

ABSTRACT OF LECTURES ON THE USE OF THE LARYNGOSCOPE.

Delivered at the London Hospital.

BY MORELL MACKENZIE, M.D. Lond.,
Assistant-Physician to the Hospital.

LECTURE III.

THE healthy larynx, as seen with the laryngoscope, has a very different appearance to that seen after death. The *rationale* of the formation of the image has already been explained; the special description of its individual parts will, therefore, be now undertaken. In some cases, on introducing the laryngeal mirror, only the epiglottis may be visible, with perhaps just the tips of the capitula Santorini at the posterior part; whilst in others, the entire length of the vocal cords, the ventricular bands (false vocal cords), the small cartilages of Wrisberg and Santorini, a portion of the cricoid cartilage, the rings of the trachea, and perhaps even the bifurcation of the bronchi below it, can be seen with perfect distinctness. The view varies in different cases between these two extremes. The epiglottis varies very much in appearance in

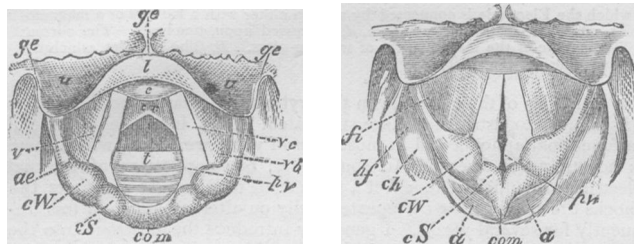


Fig. 9.—Laryngoscopic Drawing, showing the Vocal Cords drawn widely apart, and the position of the various parts above and below the Glottis, during quiet inspiration. *ge*. Glosso-epiglottidean Folds. *u*. Upper surface of Epiglottis. *l*. Lip of Epiglottis. *c*. Cushion of Epiglottis. *v*. Ventricle of Larynx. *ae*. Ary-epiglottic Fold. *cW*. Cartilage of Wrisberg. *cS*. Capitulum Santorini. *com*. Arytenoid Commissure. *vc*. Vocal Cord. *vb*. Ventricular Band. *pv*. Processus Vocalis. *cr*. Cricoid Cartilage. *z*. Rings of Trachea.

Fig. 10.—Laryngoscopic Drawing, showing the approximation of the Vocal Cords, and the position of the various parts in the act of vocalisation. *fi*. Fossa Innominata. *hf*. Hyoid Fossa. *ch*. Cornu of Hyoid Bone. *cW*. Cartilage of Wrisberg. *cS*. Capitulum Santorini. *a*. Arytenoid Cartilages. *com*. Arytenoid Commissure. *pv*. Processus Vocalis.

different individuals; for it may be large or small, broad or narrow, long or short. In most cases there is seen—1, a portion of its upper surface on either side (*u*); 2, its free edge and a small portion of its under surface turned up in the centre, and forming a kind of lip (*l*); and 3, another portion of its under surface, below and behind the lip, projecting as a rounded prominence—the cushion (*c*). The upper surface is of a dirty pinkish hue; the lip is of a decided yellow colour, though it has a slight shade of pink; and the cushion is invariably bright red. In some cases the whole of the under surface of the epiglottis is seen, and then it is of a bright red colour. This normal coloration of the under surface of the epiglottis is apt to be mistaken (by those unaccustomed to the use of the laryngoscope) for congestion of the mucous membrane. In some cases the epiglottis is broad, whilst in others it is extremely narrow; and whilst in some people only the upper surface can be seen, in others where the epiglottis is drawn tightly to the tongue, only the under surface is visible. In the centre of the free edge is a slight notch, which gives to the epiglottis, when seen in its entirety, its foliate appearance; but the free edge of the valve is more often turned upon itself, so that in the reflection the notch is lost sight of, and the border appears round. In some cases, on account of the inclination of the epiglottis, only the profile of its free edge is visible in the mirror. In these cases the valve is represented by a thin line. Above the epiglottis, the glosso-epiglottic folds (*ge*) may be seen, passing upwards and backwards to the tongue; the profile of the latter—that is to say, of its posterior superior border—is seen as a horizontal line, which, on account of the projecting papillæ, is somewhat uneven.

