of syphilis, but probably they consist of increase of the cell elements of the pulp with hyperæmia, as suggested by Weil.

In all cases of enlarged spleen thought to have a syphilitic origin, other causes must be eliminated.

Gummata of the Spleen.—Gummata vary in size from that of a millet-seed to that of a walnut, and may be few in number or very numerous. Their number is usually greater when their size is small. In some cases the spleen itself is enlarged. The tumors are usually found near the trabeculæ and deeply seated, or at the periphery of the organ; in the latter case the capsule is thickened. Recent tumors have a reddish-gray color, and are more dense and tough than the normal spleen tissue; when old they are dry and of a yellowish-gray color. When young they are less clearly defined than at a later period, when they may become distinctly encapsulated. The vessels and the structure of the organ in the neighborhood of the tumors are more or less destroyed. Cicatricial contraction, especially in the capsule, subsequently occurs. The spleen has several times been found adherent to the diaphragm in consequence of peritonitis from irritation by gummy tumors.

We know little of the symptomatology of this affection. Enlargement of the spleen is sometimes demonstrable; and in some cases, when the tumors are superficial, inflammation of the capsule and localized peritonitis occur.

In the cases hitherto observed the lesion has generally been accompanied by similar affections of other viscera, and the patients have suffered from cachexia or marasmus.

According to Bäumler, Beer thinks that, besides gummata, syphilis causes in the spleen a diffuse cellular infiltration of the arterial sheaths, and certain characteristic deposits, which are as follows: "They are paler than the normal tissue, from which they do not project at all, but merge diffusely into the surrounding spleen tissue; contain but little blood and few cells, and in the centre consist of a finely granular material in which a few cells and nuclei are imbedded."

Pancreas.

Upon this subject Lancereaux remarks: "Cases showing syphilitic changes in the pancreas are extremely rare. In a patient who died under the care of Professor Rostan fourteen years after having contracted a chancre, there was found, besides multiple gummata of the muscles, a gummy tumor of the mammary region, and two others in the pancreas.[1] All these tumors, subjected to microscopic examination by Verneuil and Robin, appeared to be composed of similar elements. I, myself, in several cases of visceral syphilis, have found this organ firm, indurated, and sclerosed, so that we cannot deny that the pancreas, like most of the viscera, is subject to the diffuse and circumscribed lesions of syphilis."

[1] Bull. Soc. Anat. de Paris, 1855, p. 26.

CHAPTER XVII.

AFFECTIONS OF THE ORGANS OF RESPIRATION.

The Nose.

The pituitary membrane may be the seat of erythema, superficial ulcerations, and mucous patches, which give rise to symptoms resembling those of an ordinary catarrh. Sometimes an ulcer may be seen just within the nasal orifice, surrounded by swollen mucous membrane, and rendering the alæ nasi tender upon pressure. Plugs of inspissated mucus, mixed with blood and pus, which obstruct the passages, are from time to time discharged. The nasal secretion is more abundant and more purulent when ulcerations or mucous patches exist. In the absence of other lesions of syphilis, upon the skin or elsewhere, the character of the nasal affections may be suspected only because of their persistence and of their rapid disappearance under specific treatment.

In the more advanced stages of syphilis, deeper ulcers appear, which originate in gummatous infiltration of the submucous tissue and gradually involve the cartilaginous and osseous textures; or the latter structures may be the first attacked, and the mucous membrane become implicated secondarily. On account of the serious deformity resulting from destruction of the framework of the nose, the importance of recognizing these lesions at an early period is very great. Their progress is usually very slow and insidious, so much so that necrosis may occur before the patient is conscious of any serious trouble. The ulcerative process may perforate the septum or the floor of the nasal cavity, or it may extend into the pharynx; again, it may find its way along the Eustachian tube, and even penetrate the cranial cavity, involving the meninges; more commonly, however, the membrana tympani becomes ruptured and a purulent discharge takes place through the external auditory canal. Deafness may ensue from obliteration of the Eustachian tube by a cicatrix. The disease has been known to pass up the lachrymal canal, involving the lachrymal bone and even the eye.

