

she had a very severe sore-throat, which had been lanced and burnt with caustic by Mr. Knowles, of Farnham, under whose care she remained for five months. In December 1862, being then extremely depressed and weak, and having scarcely recovered from her bad throat, she lost her voice; and since then she had never been able to speak a word out loud. Mr. Knowles recommended change of air, and so also did Dr. Cobb (formerly of the London Hospital). After a fortnight's residence in London, the patient applied at the Dispensary in the condition described.

On making a laryngoscopic examination, the approximate action of the vocal cords was seen to be very feeble; or otherwise, the larynx was perfectly healthy.

August 25th. I galvanised the vocal cords, and the voice immediately returned. It was weak at first, but soon became full and strong. I only repeated the galvanism once (on the 27th); but the voice was really restored by the first application.

CASE XIV. *Aphonia of Five Months standing cured by One Application of Galvanism to the Vocal Cords.* Miss Gertrude S., a pretty child, aged 10, suffering from loss of voice, but otherwise healthy, was brought to me, on August 27th, by Mr. Taylor of Guildford. Mr. Taylor gave the following account of the little patient's aphonia. He was called to see her in March, when he found her sitting up in bed, and breathing excessively quickly. The physical signs did not at all explain the rapid respiration; and he was struck with its remarkably nervous character. An attack of bronchitis, in which the nervous symptoms predominated, afterwards developed itself; and on recovery it was noticed that the child had lost her voice. Various tonics were tried in vain; and change of air to Brighton (where a laryngoscopic examination was made by Dr. Ormerod) failed to restore the voice.

Finding that the larynx was quite healthy, with the exception of a relaxed state of the vocal cords, in the presence of Mr. Taylor and the child's parents I applied galvanism to the vocal cords. The voice was then and there perfectly restored; and when the little girl left me, she was able to speak in her natural voice.

## Original Communications.

### THE LARYNGOSCOPE AND ITS CLINICAL APPLICATION.

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#### IV.—DIRECTIONS FOR USING THE LARYNGOSCOPE.

In order to render my description of the mode of applying the instruments for examination of the larynx and pharynx as practical as possible, I have thrown it into the form of short rules, which will, if followed precisely, at once enable the practitioner to obtain a view of the parts.

##### a. For Examination of the Larynx by Unconcentrated Sunlight.

1. Place your patient, seated quite upright, on a chair of convenient height, facing a window or door through which the sunlight enters.

2. On the window-sill, or on a table between the patient and the window, place a small looking-glass at such an angle, that it shall reflect the sun's rays on to the lower part of the patient's face.

3. Your patient still sitting upright with his head inclined a little backwards, you direct him to open his

mouth as widely as possible, and to put out his tongue; you will now perceive whether, from nervousness or from not understanding what is wanted, your patient keeps the tongue in contact with the roof of the mouth; if he should do so, direct him to draw a full breath through the mouth; and, if necessary, let him, while looking at his own throat in a looking-glass, study the proper mode of displaying his fauces.

4. Now alter the position of the looking-glass which reflects the light, until the sun's rays strike on to the soft palate, the shadow of the tongue just falling on the posterior border of the velum. As soon as the light is adjusted, your patient closes his mouth until you are ready to proceed with the examination.

5. Seat yourself opposite your patient and to his right hand, your eye about on a level with his mouth, and the light passing by your right shoulder.

6. Warm the laryngoscope in the flame of a spirit-lamp, or in warm water conveniently placed at your right hand, and test its temperature on the back of your own hand or on your cheek, so as to avoid burning your patient's mouth.

7. Your patient opening his mouth as widely as possible, and putting out his tongue, take hold of this, with a napkin or handkerchief to prevent it from slipping, between the thumb and forefinger of your left hand, and draw it downwards and forwards, being careful not to use so much force as to hurt the frænulum against the lower teeth, and avoiding, also, the placing your fingers or any part of the napkin in such a position as to throw a shadow on to the fauces.

8. Introduce the laryngoscope, held between the two first fingers and thumb of the right hand, quietly into the mouth, following the curve of the back of the tongue and the palate, and touching nothing until you reach the velum.

9. The hand being steadied by resting the ring and little finger against the cheek, press the back of the laryngoscope gently and steadily flat against the uvula and soft palate and raise this, the mirror being held just far enough back to avoid touching the posterior wall of the pharynx, and its face being directed, not to either side, but downwards and forwards.

