The cells composing one structure, then, take up and are acted on by some drugs, and not at all by others; while other structures are much affected by the very substances which had so little action on the first.

[To be continued.]

CLINICAL LECTURE

ON

THE USE OF THE LARYNGOSCOPE.

Delivered at the Manchester Royal Infirmary.

By HENRY SIMPSON, M.D.,

Physician to the Infirmary; Lecturer on Pathology at the Manchester Royal School of Medicine; etc.

GENTLEMEN,—Many of you have witnessed the use of the laryngoscope in my out-patients' room, and in the wards of this hospital. But as its use requires a certain amount of skill in manipulation, not all at once acquired, I think it is desirable to give you some general directions, which may clear up a few difficulties, and shorten the period required to render you its masters. It is scarcely necessary to say anything in the way of apology for so doing. The aid given by the laryngoscope in the diagnosis and treatment of disease is now acknowledged by all who know anything of the matter. No doubt there are practitioners still living who decry its merits, just as all means of physical diagnosis have in their turn been decried. Auscultation and percussion have almost, but even now not quite, emerged from this condition. The thermometer is not so generally used as it will be; and I have heard of an ophthalmic surgeon still living, who "does not believe in the ophthalmoscope." But if you meet with a case of hoarseness with partial loss of voice, as I have done, which has been treated for nineteen years in London and the provinces with internal medicines and external blisters, etc., and find, on looking into the larynx, that the supposed chronic laryngitis is due to a tumour attached to one of the vocal cords, you will learn to appreciate the value of the laryngoscope. Although its employment is at first a little difficult, and although some never acquire the dexterity of others, there is no reason whatever why it should remain in the hands of the few, or why it should not become the familiar companion of the many. And though there are valuable monographs and papers in our own language, such as Czermak's, translated for the New Sydenham Society, Dr. Morell Mackenzie's, Sir Duncan Gibb's, etc., besides numerous others in French and German, I am induced to give you, as students, some familiar and practical remarks on the mode and manner of its successful employment. And this for two reasons; one is that, while students, you will perhaps scarcely find time for the study of monographs on what some of you may consider a by-subject; and the other, that they are rather intended for the practitioner than for the student.

The history of the laryngoscope need not detain us. Like most other discoveries, it has had foreshadowings, some more distinct than others; but the claim of Dr. Babington, as being the first who used a laryngeal mirror at all resembling those now employed, is very strong. This was in 1829. Dr. Czermak, of Pesth, however, has done more than any one else to bring the instrument into general use. Without dwelling further on its history, which you will find in the monographs referred to, I will proceed to the more practical question as to the best mode of using the laryngoscope.

First of all, you require a lamp, for ordinary daylight is not sufficiently intense, sunlight is too rarely available, and moonlight—which Sir Duncan Gibb states that he has experimentally ascertained to be more suitable than daylight—is still less to be commanded. In towns and, indeed, in most villages, you have gas, which is the most convenient light you can obtain. An Argand burner is the best for our purpose. In the out-patients' room, we use an arrangement devised by Dr. Morell Mackenzie, consisting of a double arm, carrying an Argand burner, which can be raised and lowered by means of a rack, and also moved horizontally. The burner is provided with a metal chimney, which shuts in the light on all sides but one, where a plano-convex lens is placed to act as a concentrator of the light. In the wards, we use a German reading lamp with an Argand burner and Tobold's condenser. In my consulting room, I am in the habit of using a similar lamp with Dr. Mackenzie's portable light-concentrator, which you see here. There are various other concentrators in use, but you will find Mackenzie's or Tobold's sufficient for all your requirements. Mackenzie's

is portable, and by means of the side clips can be adapted to any lamp with a chimney of ordinary size, or even to a candlestick. It gives moreover a good light. Tobold's gives a somewhat whiter light, but is more bulky, and not so easily adapted to any but the reading lamp with upright stem. It could not be used, for example, with a moderator lamp, which answers extremely well for the laryngoscope, and to which Mackenzie's is perfectly suited. One great advantage of the reading-lamp is, that the upright stem allows of the light being raised and lowered. It is, moreover, always ready for its ordinary purpose when not required for special use. I saw a case in consultation the other day, where the gentleman in attendance on the patient brought a Bockett's lamp for the microscope, which answered sufficiently well for the laryngoscope.