Respiration through the nose may be interfered with by hypertrophy of the mucous membrane, by the formation of adhesions between ulcerating surfaces in process of repair, or by the contraction of cicatrices. The voice becomes nasal; the sense of smell may be impaired or lost, even when the terminal filaments of the olfactory nerve are not involved; the discharge, in cases of necrosis, is extremely fetid, and may contain fragments of bone. When necrosis of the nasal bones occurs, the bridge of the nose becomes depressed and its

tip elevated; when the cartilages are destroyed, the tip of the nose is depressed and flattened. The portions of bone spared by the destructive process become thickened and eburnated, and are often separated superiorly so as to form a longitudinal furrow running along the dorsum of the nose. According to Virchow,[1] this tendency to eburnation and thickening of the osseous tissue is not confined to the part first affected, but may extend to the bones composing the base of the skull.

Treatment of Lesions of the Nose.

The earlier syphilitic affections of the nasal passages readily yield to the internal administration of mercurials, and rarely require topical applications. In tertiary affections, iodide of potassium, preparations of iron, the mineral acids, cod-liver oil, and other tonics must frequently be employed, either alternately or in combination, and for a long period, in order to afford permanent relief to the disgusting and distressing symptoms. As a general rule, however, the iodide of potassium in large doses, together with the cautious use of mercurial inunction, will suffice to effect a cure. The most efficacious local treatment consists in mercurial fumigations, which may be administered by means of the ordinary mercurial vapor bath, provided the general health of the patient be not too much reduced; but a more convenient method is to evaporate a sufficient quantity of calomel, the bisulphuret or binoxide of mercury, from a metallic plate heated over a spirit-lamp, directing the fumes into the nostrils by means of a tunnel of paper or other convenient material. Blood-warm injections of salt and water (ʒj ad Oj), diluted chlorinated soda (one part to twelve or twenty of water), and weak solutions of nitrate of silver or chloride of zinc, by means of a syringe, or with Thudichum's apparatus, will also be of much service. I most frequently employ a strong solution of chloride of potash. It must be recollected that the discharge will still continue as long as there are any necrosed portions of bone or cartilage to come away. Patients and even physicians are too apt to despair of the success of treatment in consequence of forgetting this fact.

Before making any of the above applications, the nasal passages should be thoroughly cleaned by the use of Thudichum's apparatus, or, better still, by a douche directed from behind forwards.

The Larynx.

Before the invention of the laryngoscope, knowledge of the syphilitic affections of the larynx was derived chiefly from the study of post-mortem appearances. Reasoning by analogy, it was the custom to infer the existence of laryngeal lesions corresponding with those manifested on parts within the reach of visual examination.[2]

[1] Ueber der Natur der constitutionellen Syphilis.
[2] Dance, Eruptions syph. du larynx, Thèse de Paris, 1864.

Thus all syphilitic diseases of the larynx were believed to be propagated from those occurring primarily in the pharynx, and they were thought to follow the same laws, regarding their time and mode of development, as the dermal lesions of syphilis. Modern research has shown these theories to be erroneous. We know that the larynx may be the seat of syphilitic lesions independently of manifestations in the pharynx, although these regions are usually involved at the same time. Moreover, the laryngeal lesions are so erratic as regards the time of their appearance, and so modified by their situation that their arbitrary division into secondary and tertiary is impracticable. It is desirable, however, in order to obtain a clear idea of these affections, to adopt some system of classification. Provided it be borne in mind that they refer to the depth and extent of the lesions rather than to the time of their occurrence, it may be as well to retain the terms *secondary* and *tertiary*.