10. Simultaneously with the introduction of the mirror, direct your patient to draw a deep breath, or to say *a* in a prolonged high tone; thus you give him something to occupy his attention, and also cause him to open up the fauces and the larynx as much as possible.

11. If the preceding rules have been strictly adhered to, in any ordinary case, the epiglottis will certainly now be seen. Should it appear quite at the lower edge of the image seen in the laryngoscope, the instrument is not introduced far enough into the pharynx, and its position must be shifted accordingly.

12. The patient is again directed to utter the vowel sound *a* or *ah* in a prolonged note and a high tone; and now the summit of the arytenoid cartilages with the cartilages of Santorini, constituting two rounded nodules, should be seen behind the epiglottis; and probably deeper down, between these and the epiglottis, the vocal cords will appear. If, however, the parts behind the epiglottis be not visible, and this portion of the image appear dark, the inclination of the mirror must be altered, so that the rays of light may be thrown into the larynx.

13. It may be that no part of the image in the mirror is obscure from want of light; but, the front and edge of the epiglottis occupying the most anterior part of the mirror, immediately behind it is seen the posterior surface of the pharynx. In this case, the inclination and elevation of the laryngoscope being altered, the deeper parts may be brought into view; but the main reason why the larynx is not seen, is that the epiglottis actually overshadows it; therefore, draw the tongue more forcibly forwards, and direct your patient to utter a falsetto

note, to force a laugh or cough, and thus endeavour to alter the position of the parts.

14. Whenever the introduction of the instrument causes retching, withdraw it, and let your patient compose himself before you re-introduce it. The operator will best insure the patient's tolerance of the examination, by dexterously avoiding the touching any part of the pharyngeal wall; by pressing firmly against the velum, not touching it lightly and tickling it; by occupying the patient's attention, and directing him to take a deep inspiration, to utter a vowel-sound, to cough or to laugh, as recommended in Rule 10, whenever any tendency to retch is observed. It will, however, very seldom be found, except in the case of young children, that intolerance of the instrument in the throat prevents our getting a satisfactory view of the larynx; the great difficulty usually is, that the epiglottis intercepts the view.

15. A view of the vocal cords, arytenoid cartilages, and epiglottis, having been obtained, incline the face of the mirror to one or other side, and thus bring into view the parts situated further from the middle line, and which have been described in Part III of these papers.

16. Be careful lest, in looking into the mirror, the head be placed between it and the source of light; the right eye can be brought close up to the mouth without placing the head in such a position as to cast its shadow on the mirror. Keep also the handle of the laryngoscope, and the hand which supports it, well towards the left side of the mouth; otherwise, they will interfere with the illumination of the mirror.

*b. For Examination of the Larynx by Direct Concentrated Artificial Light.*

1. In a darkened room, place your lamp on a table, a little way from the edge, and at such a height that the flame shall be near the level of your patient's mouth when he is seated on a chair. Immediately in front of the lamp, place your globular condenser.

2. Seat your patient upright in a chair, with his face directed towards and exactly opposite to the lamp and concentrator, and distant from the latter from eighteen to twenty four inches, the light being brightest within this range.

3. Your patient's head being placed in position as directed in Rule 3 of Section A, adjust, by means of the screw, the level of the concentrator, until the light falls on to the soft palate.

The remaining rules, as to the position of the operator, the introduction of the mirror, and so on, are the same, whether we employ the sunlight or concentrated artificial light.

*c. For Examination by Artificial Light Concentrated by Reflection.*

1. Place your patient with his back towards a table, near the edge of which you place the lamp or other source of light, in such a position that the light shines over his left shoulder; or, where a lamp is not procurable, the patient being seated in a chair, you may get an assistant to hold a candle just over his left shoulder.

2. Now seat yourself opposite your patient, attach the frame supporting the reflector to your head, and adjust it so that the light is thrown on to the patient's face.

3. Having made the patient open his mouth and expose the fauces, as previously directed, move your own head nearer or further from him, until you ascertain that the back of the pharynx is in the focus of the concave reflecting mirror.

The remaining steps of the examination are precisely the same as in the examination by direct light, which method is, wherever practicable, to be preferred to that of examining by the light concentrated by the reflector; in the latter case, it must be borne in mind that the operator has, as I have already pointed out, to contend with the following disadvantages. 1. The light

obtained is actually not so bright as that obtained by the globular concentrator. 2. The operator cannot move his head to either side without removing the light from the fauces and laryngoscope; nor nearer to or further from the object he is looking at without diminishing the intensity of the illumination. 3. The operator's eye is necessarily at a greater distance from the laryngoscope, than is suited for distinct vision; and instead of having it uncovered, except by such spectacles as may be necessary to assist any defect in his own sight, the operator is compelled to look through a small orifice covered by glass.\* In fact, complications are added in this mode of illuminating the fauces, which render the successful examination of the larynx comparatively difficult.