You need, moreover, a reflector and a set of laryngeal mirrors, with one or two for examining the posterior nares. The reflector is a slightly concave circular mirror, about three inches and a half in diameter, sometimes perforated near the centre with an oval opening about half an inch long in the horizontal direction, and a quarter of an inch wide, and sometimes without perforation. This difference depends on whether you wear the mirror on the forehead or in front of the eye. If worn on the forehead, of course no aperture is required. There are various modes of fixing it, as by the forehead-band, the mouth-piece which Czermak at first used, and the strong spectacle-frame of Semeleder, which Dr. Morell Mackenzie and others use. Of these, the last is in my opinion the best. It is easier with this to fix the reflector quickly in the proper position, than with the forehead-band. The latter is elastic and very comfortable in use, but this elasticity itself renders the adjustment of the mirror a little troublesome. You place it as you think correctly, with a good light thrown in the right direction, but find that, on removing the hand, the mirror starts aside and requires a further adjustment.

Many skilled laryngoscopists, as Dr. G. Johnson, use the reflector on the forehead; but there are disadvantages in this position which do not obtain when it is worn in front of the eye. A very palpable one is that both eyes are exposed to the full glare of the concentrated light from the lamp. This is disagreeable and almost painful, and interferes much with our comfort in examining the larynx. To avoid this, some wear a shade, but this tends to complicate a simple matter, and make it look formidable, or at any rate fussy. There is, moreover, a theoretical objection to the position on the forehead, from the eye not being in the axis of the rays reflected into the throat. Without laying too much stress on this, I have myself a strong preference for the other position as a matter of comfort and convenience. Here, moreover, the line of vision and the rays from the reflector coincide. But a great practical advantage is, that both eyes are shaded from the glare of the lamp. If it be placed to the left of the patient, and the reflector before the observer's right eye, this is protected in consequence of the angle at which the rays from the lamp fall, and the reflector will be found, also, an efficient shade for the left eye likewise. The French are much in the habit of using direct illumination of the throat, and so of doing away with the reflector. But this apparent simplicity is really complex and troublesome. The lamp, provided with a lens, and having the side next the observer shaded, is placed on a small table between the observer and the patient. A good light is thrown into the throat, but the position of the physician is somewhat cramped by having an arm on each side of the lamp, and his face very near it. It is possible, indeed, to see the larynx with direct light not sufficiently powerful to be used with a reflector, but generally speaking the latter is preferable.

There is one mode of using it which has greater illuminating power than any other, and is admirably adapted for demonstrating the larynx. I refer to the oxy-hydrogen light, the use of which, by the courtesy of Dr. Mackenzie, I have had opportunities of seeing at the Hospital for Diseases of the Throat. As this, however, is only suited for special institutions, and not for private practice, we may pass on.

Assuming that you use the reflector, place the patient in a chair in front of you. The lamp must be on a table on one side. I prefer it on the left and near the patient's elbow, and I place the reflector in front of the right eye. The flame should be about the level of your eye, and the patient's head at the same height as your own. Now direct him to open his mouth, and so arrange the reflector as to throw a broad disk of light on the back of the fauces. You may find in your early trials that this brilliant light is a sort of will-o'-the-wisp, or *ignis fatuus*, and most apt to elude you when it seems securely fixed. The control of the light, indeed, is one of the most difficult of the preliminary acquirements necessary. A little practice, however, will enable you so to accommodate yourself to the slight movements of the patient, that you will soon be able to keep the light exactly where you wish. Now ask the patient to put out the tongue freely, but not uncomfortably, keeping the mouth well open. Then with the left hand,

guarded by a soft cloth, take good but gentle hold of a sufficient portion of the tip to have a firm grasp, and keep it steady in the protruded position. And here let me caution you as to a very obvious mode—but one at first apt to be forgotten—in which you may give pain to the patient and acquire a reputation for clumsiness. The attention being directed altogether to the obtaining a view of the larynx, you may not recollect the very sensitive member you are holding, and may pull it forward too forcibly, or press it down on the lower incisors. To avoid this, it is a safe habit to hold it between the first finger and thumb, using, of course, a small cloth, not only for the sake of delicacy, but because you would otherwise fail in securing it, and resting the back of the fingers against the chin. You can in this way not only avoid giving pain to the patient, but you have considerable control over the movements of the head.