Among *secondary* or *superficial* lesions, therefore, may be included;

1. *Erythema.*
2. *Superficial ulcerations.*
3. *Mucous patches.*
4. *Chronic inflammation with hypertrophy of the mucous membrane. Vegetations.*

Tertiary or *deep* lesions comprise:

1. *Deep ulcerations.*
2. *Gummy tumors.*
3. *Perichondritis and Chondritis.*
4. *Caries and Necrosis.*

With regard to laryngeal syphilis, in general, it seems to be true that the more remote a lesion is from the entrance to the larynx the more serious will be its consequences, and that the subjective symptoms of a lesion are by no means commensurate with its gravity. For instance, a superficial ulcer may be complicated by an acute œdema so general and so excessive as to threaten life; on the other hand, a destructive process may have gone on to a considerable degree while the patient is in ignorance of his condition. The invasion of the larynx by syphilis is usually very insidious, and the subsequent course of the lesions is chronic and devoid of pain. Gerhardt and Roth[1] express the opinion that the parts of the vocal organism most often in contact during the performance of its function are more frequently attacked by syphilis. Hence the vocal cords and the arytenoids are the most susceptible regions.

There are certain symptoms, some of them common to many of the lesions of laryngeal syphilis, which deserve special attention. *Spontaneous pain* is very rare. It is considered an indication of the inva-

[1] Ueber syph. Krankheiten des Kehlkopes, Arch. f. path. Anat., etc., Berl., H. xxi., 1861.

sion of fibrous or cartilaginous tissues. Pain in the ear, and, when the lesion is unilateral, in the ear corresponding to the affected side, is spoken of by Jullien[1] as a symptom in many cases, although not peculiar to syphilitic disease of the larynx.

Cough is also an extremely rare symptom, and *expectoration*, if present, is scanty, mucous or muco purulent. The sputa may be tinged with blood from an ulcerative lesion or from ruptured capillaries. In cases of caries or necrosis they may contain fragments of cartilage or bone. In the latter condition also the breath is likely to have a fetid odor.

Alteration in the volume and quality of the voice may be very slight even in severe lesions. Frequently the voice becomes hoarse or assumes a character called by the French "*crapuleuse.*" Sometimes it is reduced to an almost inaudible whisper.

Dysphagia is quite infrequent except in very advanced stages of disease, or when the epiglottis is attacked.

Dyspnœa may supervene in consequence of stenosis due to various causes, chief of which are œdema, growths which invade the air-passages or occlude them by pressure from without, and cicatricial contractions. Probably spasm may be an occasional and temporary cause of dyspnœa. Œdema may occur with any lesion of syphilis. The submucous effusion may take place rapidly, in which case the danger to life is imminent, or it may be gradual. In the latter case the patient may accommodate himself to a very considerable diminution in the calibre of the larynx. The disappearance of an acute œdema is usually proportionately rapid, while a slowly formed effusion may persist for a long time. Among new growths which may cause stenosis of the larynx, are to be included vegetations, hypertrophy of the mucous membrane following chronic inflammation, gummy tumors and exostoses. The most intractable cases of stenosis are those due to gradual contraction of cicatrices. This unfortunate result usually follows only the deep ulcerations of the later stages of syphilis. Superficial ulceration may involve quite extensive surfaces, producing complete aphonia and other pronounced subjective symptoms, yet a cure may be obtained with entire restoration of the functions of the larynx. It is in these cases of stenosis from cicatricial contraction that the operation of tracheotomy is sometimes necessitated. The experience of Krishaber,[2] however, authorizes confident delay of surgical means of relief, even in the presence of alarming dyspnœa from *other* causes, the energetic use of specific remedies, especially by the hypodermic method, having been promptly efficacious in many instances.

The larynx may also be occluded by the formation of false membrane between the vocal cords. This is rather a rare cause of stenosis.

[1] Mal. vénériennes, p. 835.
[2] Contribution a l'étude des troubles resp. dans les laryngopathies syph., Gaz. hebd. 1878, Nos. 45–47.