The ary-epiglottic folds (*ae*), which form the lateral boundaries of the upper laryngeal aperture, can be seen in the mirror extending obliquely downwards and backwards from the epiglottis to the arytenoid cartilages. Near the latter are the slight pinkish prominences of the cartilages of Wrisberg (*cW*), and a little beyond the cartilages of Wrisberg, in the same fold of mucous membrane, are two other small prominences, the capitula Santorini (*cS*), surmounting the arytenoid cartilages. The cartilages of Wrisberg generally appear round, but sometimes, especially in thin people, they have a triangular shape, the apex of the triangle being directed outwards. The capitula Santorini have a roundish shape in the healthy larynx. Both these cartilages are most distinct when the vocal cords are approximated; but the clearness with which these small laryngeal cartilages can be seen depends upon their degree of development, and also upon the amount of submucous areolar tissue surrounding them. Sometimes the cartilage of Wrisberg is not to be seen at all, whilst occasionally there are small cartilages between it and the capitula Santorini. The breadth of the ary-epiglottic folds varies in different people and in different states of the larynx, appearing broad when they are relaxed, that is in inspiration, and narrow when they are tense, as in the approximation of the cords, especially in the production of high notes. The ary-epiglottic folds have been well described by Störck, as having almost the colour of the gums. The cartilages of Wrisberg and Santorini are of a rather brighter and deeper colour than the rest of the mucous membrane.

The arytenoid cartilages (*a*) are easily recognised by the small cartilages of Santorini which surmount them: they can be best seen when the vocal cords are approximated. The mucous membrane covering them is generally of a rather redder tinge than that forming the ary-epiglottic folds. Between the arytenoid cartilages is a fold of mucous membrane—the inter-arytenoid fold or commissure—which is most apparent when the glottis is widely open (fig. 9, *com*). When the arytenoid cartilages are approximated, the commissure folds together, and is directed backwards (fig. 15, *com*). It is of a yellowish pink colour. The ventricular bands (*vb*), which were formerly called the false vocal cords, are the folds of mucous membrane which are seen below the ary-epiglottic folds, passing obliquely in the antero-posterior diameter of the larynx, from the arytenoid cartilages to the epiglottis. They are thick rather than prominent, and of a deeper red than the ary-epiglottic folds. Being rather thinner, and more prominent at their lower edge (which borders on the ventricle) than elsewhere, this part has a lighter tint when illuminated than the rest of the ligament. When the vocal cords are approximated, a small depression may be seen near the epiglottis between the ventricular bands below and the ary-epiglottic folds above, which I have called the fossa innominata (*fi*). The openings of the ventricles (*v*) can sometimes be seen, as dark lines, between the ventricular bands and vocal cords. They are best seen in the healthy larynx of a thin subject, especially when there is a slight disposition to spasm.

The vocal cords (*vc*), when visible, cannot be mistaken. They are seen as two pearly white cords, passing from the base of the arytenoid cartilages to the angle of the thyroid cartilage. On inspiration, they appear almost to touch each other at their anterior insertion, but to be separated from a quarter to half an inch posteriorly. On phonation, they become parallel, and appear to approximate. Each vocal cord is seen to terminate in the angle at the base of the arytenoid cartilages, called the vocal process (*vp*). On inspiration, this angle is directed outwards, and the glottis has a lozenge shape; but when the vocal cords approach one another, the angle is turned inwards. This process divides the intercartilaginous and interligamentous portions of the glottis.

Below the vocal cords, appears the broad yellow cricoid cartilage (*cr*), and below it, again, the rings of the trachea (*z*) are seen elevating the mucous membrane, which between them is of a pale pink colour. Occasionally two indistinct dark circles (the openings of the bronchi), on either side of a bright projecting line (the angle of division between the bronchi), indicate the bifurcation of the trachea. In some rare cases a ray of light may be thrown down the right bronchus.