You now come to the next step—the introduction of the laryngeal mirror. These mirrors are now generally circular, which is the most convenient form. Czermak used them square or lozenge-shaped, with rounded corners, at one of which the handle was fixed. They are of silvered glass, with the back and handles of German silver. The wire of which the latter consists should be strong enough to resist bending or pretty firm pressure. Wooden handles are provided into which the wire stem passes, and it can be fixed at various depths by means of a screw. The mirrors vary in size from a quarter of an inch to an inch and a quarter, but the most generally useful is one seven-eighths of an inch in diameter. The cases to which the various sizes are best adapted will readily suggest themselves. Large tonsils will, of course, prevent the use of a large mirror, and, as Dr. Mackenzie suggests, an oval one is most convenient. For purposes of demonstration, a large size is best suited, and, as you know, I frequently use in the hospital a handle which I have had made so curved as to prevent the hand from at all interfering with the view of those looking into the larynx from behind the observer.

The mirror of course needs warming, either with hot water or over the chimney of the lamp, in order that it may not be dimmed by the breath. It is, too, much more agreeable to have a warm than a cold mirror applied to the back of the throat. But you must never fail to test its warmth by applying it to the back of the hand or the cheek; for too hot a mirror is much more objectionable to the patient than one too cool.

Having, then, the mirror properly warmed, the lamp and reflector adjusted, the patient's mouth opened, and the tongue carefully held, pass the mirror to the back of the mouth. Now, much of your success will depend on the dexterity or clumsiness with which you perform this little manœuvre. Take the handle as you would a pen, and pass it between the tongue and palate, with the reflecting surface to the former, so as to avoid touching either. On arriving at the soft palate, let the back of the mirror slide down till it covers the uvula, and gently press the soft palate and uvula upwards and backwards. This movement must not be made hurriedly, but so gently that you can at once stop when the larynx comes into view. It will at first, perhaps, be a little difficult to get the mirror at the proper angle for showing the larynx; but practice will soon enable you to accomplish this almost instinctively. As I said before, this proceeding must be managed without haste, but quietly and steadily, as if it were a matter of course. If so done, it will be quickly done. Nothing is so likely to disturb a nervous patient, and to render the examination difficult, as slowness and bungling on your part. There are all degrees of excellence, or the reverse, in the way in which a laryngoscopic examination is borne. You will not unfrequently find that the approach of the mirror to the mouth is a signal for the violent withdrawal of the tongue; or that, when you have succeeded in placing it at the back of the mouth, the patient seems determined to swallow it. Very often the fault will be in some hasty incautious movement of your own, by which the back of the pharynx is touched. Sometimes, however, it arises from the timidity of the patient. In this case, a word or two of encouragement, or a simple explanation of what you are going to do, will remove the difficulty; but now and then a firm direction to keep the tongue out will answer better. A little tact will soon enable you to distinguish the various temperaments with which you have to deal; and you will almost intuitively vary your proceedings accordingly.

The point incidentally mentioned—not to press the mirror against the back of the pharynx, either directly or with the uvula intervening—is important. If you do, spasm is almost sure to be excited, which not only renders your chance of seeing the larynx at that sitting more remote, but produces congestion of its lining membrane, and so a departure from its true condition at the time. In some patients, the throat is much more irritable than in others; and various plans have been tried for the purpose of lessening this irritability. Sir D. Gibb gives large doses of bromide of ammonium to lessen the spasmodic

