insidious manner, irreparable injury being done. These ulcerations can hardly be confounded with those of tubercular origin, which are smaller, more numerous, and more superficial. The lardaceous base and the general appearance of the lesions, in connection with cicatrices of previous ulceration, suggest their specific character. They are much more likely to be mistaken for malignant disease. In cancer the tonsils and the submaxillary glands are, at an early period, the seat of infiltration. Pain, often extreme, is distinctive of cancer, while the syphilitic lesion makes much slower progress and is generally painless, until the tissues have been extensively destroyed. In most cases of syphilis, moreover, there is a clear history of infection, and traces of former lesions may be discovered in the mouth or pharynx, or in other regions of the body.

Gummy Tumors.—Gummy tumors of the larynx are much more common than has been supposed. Two forms of gummatous deposit are described by Simyan:[1] a circumscribed variety of a grayish-red color, and a diffuse infiltration which has a yellowish color. Virchow describes gummy tumors of the larynx as extremely vascular nodules, of softer consistence than those developed in other regions, which gradually ulcerate and penetrate the deeper tissues. The lesion is often single, and may attain a very large size; frequently the tumors are small and multiple, and may be limited to the mucous and submucous tissues. The deposit sometimes undergoes absorption, but more frequently it degenerates, forming the deep, ragged ulcers already described, which may involve the framework of the larynx and produce permanent deformity. The epiglottis and the arytenoids are most often involved, but any of the laryngeal cartilages may suffer. A fatal termination may ensue in the course of these lesions from impediment to respiration, due to the size of the tumor or to an acute œdema of the larynx. A single case of death from hæmorrhage has been recorded by Türck.

Perichondritis.—Perichondritis is generally the result of the extension of an inflammatory or ulcerative process from the mucous and submucous tissues. The cartilage itself may be involved. Pain, of a marked character, is a common symptom of this lesion, and the parts are sensitive to external pressure. Crepitation on palpation of the cartilage is referred to by Jullien[2] and others as a sign of its invasion. Œdema of the soft parts, and deformity from the structural changes in the affected cartilage, are frequently observed. The epiglottis and the arytenoid cartilages are most often involved, more rarely the cricoid. They may be entirely destroyed.

Caries.—Caries, or true *necrosis*, in cases where ossification of the

[1] Syphilis laryngée tertiaire. Thèse de Paris, 1877.
[2] Mal. vénériennes, Paris, 1879.

cartilage has taken place, is a common sequel of the invasion of the perichondrium by inflammation or gummatous ulceration. It is always a very late accident, and frequently induces structural changes in the larynx which cannot be remedied. An instance of its occurrence six years after infection has been reported by Lamallerée.[1] Two small abscesses formed on the anterior aspect of the neck at the level of the cricoid cartilage. They soon opened, and, several years later, pieces of necrosed bone were discharged through the fistulous tracks. Fragments of sequestrum may be expectorated, or may lodge in the air-passages, and cause alarming or even fatal dyspnœa. The occurrence of phlegmonous inflammation in the parts surrounding the larynx, secondary to the invasion and death of the cartilage, has been made the subject of a special paper by Mauriac.[2]

Syphilitic aphonia, occurring at an early period, without appreciable lesions, was originally described by Diday before the use of the laryngoscope became general. There can be little doubt that the condition was really due to lesions which could not be discovered with the imperfect methods of exploration at his command.

Simyan and Paget[3] describes a *paralysis* of the vocal cords which has been observed in the later stages of syphilis. It is always unilateral, and affects the left cord more often than the right. Simyan gives the details of a case, communicated by Libermann, of complete aphonia, due to this condition, which appeared eight years after infection. It resisted every kind of treatment, until its specific character was suspected, when the use of hypodermic injections of mercury was begun. The affection then yielded, and the voice was gradually restored.

The Trachea.

The trachea may be the seat of lesions similar to those occurring in the larynx. Vierling[4] concludes from the observation of forty-six cases that early syphilitic lesions are rare; the most common are ulcerative processes, which lead to stenosis by contraction of the resulting cicatrices.

The wall of the trachea may be perforated and an abscess be formed externally. Usually the larynx, trachea, and bronchi are involved at the same time. In sixteen out of the forty-six cases the larynx was spared. Cough, purulent expectoration, and dyspnœa, which may be intermittent, are the prominent symptoms of tracheal syphilis. Stenosis is most likely to occur just above the bifurcation of the trachea, and is always a serious if not a fatal sequel of deep ulceration. According to Gerhardt, stenosis of the trachea may be distinguished from that of the larynx by the absence of depression

[1] Ann. d. mal. de l'oreille et du larynx, Paris, 1878, vol. iv., No. 5.
[2] Sur les laryngopathies syph. graves compliquées de phlegmon péri-laryngien, Paris, 1876.
[3] Des paralysies du larynx. Thèse de Paris. 1877.
[4] Deutsches Arch. f. klin. Med., Leipz., April 16, 1878.

of the larynx during convulsive inspiration. The trachea above the ulceration is often dilated, and the structure of the cartilages may be changed or destroyed. Thus, in addition to the stenosis caused by cicatricial contraction, the ingress of air may be impeded by collapse of the trachea at each act of inspiration.

