II. DISEASES OF THE LARYNX.

I. ACUTE CATARRHAL LARYNGITIS.

This may come on as an independent affection or in association with general catarrh of the upper respiratory passages.

Etiology.—Many cases are due to catching cold or to overuse of the voice; others develop in consequence of the inhalation of irritating gases. It may occur in the general catarrh associated with influenza and measles. Very severe laryngitis is excited by traumatism, either injuries from without or the lodgment of foreign bodies. It may be caused by the action of very hot liquids or corrosive poisons.

Symptoms.—There is a sense of tickling referred to the larynx; the cold air irritates and, owing to the increased sensibility of the mucous membrane, the act of inspiration may be painful. There is a dry cough, and the voice is altered. At first it is simply husky, but soon phonation becomes painful, and finally the voice may be completely lost. In adults the respirations are not increased in frequency, but in children dyspnœa is not uncommon and may occur in spasmodic attacks. If much œdema accompanies the inflammatory swelling, there may be urgent dyspnœa.

The laryngoscope shows a swollen and tumefied mucous membrane of the larynx, particularly the ary-epiglottidean folds. The vocal cords have lost their smooth and shining appearance and are reddened and swollen. Their mobility also is greatly impaired, owing to the infiltration of the adjoining mucous membrane and of the muscles. A slight mucoid exudation covers the parts. The constitutional symptoms are not severe. There is rarely much fever, and in many cases the patient is not seriously ill. Occasionally cases come on with greater intensity, the cough is very distressing, deglutition is painful, and there may be urgent dyspnœa.

Diagnosis.—There is rarely any difficulty in determining the nature of a case if a satisfactory laryngoscopic examination can be made. The severer forms may simulate œdema of the glottis. When the loss of voice is marked, the case may be mistaken for one of nervous aphonia, but the laryngoscope would decide the question at once. Much more difficult is the diagnosis of acute laryngitis in children, particularly in the very young, in whom it is so hard to make a proper examination. From ordinary laryngismus it is to be distinguished by the presence of fever, the mode of onset, and particularly the coryza and the previous symptoms of hoarseness or loss of voice. Membranous laryngitis may at first be quite impossible to differentiate, but in a majority of cases of this affection there are patches on the pharynx and early swelling of the cervical glands. The symptoms, too, are much more severe.

Treatment.—Rest of the larynx should be enjoined, so far as phonation is concerned. In cases of any severity the patient should be kept

in bed. The room should be at an even temperature and the air saturated with moisture. Early in the disease, if there is much fever, aconite and citrate of potash can be given, and for the irritating painful cough a full dose of Dover's powder at night. An ice-bag externally often gives great relief.

II. CHRONIC LARYNGITIS.

Etiology.—The cases usually follow repeated acute attacks. The most common causes are overuse of the voice, particularly in persons whose occupation necessitates shouting in the open air. The constant inhalation of irritating substances, as tobacco-smoke, may also cause it.

Symptoms.—The voice is usually hoarse and rough and in severe cases may be almost lost. There is usually very little pain; only the unpleasant sense of tickling in the larynx, which causes a frequent desire to cough. With the largyngoscope the mucous membrane looks swollen, but much less red than in the acute condition. In association with the granular pharyngitis, the mucous glands of the epiglottis and of the ventricles may be involved.

Treatment.—The nostrils should be carefully examined, since in some instances chronic laryngitis is associated with and even dependent upon obstruction to the free passage of air through the nose. Local application must be made directly to the larynx, either with a brush or by means of a spray. Among the remedies most recommended are the solutions of nitrate of silver, chlorate of potash, perchloride of zinc, and tannic acid. Insufflations of bismuth are sometimes useful.

Among directions to be given are the avoidance of heated rooms and loud speaking, and abstinence from tobacco and alcohol. The throat should not be too much muffled, and morning and evening the neck should be sponged with cold water.

III. ŒDEMATOUS LARYNGITIS.

Etiology.—Œdema of the glottis, or, more correctly, of the structures which form the glottis, is a very serious affection which is met with (*a*) as a rare sequence of ordinary acute laryngitis, whether due to cold or to the application of irritants. (*b*) In chronic diseases of the larynx, as syphilis or tubercle. (*c*) In severe inflammatory diseases like diphtheria, in erysipelas of the neck, and in various forms of cellulitis. (*d*) Occasionally in the acute infectious diseases—scarlet fever, typhus, or typhoid. In Bright's disease, either acute or chronic, there may be a rapidly developing œdema. The connection with Bright's disease has been disputed and is certainly rare. I have met with two instances, one in scarlatinal