condition of the muscles, and speaks well also of a gargle containing it as producing moderate anæsthesia. Dr. Mackenzie, speaking of the bromides of potassium and ammonium, says that his "experience has proved the total inutility of their employment". He recommends the sucking of ice for ten minutes before the mirror is to be introduced. Generally, however, care and patience will enable you to do without either of these aids. Do not keep the mirror too long in the mouth. Carry out all the necessary movements quietly and gently, but without hesitation; and do everything with a "light hand". Generally, you will have no difficulty in seeing the larynx at the first attempt; but, if the patient be nervous, pass the mirror to the back of the mouth for a moment, and withdraw it again, asking if you gave any pain. Although you may previously tell them that the proceeding is painless, patients will not always give you credence; but, if their fears are allayed, the difficulties of the examination are much lessened. In nervous persons, or where the throat is at all irritable, be sure to keep the mirror in the mouth as short a time as possible. Always withdraw it at once, if signs of approaching spasm show themselves. Some patients contract the fauces so much that it is almost impossible to see anything; perhaps the tip of the epiglottis may be visible. In this case, get them to breathe entirely through the mouth, and to take the breath in, so to speak, as far back as possible, so as to open the upper part of the pharynx.

Now and then you will be perplexed by a long uvula projecting forwards under the lower edge of the mirror, and showing its reflection there; but a larger mirror will often enable you to avoid this annoyance. A pendulous epiglottis is one of the most serious difficulties you will meet with, and it sometimes renders it impossible to get a satisfactory view of the larynx. You may try to put the mirror lower in the throat, but perhaps will only just see the arytenoid cartilages. Sir D. Gibb estimates that it occurs in 11 per cent. of people in health. Various attempts have been made to raise the epiglottis by forceps, etc.; but they are not of much practical utility. The most readily available plan, and one that succeeds sometimes fairly, is to take advantage of the physiological action which occurs in the production of the highest notes of the voice. In his able and interesting inaugural thesis on the Physiology of the Larynx, Dr. Wyllie describes what occurs as follows. "In the highest notes of the voice, the larynx is raised as in deglutition; but . . . the os hyoides is pulled further forwards by the genio-hyoid muscles, so that the point of the pomum Adami engages itself behind the hyoid bone, instead of merely impinging upon it. The hyo-epiglottic ligament is thus put upon the stretch. In like manner the glosso-epiglottic is pulled upon by the muscles of the tongue. . . . The epiglottis is drawn forwards upon the base of the tongue." Of course this description refers to the normal erect or nearly erect position of the epiglottis; and, when abnormally pendulous, it will not be drawn forwards so completely, but still in these cases it will often help you very considerably to get the patient to produce as high a note as he is capable of doing.

Supposing, however, that you have introduced the mirror, and succeeded in throwing the light into the mouth, you will at first perhaps see little but the back of the tongue; but, by slightly altering the angle of the mirror, the epiglottis will come into view. In favourable cases, you will see its laryngeal surface with a cushiony prominence at its base. At the opposite side of the picture, as it were, you will see the arytenoid cartilages, with the vocal cords passing forwards or apparently backwards; for, of course, in the mirror the position of the various parts is transposed antero-posteriorly. They are pale or pearly white in colour, with a glistening surface, vary slightly in width in different individuals and in different states of the larynx, and look like two whitish ribands limiting the glottis on either side. Their position varies according to the action going on in the larynx at the time. In quiet inspiration, the glottis is seen as a triangular opening, the anterior ends of the cords being approximated at their origin in the depression of the thyroid cartilage, and their posterior attachment to the processes at the base of the arytenoids being widely separated. During vocalisation, they approach each other very closely, and so become nearly parallel along the greater part of their length. But you will often see the glottis assuming an oval or lozenge shape, and varying rapidly in form during the examination.

The arytenoid cartilages are somewhat variable in size and distinctness, but are easily recognised. In the fold of mucous membrane passing from them to the epiglottis, the ary-epiglottidean folds, as Dr. Mackenzie abbreviates the term, and near the cartilages, you may sometimes see the small round cartilages of Wrisberg; but frequently they are not visible. Sir D. Gibb says that they are much more prominent in the negro than in the white. The sloping surface extending from the edges of these folds to the vocal cords forms the roof of the ventricle of the larynx; and the portion immediately above the slit-

like opening of the ventricle is called the false cord or ventricular band by Dr. Mackenzie, and the regulator of the glottis by Sir D. Gibb.