Elsberg,[1] in an article published in 1874, stated that in about 270 cases of laryngeal syphilis he had met with this condition six times. It may result from superficial ulceration and, on the contrary, has been observed in conjunction with destruction of the cartilages and other late lesions. The process appears to begin usually at the anterior commissure, leaving a passage for the air posteriorly. It may take place in a reverse direction, or an aperture may be left in the middle of the rima glottidis, or along the edge of the vocal cord. This condition is also described by Sommerbrodt,[2] who, with Elsberg, recommends the use of the galvano-cautery in relieving the dyspnœa, and adds that complete restoration of the voice must not be expected. The fact that in many cases of stenosis the obstacle to inspiration is greater than to expiration has been noticed by several observers.

Let us now consider the special lesions which may occur in the larynx in the course of syphilis.

Erythema.—Erythema of the larynx, unless it be very acute and attended by œdema, may be so slight as to attract no attention, the only symptoms being slight huskiness of the voice and moderate catarrh. No doubt it occurs during early skin eruptions, and it is frequently developed at more advanced stages, either independently or in connection with deep laryngeal lesions. There may be nothing in the appearance of the affection to distinguish it from a simple catarrh. It occurs either in patches, which give the mucous membrane a mottled appearance, or it may be limited to certain regions, or it may be diffuse, the lining of the larynx having a uniform dusky-red hue. There may be superficial erosions of the mucous membrane. The vascularity of the affected parts is much increased, the blood vessels often presenting the appearance referred to by Krishaber and Mauriac[3] as "*arborization.*" When the epiglottis participates in the affection and in the concomitant œdema, it may be much tumefied, and assumes a bilobed shape.

Superficial Ulcerations.—The superficial ulcerations observed in laryngeal syphilis involve only the mucous membrane, and, according to Bäumler,[4] usually begin in mucous follicles at the posterior commissure. They may affect phonation to some extent, but are generally very sluggish, persisting with slight change for an indefinite period. Their margins are well defined, quite regular, and very slightly elevated above the surrounding level. The surface of the ulcers is usually concealed by a layer of tenacious secretion. Frequently, general erythema of the mucous membrane coexists. These early ulcerations, whose appearance is quite different from that of

[1] Syphilitic membranoid occlusion of the rima glottidis. Am. J. Syph. and Derm., N. Y., Jan., 1874.
[2] Berl. klin. Wchnschr., Apr. 1, 1878.
[3] Des laryngopathies syph. pendant les premières phases de la syphilis. Paris, 1876.
[4] Ziemssen's Encycl., vol. iii, p. 206.

ulcers occurring at a later period, may be confounded with incipient tubercular ulcers. They are not so likely as are the late ulcerations to be mistaken for cancerous disease. The following points of distinction may be found of service. The ulcers of phthisis begin in the ventricular bands, and are usually paler than those of syphilis. They are bathed in a copious muco-purulent secretion. There is decided swelling and œdema of the arytenoids, while the mucous membrane elsewhere is anæmic. The course of phthisical ulcers is more rapid and painful, and pulmonary symptoms coexist, or are soon manifested. Whistler[1] observes that in syphilis the voice is rough and rasping, while in phthisis it is whispering and moist, suggesting the presence of excessive secretion. The absence of ulceration in the mouth, the blanched appearance of the palate and fauces, while the pharynx may be congested, are indicative of the tubercular character of laryngeal ulceration. Symmetry in the position and outline of syphilitic ulcers is considered characteristic by some authorities.