It is an interesting fact that stricture of the air-passages consequent upon the *cicatrization* of a syphilitic ulcer may cause death from dyspnœa, so that specific remedies may in reality hasten a fatal termination just so far as they exert a beneficial influence upon the local disease. Two interesting cases of this description are given in the *Annuaire de la syphilis* (année 1858, p. 324).

In the first, reported by Moissenet, the stricture was situated just above the bifurcation of the trachea. The lining membrane at this point presented a honeycomb appearance, and the cartilages were more or less changed in their structure and destroyed; indeed, four of the rings had entirely disappeared and were replaced by flexible tissue; hence, in addition to the diminution in the calibre of the tube, its walls collapsed at each act of inspiration and added to the difficulty in the ingress of the air. The patient had been taking mercurials and iodide of potassium, which only aggravated her symptoms. Tracheotomy was performed without benefit, since the larynx was unaffected and the obstruction was below the artificial opening. Death was caused by asphyxia.

The following is a summary of the second case, reported by M. Demarquay:

The patient, aged 36, entered a *maison de santé*, Oct. 25, 1858, with all the symptoms of œdema of the glottis. He seemed to be threatened with suffocation; his respiration was noisy and painful; he had had a cough for two months with slight expectoration; his sputa resembled those of laryngeal phthisis; and he had lost much flesh. For a fortnight his symptoms had been very intense. The lungs were found to be sound; and, as the patient had had ulcers upon the penis twelve years before, followed six years afterwards by ulceration and perforation of the soft palate, iodide of potassium was ordered. Under this treatment he continued to improve for a month; but on Nov. 25th he was suddenly seized with such extreme dyspnœa that M. Demarquay thought it best to perform tracheotomy. The operation was of no benefit and death soon ensued.

At the autopsy, the larynx was found to be perfectly healthy, with the exception of a small cicatrix between the two arytenoid cartilages; but the trachea was found to be abruptly contracted opposite its eleventh ring, at which point its circumference measured only 28 millimètres. This stricture involved the left side of the trachea and was formed of cicatricial tissue in which six rings of the tube were twisted on themselves and fractured. Below the stricture the bronchi were dilated, and their longitudinal muscular fibres hypertrophied. The lungs were healthy, and free from tubercles.

Treatment of Lesions of the Larynx and Trachea.

Treatment, except in the advanced stages of laryngeal syphilis, gives prompt and permanent results. The use of the "mixed" treatment is in all cases indispensable, and, when cachexia exists, it should be combined with various tonics. Local treatment may be of service in hastening reparation, although Krishaber believes that it is not essential, except in the case of vegetations or of hypertrophy of the mucous membrane. For these conditions he uses chromic acid and the galvano-cautery. Acid nitrate of mercury, chloride of zinc, or nitrate of silver, in solutions of appropriate strength, may be applied to ulcerations. Astringent sprays, preferably a solution of sulphate of zinc, sedative insufflations, such as iodoform, and inhalations, as of the compound tincture of benzoin, are useful palliatives. When œdema threatens, counter-irritation externally is indicated, and for its relief scarification of the mucous membrane may be required. Cohen[1] speaks of the œdema which sometimes results from the use of large doses of iodide of potash, and the consequent necessity of closely watching the effect of the drug. Spasm may be quieted with bromide of potassium, and opiates may be required in the rare cases of extreme pain. Fetor of the breath may be relieved by the use of detergents and disinfectants in the form of sprays or gargles. For the stenosis following ulceration dilatation with bougies has been resorted to with results not fully satisfactory; when the contraction becomes extreme tracheotomy is the only resource. The operation is rarely required for other conditions which cause laryngeal obstruction. The tracheal lesions of syphilis, especially those which may result in stenosis, are much more serious than similar lesions of the larynx. Although they are equally amenable to constitutional treatment, the tracheal lesions are usually beyond the reach of surgical intervention. In all cases of syphilis of the air-passages, and especially of the larynx, particular attention should be given to abstinence from tobacco and alcohol, and the avoidance of excessive use of the vocal organs.

The Bronchi.

The *bronchi* may be the seat of syphilitic ulceration and consequent stricture.

In the case of Marguerite Rudloff, reported by Virchow, "the right bronchus was contracted at its bifurcation and above that point; a section of it presented the form of a triangle; its diameter measured a quarter of an inch, while that of the left bronchus measured half an inch. The left bronchus was contracted to a still greater extent near its bifurcation, but only for the distance of a quarter of an inch, and was adherent at this point to the normal œsophagus through the intervention of a thick and tendinous mass of tissue. The right bronchus was the seat of thickening and contraction which extended for a short distance into its branches, which further on were reddened upon their internal surface and dilated. Several larger dilatations

[1] Diseases of the Throat and Nasal Passages. Phila., 1879.