You should make yourselves familiar with the appearances of the healthy larynx, with its form and the movements of its various parts, and with the colour of its healthy mucous membrane. We will not to-day enter on the appearances produced by disease; but they consist of the changes of colour and form produced by congestion and inflammatory action and its results, and other causes; of loss of substance; of new growths; and of interference with the normal movements.

And rest assured, gentlemen, that you will not regret some time and attention devoted to the subject of laryngeal disease. It is too apt to be considered a specialism; but you will find abundant opportunities of proving it eminently useful in your daily practice.

TRUE AND FALSE ANEURISM OF THE ABDOMINAL AORTA; RUPTURE OF THE FALSE ANEURISM AND EFFUSION INTO THE SUBPERITONEAL SPACE; DEATH ON THE TWELFTH DAY.

By JAMES NEAL, M.D.,

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J. G., aged 36, married, an electro-plater, came under my care Oct. 15, 1869. He had been ailing three or four years with severe pains in the back and left hip, and was treated for sciatica. When I saw him, he was much reduced and suffering from violent paroxysmal pains in the left hip, just above the sciatic notch, and affecting branches of the anterior crural nerve. There was also (at times) partial numbness of the left thigh. The attacks were worse about 8 P.M. and 4 A.M. He had a good deal of lumbar pain, and thought that his kidneys were affected. He had also internal pains of a cramping or spasmodic character, was anæmic and dyspeptic, and suffered much from palpitation. His urine was scanty and high coloured, and voided with difficulty. His bowels were costive, and great pain and prostration had lately followed defæcation; pulse 120, feeble. A careful examination detected no disease of the chest. I treated him for neuralgia, but without success. On Sunday, October 24th, I was hurriedly summoned to him at noon. He was said to be much worse. He had had an unusually severe attack the evening before, but had afterwards taken a morphia draught and slept well for three or four hours. About 4 A.M. another very severe attack came on, which he described as beginning at the heart with palpitation, and extending all down the left side; he spoke of it as a "tearing" or "burning" pain. It was followed by great faintness and prostration. When I saw him he was pale and anxious in appearance, and was just recovering from the attack. The pulse was 140, weak and fluttering. On examining his abdomen, I found that it was swollen and tense, with a distinct projection across the epigastric and hypochondriac regions. This swelling was dull on percussion, and pulsated vigorously—a violent heaving impulse—which spread all over the abdomen. All down the left side the abdomen was dull, both front and back, and tender to the touch; the tenderness being most marked just above the crest of the ilium. The dullness terminated by a distinct border in front, perceptible to the touch. Pulsation could be felt behind as well as in front. The front and right side of the abdomen below the liver were resonant on percussion. There was no bruit or *frémissement*; no sickness. I diagnosed an aneurism which had suddenly burst, so that a large quantity of blood was effused into or behind the peritoneal cavity. Dr. Russell saw him with me in about half-an-hour, and confirmed the diagnosis. He thought that the prominence across the epigastrium was the liver thrust forwards by an accumulation of blood behind it—in the subperitoneal space. The treatment was as follows. Perfect rest and quietude were enjoined; bladders filled with ice were ordered to be constantly applied; and a mixture of dilute sulphuric acid and tincture of opium in acid infusion of roses was prescribed.

On being questioned next day, the patient stated that he remembered straining his back badly about two years and a half previously, in lifting a heavy weight, since which time he had suffered a good deal in his back. Up till quite recently he had been in the habit of lifting heavy packages of goods, but a good deal of prostration always followed such exertions.

For the first two or three days there was great prostration, with tympanitis, local tenderness, and numbness of the left leg. He was kept well under the influence of opium, and, in the course of a few days, these symptoms subsided, and he appeared much better.

At 2 A.M., Nov. 4th, my partner, Mr. Garner, was hurriedly fetched

to him. He found him in a state of great prostration, with feeble fluttering pulse, and evidently sinking beyond hope of recovery. He had had an attack of severe pain the evening before similar to the one before Sunday the 24th of October. Stimulants were administered, but he gradually became weaker, and died at 11 o'clock the same morning, the twelfth day after the rupture of the aneurism.