Mucous Patches.—Great diversity of opinion has prevailed, even since a method of inspecting the larynx during life has been provided, regarding the frequency of mucous patches. Pierre Ferras[2] considers them very rare, having found them in only one instance among nearly one hundred cases of syphilis. Krishaber and Mauriac, on the contrary, found ten cases of "*plaques muqueuses*" in fourteen of laryngeal syphilis, the former observer discovering them only on the vocal cords. Whistler states that he has met with twenty-four cases of this lesion among eighty-eight of syphilis in its secondary stage. In his experience, the time of its occurrence varied from one and a half to twelve months after primary infection. In all cases mucous patches of the mouth or genitals coexisted; in seven cases papular or papulo-squamous eruptions were found, in one case associated with a roseola. In one case, six weeks after infection, the indurated cicatrix of a chancre was still present. Enlarged glands and alopecia occurred in many instances. In ten cases the epiglottis was the seat of the lesion, and in ten the vocal cords; in four cases the arytenoids, in two the inter-arytenoid fold, in two the ventricular band, and in one the glosso-epiglottic fold. When seated on parts exposed to irritation, either in respiration or in phonation, mucous patches of the larynx are prominent, with ragged margins, forming what are known as *condylomata;* in other regions they are flatter, and the ulceration is more sharply cut. Their surface is covered by a scanty, viscid secretion. The removal of this film exposes a red, excoriated surface, in striking contrast with the paler hue of the surrounding mucous membrane. Sometimes the centre of a patch is slightly depressed, its borders remaining prominent. Besides the

[1] The early manifestations of syphilis in the larynx. Med. Times and Gaz., Lond., 1878, Nos. 1473–74–75–80–84.
[2] De la laryngite syph. Paris, 1872.

ulcerated form of mucous patch, we also meet with the *opaline patch,* according to Whistler, more often on the epiglottis and on the arytenoids. In these lesions the epithelium is thickened and still adherent, the deeper tissues being infiltrated with new cells. The opalescent appearance is attributed by Cornil[1] to minute collections of pus amidst the epithelial cells.

Chronic Inflammation.—Chronic inflammation of the larynx is an intermediate lesion; it may follow an early catarrh, or may not appear until three or four years after infection. The color of the mucous membrane is decidedly darker than in the early erythemas, although Whistler affirms that it never deserves the name "coppery," which has been applied to it by some authors. The affection is very persistent and commonly leads to thickening or *hypertrophy* of the mucous membrane, which, according to Krishaber, is the only one of the early lesions which does not disappear spontaneously. This thickening is quite different from the œdema occurring with an erythema, in which the mucous membrane has a puffy appearance. The thickening of the cords may be so great as to require operative interference for the relief of the dyspnœa. A remarkable instance of this condition has been reported, in which tracheotomy was done four times during a period of five years.[2] Associated with this condition chronic ulcers are almost always found. These ulcers have ragged and thickened edges; frequently vegetations spring from them, which may reach a considerable size, even to the degree of producing aphonia and of impeding respiration. The vocal cords, which are thickened and rough, are very often the seat of these ulcers. The ventricular bands may be so swollen as to overlap the cords. The *vegetations,* which may grow from the margins of an ulcer or from other portions of the mucous membrane, are often difficult to distinguish from simple polypoid growths. Their favorite seat is at the insertion of the inferior vocal cords. Ferras states that they may appear in the ventricles of the larynx, where natural papillæ are scanty. The history of the case, or even the empirical use of specific treatment, may sometimes be required to determine their character.

Deep Ulcerations.—Deep ulcerations, occurring in the later stages of syphilis, may form by extension from the pharynx or by degeneration of gummatous deposit. The epiglottis may be entirely destroyed by the ulcerative process. Next in order of frequency the aryteno-epiglottic ligaments are attacked, then the superior vocal cords, and more rarely the true cords. The ulcerations, especially those of gummy tumors, are very irregular and indurated. Frequently, vegetations, like those occurring in connection with the ulcers described in the preceding section, accompany these deep ulcerations. Extensive regions may be destroyed in a chronic and

[1] Progrès méd., Par., Aug. 10, 1878.
[2] Tr. Clin. Soc. Lond., vol. x., 1877.