wakes in the morning, perhaps without fever and feeling comfortable. The attack may recur the following night with greater severity. In unfavorable cases the dyspnœa becomes more and more urgent, the cyanosis deepens, the child, after a period of intense restlessness, sinks into a semi-comatose state, and death finally occurs from poisoning of the nerve centres by carbon dioxide. In diphtheritic laryngitis the onset is usually less sudden and is preceded by a longer period of indisposition. As a rule, there are pharyngeal symptoms. The constitutional disturbance, too, is more severe, the fever higher, and there may be swelling of the glands of the neck. Inspection of the fauces may show the presence of false membranes on the pillars or on the tonsils. This, however, is held by some not to be an invariable evidence of the diphtheritic nature of the inflammation. Fagge held that non-contagious membranous croup may spread upward from the larynx just as diphtheritic inflammation is in the habit of spreading downward from the fauces. Ware, of Boston, whose essay on croup is perhaps the most solid contribution to the subject made in this country, reported the presence of exudate in the fauces in 74 out of 75 cases of croup. These observations were made prior to 1840, during periods in which diphtheria was not epidemic to any extent in Boston. In protracted cases pulmonary symptoms may develop, which are sometimes due to the difficulty in expelling the muco-pus from the tubes; in others, the false membrane extends into the trachea and even into the bronchial tubes. During the paroxysm the vesicular murmur is scarcely audible, but the laryngeal stridor may be loudly communicated along the bronchial tubes.

Diagnosis.—Membranous laryngitis must be distinguished from ordinary simple laryngitis and from certain spasmodic affections. Simple catarrhal laryngitis rarely induces such severe symptoms, occurs more suddenly, nearly always at night, and the hoarseness and implication of the voice are not nearly so marked. The presence of preceding symptoms is one of the most important diagnostic distinctions between the false and the true croup. By hoarseness, dyspnœa, and signs of membrane on the fauces or tonsils the existence of membranous laryngitis may be definitely determined. Occasionally simple laryngitis induces swelling sufficient to cause marked dyspnœa and hoarseness and may, indeed, prove fatal. Of course, true membranous laryngitis may follow the catarrhal form. In laryngismus the attack comes on suddenly and is not associated with either cough or hoarseness. The child is seized with a difficulty in breathing; the inspirations are crowing in character, and the dyspnœa rapidly becomes urgent, so that symptoms of suffocation supervene, sometimes within less than a minute; the spasm then relaxes and the child appears to be in its normal condition. It is most commonly met with in rickety children.

The diagnosis between diphtheritic and non-diphtheritic membranous laryngitis is by no means easy, and, as mentioned above, many excellent authorities hold the diseases to be identical. The following are the chief points of distinction, which refer to general rather than to local conditions: The

non-specific affection generally begins in the larynx and the fauces are but slightly, if at all, affected. It is not infectious. Cases develop in institutions under circumstances most favorable to the spread of the disease, but other children are not attacked. It has none of the serious asthenic symptoms of diphtheria, and it is not followed by paralysis. It occurs almost exclusively in very young children, whereas diphtheritic laryngitis is not at all uncommon in adults.

Prognosis.—True croup, whether simple or diphtheritic, with a mortality of from sixty to eighty per cent, is an extremely fatal disease. When it attacks healthy children and is not secondary to some febrile affection, the outlook is more hopeful. Even a very limited exudation may prove fatal. On several occasions, in performing post-mortems in fatal cases, I have been astonished to find such a slight involvement of the larynx; in some instances scarcely more than a granular exudation covering the cords and folds. A fatal result is almost inevitable when the disease extends to the bronchi.

Treatment.—As the cases rarely come under observation until the membrane is formed, the main medicinal indication is to favor its separation. The air of the room should be saturated with moisture from an atomizer and the throat should be sprayed with lime-water.

In young children topical application to the larynx itself is extremely difficult and in many instances impossible. Good results have followed the passage of a sponge-probang with a strong solution of nitrate of silver. It is an easy matter to recommend such measures, but very difficult to carry them out. The administration of a brisk emetic will sometimes bring away portions of the false membrane; ipecacuanha or the turpeth mineral is the most suitable. Of late years there has been a return to the mercurial treatment of membranous laryngitis, but I have not seen such results from its use as would justify a recommendation of it. Continuous hot applications to the throat are usually much more grateful than the ice-bag, so highly recommended by some practitioners. With the first indication of defective aëration of the blood it is well to let the child inhale oxygen, which may be conveniently passed into a tent made of sheets on the bed.

In very many cases the obstruction reaches such a grade that the propriety of intubation or tracheotomy is raised. One great advantage of the former is that it may be suggested at an earlier stage with more likelihood of gaining the consent of the parents.

The statistics of tracheotomy are not very satisfactory, as only a fourth to a third of the cases recover.

The general treatment of these cases is of great importance. In the first place the child should be isolated, since it is often impossible to say whether the case is specific or not. Much of the success in the case depends upon careful nursing. There is no disease which requires greater care, coolness, and judgment on the part of the attendants. The diet