*d. For Examination of the Posterior Nares, Eustachian Tubes, and Upper Part of the Pharynx.*

Either of the modes of illumination described above may be adopted; and the first rules as to the position of the patient will vary accordingly. The light being so arranged as to fall on the mouth of your patient, proceed as follows.

1. His head being inclined back somewhat, let your patient, without protruding his tongue, open his mouth as widely as possible; if he be able to keep the tongue lying quietly at the bottom of his mouth, so that the fauces are freely exposed, the depressor is not required; but when the back of the tongue fills up the mouth too much, let the patient hold an ordinary tongue-depressor so as forcibly to depress the unruly member.

2. Now adjust the light so that it falls well on to the fauces, the shadow of the lower teeth falling lower than that of the tongue when this is drawn forward in examining the larynx.

3. Direct your patient to let all the muscles of the throat rest in an absolutely passive state. Any attempt on his part to open up the fauces will cause the elevation of the soft palate against the posterior wall of the pharynx, and will effectually prevent your seeing the parts situated in the upper part of the pharynx. The uvula and soft palate must hang passively forward; and if there is any tendency on the part of a patient to hold them otherwise, it is absolutely essential for the success of the examination that this tendency should be corrected. Make your patient, therefore, clearly understand what you wish him to avoid doing; and let him, watching the movements of his throat in a looking-glass, persevere until he has learned to control them.

4. Now, with the left hand, introduce the palate-spatula, previously warmed in a spirit lamp, and its temperature tested on your own skin; and with the broad blade gently and steadily raise the uvula and velum, at the same time drawing them forward, and keeping them steadily in their altered position by resting the little and ring fingers of the hand holding the spatula against the patient's cheek. The contact of the spatula with the posterior border and upper surface of the soft palate always produces a disagreeable sensation, and may cause the involuntary raising of the velum against the posterior wall of the pharynx; if so, the patient must be allowed to observe in a looking-glass the introduction of the instrument, and must endeavour to bring this reflex action under control.

5. The soft palate and uvula being raised and drawn forward, and the tongue either lying passive at the bottom of the mouth, or being held there with a tongue-depressor by the patient, introduce the small laryngoscope (the mirror should be bent, so as to be nearer a right angle with the stalk than it is when used for the examination of the larynx), previously warmed, into the

\* Dr. G. Johnson has adopted the plan of placing the concave reflector on the forehead instead of in front of the eye of the operator, which is thus left uncovered. Dr. Johnson's reflector, though greatly inferior to the globular concentrator, is, I think, to be recommended before Semelweis's, or any other reflecting apparatus.

pharynx, with its reflecting surface turned upward; hold it immediately below the level of the soft palate, close upon, but not in actual contact with the back of the pharynx, and depress the handle until the plane of the mirror is much nearer the vertical than the horizontal position.

6. Some part of the posterior nares—probably the superior portion of the vomer and the middle spongy bones—should now be seen; if the upper part of the pharynx appear dark, the inclination of the speculum must be altered until it throws the light upon the nares; if we cannot see the cavity of the upper part of the pharynx at all, the view is probably obstructed by the velum being in contact with the posterior wall of the pharynx, and thus shutting off the whole of its upper part in the manner to which I have already alluded: even should the soft palate, in the first instance, be drawn well forward by the spatula, it is apt to be involuntarily raised by the patient while the attention of the operator is directed to the introduction of the speculum; and this involuntary occlusion of the upper part of the pharynx will frequently prove an obstacle to successful rhinoscopy altogether insurmountable.

7. The vomer and middle turbinated processes being brought into view, alter the inclination of the mirror, and direct its face to either side, so as to bring the orifices of the Eustachian tubes, the lower spongy bone, and other parts, into view.

As no rhinoscope—that is, an instrument combining the palate-spatula and the mirror in such a way that they may be managed with one hand—has at present been constructed of a sufficiently perfect form to be practically useful, I give no directions as to the mode of using this instrument; but it is evident that, both hands being occupied in the management of the mirror and the spatula, in the usual mode of examining the posterior nares, we cannot, while the parts are in view in the mirror, apply caustic, or adopt any other measure towards the treatment of the malady we are observing. This does not, however, render the use of the palate-spatula and speculum as above directed of no practical value; for the information gained by an ocular examination of this region may guide our general treatment, and also enable us to apply local means with more certainty than where we have never seen the part.