Though external to the larynx, it is necessary to mention the hyoid fossa (*hf*), in which foreign bodies are extremely likely to be lodged. It is bounded on the inner side by the ary-epiglottic folds, and on the outer side by the inner surface of the thyroid cartilage. Projecting from the outer wall, and sometimes forming the floor of the fossa, the greater corner of the hyoid bone (*ch*) is sometimes seen glistening beneath the mucous membrane.

For the general practitioner, the armamentaria of laryngoscopy need not be extensive. Good laryngeal brushes, inhalers, both for atomised fluids and warm vapours, and a laryngeal electrode, are all that are

required. For atomised inhalation, Siegle's steam kettle, or Dr. Andrew Clark's handball spray-producer, answer well, and are both so well known that they do not need any description. For the inhalation of vapours, the "eclectic inhaler", made by Messrs. Maw, Son, and Thompson, is perhaps the best, as besides possessing certain special

own invention is now generally used. The accompanying woodcut (fig. 11) sufficiently explains its method of action; the important feature being that the current does not pass beyond the handle until the operator, with his index finger, presses on the spring in the handle, when the electric current is conveyed to the part desired. By placing

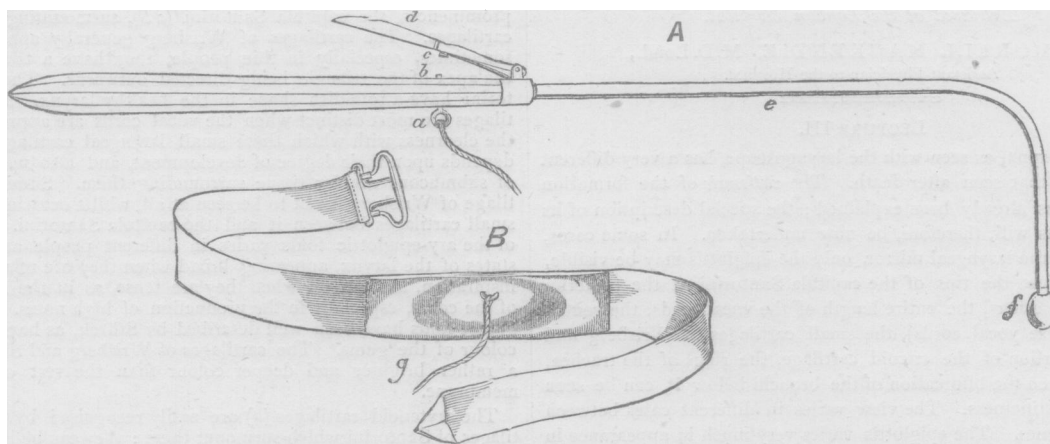


Fig. 11.—Electrode and Necklet. *A*. The Laryngeal Electrode. *a*, a metal ring by which the Electrode is connected by a chain either with a battery or a magneto-electric machine; *b*, the extremity of a wire communicating with *a*; *c*, metal point, which, when the ivory handle, *d*, is pressed upon, touches *b*. The current then passes along the wire, *e* (which is insulated in caoutchouc), to the sponge, *f*. The handle of the instrument is of wood or glass. *B*. The Necklet, which the patient wears. *g*, the chain by which the Necklet is connected with the apparatus producing the electricity.

features of its own, it has all the good points of those previously invented.

I shall, I think, best conclude these lectures by a few remarks on the mode of applying remedies to the larynx, and an enumeration of the solutions, etc., which I find most useful.

For applying solutions to the larynx, squirrel's or camel's hair pencils, cut square at the end, and firmly attached to aluminium wire, bent at an angle of about 90 deg., will be found most suitable. Brushes of different lengths and of different sizes are required in different cases. For ordinary use, three brushes will be sufficient, and these are made of definite dimensions. The shortest size (No. 1) measures two inches in length from the angle to the end of the brush; the length in the medium size (No. 2), from the angle, is two and a half inches; and in the longest (No. 3), the length is three inches. The handles of these brushes (Nos. 1, 2, and 3) are, for convenience, coloured white, red, and black, respectively.