Post-mortem examination.—On opening the abdomen, recent coagula were found loose in its cavity, to the amount of eight ounces. A large fibrinous clot formed a prominent tumour occupying the epigastric and left hypochondriac regions, and extending down the left side of the abdomen as far as the iliac fossa, where it seemed to terminate in a rounded border. It was entirely behind the peritoneum. It measured from above downwards eleven inches, its breadth at its upper and wider part was over seven inches; it had thrust up the liver to the right, folding up its left lobe. The stomach lay in front. The convex surface of the liver was pushed up to a level with the upper border of the fourth rib on the right, and the spleen to a level with the fifth rib on the left side. The pancreas crossed the tumour obliquely at its upper and anterior part, and the descending colon coursed along its surface, being flattened by it against the front wall of the abdomen. A coil of small intestine (probably the duodenum, where it merges into the jejunum) seemed to run into the centre of the clot. Where the tumour was rounded off at the iliac fossa, an appendage was found to extend beneath the iliac fascia, and was probably arrested only by the anatomical attachments of that fascia. The coagulum was firm, and of the consistence and aspect of the spleen, and so closely attached posteriorly, that it was difficult to remove it. The thorax having been opened, the aorta was dissected from the spine from above downwards, and thus the tumour was removed *en masse*. The attachments became very firm opposite the sixth dorsal vertebra, and here an opening was discovered leading into a large aneurismal sac. After removing the sac and clot together, the bodies of the last four dorsal and first lumbar vertebræ were found to be much eroded, especially the tenth and eleventh dorsal vertebræ—the bodies having suffered more than the intervertebral cartilages. Only a thin layer of bone intervened between the tumour and the spinal canal. The mass when separated weighed 8½ lbs. On laying open the aorta there was found (near the origin of the cœliac axis) a smooth and rounded aperture on its right side, three inches in diameter when closed, but which readily admitted four fingers. This aperture led to a large sac of a *true* aneurism, of capacity to admit a man's fist, with smooth walls, and quite empty. On the left side of the aorta, by the opening discovered on dissecting it from the spine, the hand was readily admitted into the sac of a large *false* aneurism of the size of a foetal head. It contained a loose dry mass of fibrine. It was formed in front by the surrounding tissues, behind by the eroded bodies of the vertebræ, and was evidently the source of the extravasated blood. The transverse diameter of these two aneurisms was seven inches; the vertical, four inches and a half. There was no degeneration of the arterial coats in the neighbourhood of the sacs. All the organs of the body were healthy, except the heart, which showed well marked concentric hypertrophy of the left ventricle, which was contracted and empty.

On dissection of the mass, the left kidney, surrounded by its serous envelope, was found embedded in the lower part of the clot, near the front. It was surrounded by a layer of coagulum an inch or more in thickness. The appearance of small intestine running into the centre of the tumour proved to be fallacious; it was bent upon itself, and coursed backwards and upwards on the surface of the tumour, and closely adherent to it, to join the pylorus. It was with difficulty dissected off, and was nearly or quite empty. The pancreas was firmly adherent to the mass. The bulk of the mass consisted of the walls of the aneurismal sacs. Those of the false aneurism were several inches thick, and composed of concentric layers of fibrine, and covered in front with peritoneum. The extravasation had evidently taken place by a ragged opening directly in front. The structure of the upper part of the sac was much firmer than where it had given way.

REMARKS.—The case is interesting as a well marked instance of true and false aneurism of the abdominal aorta in the same subject. I have Dr. Stokes's authority for the statement that "true aneurism of the abdominal aorta is of rare occurrence". When fresh, the specimen was much more illustrative.* The length of time the patient survived the rupture (twelve days) is worthy of note. Of fourteen cases mentioned by Dr. Stokes, only one exceeded this time. The history of this case (No. 78 of the series) presents many points of similarity with the one I have recorded. The first effusion appears to have occurred more gradually, and the patient died on the twentieth day after admis-

* The case was brought before the members of the Pathological Section of the Birmingham Branch of the Association, at the meeting held Nov. 26th, 1869.