Although an expert in the use of the laryngoscope will rarely fail, if he follow the rules I have given, to gain satisfactory information as to the state of the larynx; a novice, having no experience of the small difficulties which may prevent a successful examination, will probably require to make several attempts before he acquires the dexterity in the manipulation of the instrument and the management of the patient, which he must possess in order to obtain such a clear and satisfactory view of the parts as will enable him to recognise them distinctly, and to determine their healthy or morbid condition. It is but fair to his patients that a practitioner should acquire this experience upon his own person and not upon theirs; and this he may readily do, either with or without the use of a special apparatus for self-observation. Of these special instruments, I have already alluded to the autolaryngoscope of Czermak and the pharyngoscope of Moura-Bourouillou.

In using the former, the apparatus is placed upon a table, opposite to which the practitioner is seated, with the small plane mirror fixed at a convenient distance from the face, at such an inclination that when his head is in position the observer can readily see the soft palate. The concave reflector should be about eighteen inches from the face, and placed at a lower level than the plane mirror, so that the reflected and concentrated light may pass unobstructed below this to the pharynx. The lamp is placed on one or other side, between the observer and the reflector, with one side of the chimney darkened or shaded by a screen, so that the direct light may be shut

off from the face and eyes of the person placing himself under examination. The illuminating apparatus being thus arranged, the practitioner will proceed with the examination of his own larynx, according to the rules given under the heading A, for examination of the larynx of another by unconcentrated sunlight.

It is, however, quite possible to make observations on one's own larynx without any additional apparatus to that required for the examination of others, beyond a small plane mirror two or three inches square, which is held in the left hand in such a position that, while it does not obscure the free access of light to the fauces, the operator can see in it the face of the laryngoscope introduced into the mouth by his right hand. For self-examination in this method, we may use either the light of the sun, which was the source of illumination employed by Garcia, in the series of observations, the publication of which gave the first impulse to the study of laryngoscopy; or artificial light concentrated by the globe condenser; or even unconcentrated artificial light. The latter will, however, be found very inconvenient.

*For Self-Examination by the Sunlight.* I should give the following rule. Place yourself and your reflecting mirror, or let an assistant place you, in the relative positions recommended for your patient and the mirror in the rules given under Section A; then, having your left elbow supported on a book or other convenient prop, placed on a table immediately in front of you, hold in the left hand a small plane mirror at such a height that the light passes beneath it to your fauces, and at such an angle that you have a good view of the face of the laryngoscope when placed in your throat. In the introduction of the laryngoscope, you follow the same rules as those given for its use on others; although, of course, the instrument must be held differently, and the fingers of the right hand cannot be steadied against the cheek.

*For Self-Examination by Artificial Light and the Globe Condenser.* Place yourself opposite the lamp in the position recommended for your patient under Section B, and let an assistant adjust the light until the fauces are brightly illuminated, the left elbow resting upon the table; in your left hand, hold the small mirror over the lower part of the globe, so that the light passes to the throat above it, and incline it, with its face directed a little upwards, so that by turning the eyes down you may see the fauces and the laryngoscope. This will be found the most convenient method of observing one's own larynx and demonstrating it to others when we do not possess the apparatus of Czermak or Moura-Bourouillou; of the latter I can say nothing from personal experience, and I, therefore, add nothing to what I said of its use, when describing it in Part III of these papers.

All the above rules I have myself constantly tested by practically applying them, and I have demonstrated their efficiency to others on more than one occasion. In order to carry out with success the directions given, a certain amount of tact and neatness of hand is requisite, but not more than every well qualified practitioner should possess; certainly not more than he will acquire by a little perseverance in the use of the instrument, and by careful attention to the minute practical points which I have endeavoured to embody in my rules.

† I do not hesitate to recommend the methods of examination which I have placed first in order, in preference to that by artificial light concentrated by reflection, which I have placed third; but I have given rules for examination by the reflector equally distinct with those for illumination by direct light, as I would recommend any one of my readers who expects to have to use the laryngoscope constantly, and does not mind the additional expense of another instrument, to obtain Dr. Johnson's reflecting concentrator, and to accustom himself to examining the larynx, etc., by each of the three methods of illumination.