So many cases of acute and chronic inflammation of the larynx, successfully treated by topical remedies, have been related in the medical journals, that it is scarcely necessary to bring forward here any proofs of the value of local treatment.

The various forms of laryngeal inflammation are for the most part analogous to similar morbid conditions in other parts of the body; and the practitioner, in the selection of particular remedies, will be guided by his general experience. I shall merely remark, therefore, that amongst the remedies I have found most efficacious are the following: solutions of perchloride of iron, 60-120 grains to ℥j; chloride of zinc, 20-30 grains to ℥j; sulphate of copper, 15 grains to ℥j; sulphate of zinc, 5 grains to ℥j; alum, 30 grains to ℥j; chloride of aluminium, 30-60 grains to ℥j; aluminate of iron, 30-60 grains to ℥j; carbolic acid (the crystals), 30 grains to ℥j; and tincture of iodine. The perchloride of iron and chloride of zinc are the solutions I use most largely. Glycerine will also be found a most useful solvent for these agents, as its consistency is better calculated to keep up prolonged and close contact between the remedy and the affected membrane. I seldom employ solutions of nitrate of silver as applications to the larynx, for whilst I have not found them more beneficial than other mineral astringents, they are much more likely to produce spasm and nausea. The alternation of topical remedies is often as efficacious in the cure of chronic laryngitis as it is in the treatment of chronic inflammation of other mucous passages. Solid nitrate of silver can only be safely applied to the larynx by means of the laryngeal cauteriser. This instrument consists of a piece of aluminium wire, bent at the same angle, and of the same length above and below the angle, as the laryngeal brush. The wire is roughened at its extremity, and then dipped into some nitrate of silver fused over the spirit-lamp. In this way a certain quantity of the nitrate adheres to the wire.

For faradisation of the vocal cords, a very simple instrument of my

the extremity of the electrode on the arytenoid cartilages, both branches of the pneumogastric nerve are stimulated. This instrument is useful in functional aphonia and in most cases of vocal weakness, where there is no structural disease. In some cases, one application of internal electricity is sufficient to effect a permanent cure, whilst in others the shocks are required to be repeated daily on alternate days, or less frequently for several weeks. I generally introduce the electrode into the larynx three or four times at each sitting, keeping it in each time for a few seconds.

THE CONTAGION OF SMALL-POX.*

By W. S. BRITTON, F.R.C.S.

I AM desirous of communicating to the Association the result of my observations as to the relative contagiousness of the different forms of small-pox. I have long been of opinion that that form of small-pox known as the "modified", in which the pustules are conical, without any depression of the centre, is not of the same contagious character as the "true" form, with the depression.

During the recent epidemic of small-pox, I held the appointment of surgeon to a large district in Marylebone, and had numerous opportunities of testing the correctness of my opinion, with the following results.

1. Every case of true small-pox—viz., that characterised by depression of the pustules—was removed to hospital as soon as a correct diagnosis could be arrived at, generally on the second day of the eruption; and all the usual precautions against the propagation of the disease in the patient's house were taken—that is, by the free use of disinfectants, destruction of the bedding, baking the clothes, and so on. Yet, in spite of these precautions, I found that, at some period within three weeks of the attack, the disease appeared in forty per cent. of the cases either in some other member or members of the family who had been in frequent communication with the patient, or in some person living in the same house, and who, therefore, had presumably been exposed to that special source of contagion.

2. On the other hand, about fifty cases of modified small-pox—that characterised by conical pustules, without any depression—came under my notice. These patients were not removed from their homes, but were allowed to mix with other members of their family without any restrictions; but in no one instance did the disease appear in any person so exposed to the influence of the disease. I conclude, therefore, that modified small-pox is not communicable.

* Read before the Public Medicine Section at the Annual Meeting of the British Medical Association in Birmingham, August 1872.