abundant upon a portion of the *right* ventricle and at the base. On carefully scraping away this lymph, small irregular white patches appeared on different parts of the surface of the *left* ventricle, some raised like beads, others not projecting above the surface; two or three lay over the course of the coronary vessels, but the large majority had no relation to any vessel. These patches corresponded, each one to a small irregular cavity. The largest cavities were capable of containing a small pea, if reduced to a regular shape; some of these cavities were filled with a white puslike fluid, others with a pink pultaceous matter; their sides were very soft, and passed into the normal tissue by insensible gradations. I counted twelve of these cavities, and besides them there were also a few irregular dark livid patches, as if produced by ecchymosis. Most, but not all, were at the surface of the heart. None of them had undergone rupture; of this there could be no doubt. The coronary vessels were healthy, with the exception of one small branch, which was engaged in a cavity, and contained a puslike fluid.

One small ecchymosis was discovered in the tissue of the septum; with this exception the appearances now described were absolutely confined to the left ventricle. The pultaceous matter contained in the cavities, consisted of fine granular matter, and of irregular globules about 1-2500th of an inch in diameter; with these were intermixed *débris* of muscular fascicles, opaque, and without any appearance of striæ. In proportion as the patches were less softened, the remains of fascicles were more numerous, and in the ecchymosed patches the fascicles were distinct, and more or less deeply stained with blood. Around the cavities the muscular tissue presented its normal character.

Masses having all the appearance of pulmonary apoplexy were thickly scattered through both lungs, chiefly in the upper lobes; most were at or near the surface; their tissue was soft, but there was no appearance of suppuration. The other solid organs were perfectly healthy.

The joints of the left arm, the seat of the pain, were quite healthy, but considerable serous effusion had taken place into the cellular tissue around the elbow.

No disease could be discovered in any of the vessels; nor could any relation be ascertained between the morbid changes in the heart or lungs, and the branch of any vessel.

THE RELATIONS OF HEIGHT AND WEIGHT IN THE HUMAN BODY. In the *Statistical Society's Journal*, of March last, a very interesting table is given, showing the growth of the human body from eighteen up to thirty years of age, indicated by weight and height. The averages were taken from upwards of 4,800 observations at all ages. Thus, a lad of eighteen, if he be 5 feet 4 inches in height, speaking in round numbers, ought also to weigh somewhere about 8 stone 10 lbs. Given the age of twenty-one, and the height 5 feet 5 inches, he should weigh 9 stone 5 lbs. Ascending still further, and assuming the age to be twenty-five, and the height five feet 6 inches, the weight would be 10 stone 5 lbs.; and at thirty years of age, with a height of 5 feet 6 inches, we ought to have the result 10 stone 1 lb. In fact, so clear and demonstrable is this "law of increase in the growth of man," as determined by very extensive measurements taken at different times by scientific gentlemen, that we can almost work, as it were, in a rule of three sum any one condition we like. Taking the converse of what we have already exhibited, we may say that if a lad of nineteen weighs 9 stone 4 lbs., he ought to measure in height 5 feet 4 inches, and a little more; if at twenty-two, 9 stone 12 lbs., he should be 5 feet 6 inches in height, and so on. (*St. James's Magazine.*)

Original Communications.

THE LARYNGOSCOPE AND ITS CLINICAL APPLICATION.

By THOMAS JAMES WALKER, M.D.(Lond.), etc., Surgeon to the Peterborough Infirmary and Dispensary.

IT was the late Mr. Liston, one of the most eminent of our British surgeons, who, more than twenty years ago, first suggested the use, in diseases of the larynx, of the instrument to which I wish to direct the attention of our associates; and the researches as to the physiological and pathological importance of the laryngoscope, pursued of late years with such good results in Germany and France, received their impetus from a memoir read before the Royal Society, published in 1855 in the *Philosophical Magazine and Journal of Science*, by M. Garcia, Esq., a resident in England.*

Notwithstanding these facts, it cannot be denied that the great majority of medical practitioners in this country know little more of the laryngoscope than that such an instrument exists; and not a few were ignorant even of this fact, until the recent sojourn of Professor Czermak in London, and his demonstrations at several of the hospitals, were remarked upon in some of our weekly medical journals. Had the class of diseases, in the diagnosis and treatment of which this instrument yields such important aid, been constituted in this age of subdivision into a medical specialty, no doubt many medical men would have been found who, having persevered, and conquered without aid the difficulties which naturally attend the first efforts to employ an entirely new instrument, would have gladly made known by demonstration and otherwise to their brethren and to the public, that they were possessed of means which enabled them to treat with peculiar advantages that class of cases to which they specially directed their attention. The fact that the laryngoscope has not at once come into general use, will not be taken as an indication that it is wanting in practical value, by those who remember how long it was before the stethoscope made its way into the hands of the great bulk of medical men, or will consider how few there are among the members of our profession, who have made themselves sufficiently acquainted with the use of the ophthalmoscope to be able to employ it in practice, and yet its value in the diagnosis, and consequently the treatment of eye-diseases, is undoubted; and as regards this instrument, we must bear in mind that it is the subject of special courses of instruction, and that ophthalmologists have written treatises, by the assistance of which any one of us may understand its practical application. My own experience, however, with the ophthalmoscope, with which I in vain endeavoured to gain any useful information until I received from an accomplished master of its use a few practical hints, indicates, I think, the true reason why the laryngoscope is at present so little employed, although it might be readily applied with great advantage in cases which occur constantly in the practice of every medical man. It is, then, the want of clear practical directions as to the clinical application

* This paper was sent up to the JOURNAL six months since; but, owing to unavoidable delay on my part in procuring the engravings, the publication has been postponed to the present time. Since it was written, Mr. Yearsley and others have pointed out that the late Mr. Avery had invented and constructed a laryngoscope in the year 1846. I purposely avoid entering into the controversy as to priority of invention and application of this instrument. I may mention that Dr. Merkel of Leipzic, in his work on *The Functions of the Pharynx and Larynx*, states that an artisan named Lelligues, a patient of Trousseau's, was the first to construct a laryngoscope, and used it on himself, about the year 1833.

of the larynx speculum which has led to its neglect; and it is this want which I shall endeavour to supply in this and subsequent papers on the same subject.

Having, during the summer and autumn of 1860, availed myself of the opportunities afforded during a sojourn in Vienna, to observe the practice of Stoerk, Semeleder and others, and having since that period been in the habit of employing the laryngoscope in my daily practice, I can confidently state that the difficulties spoken of by those who are practically unacquainted with the use of the instrument, are in a great measure chimerical; indeed, at this moment I cannot recall a single case of laryngeal disease in which I have wished to avail myself of the instrument, and have failed to obtain a view of the part affected. Let the practitioner persevere until he has learned to illuminate the pharynx, and hold the mirror in such a way as to display the larynx in the most tolerant of subjects; and he will then find that no more than very ordinary skill on his own part, and no extraordinary steadiness on the part of his patient, are requisite to his acquiring most valuable information from the laryngoscope in pathological cases. I have alluded to the stethoscope and the ophthalmoscope in comparison with this instrument; I may now state, that accurate observations may be made with the laryngoscope, with an exercise of far less study and far less skill, than that required by either of the former instruments. With this encouragement to those who, following the directions I shall give, will endeavour to explore these regions which have hitherto been hidden from our eye, I shall proceed at once to describe, first shortly, the principles of the laryngoscope; secondly, the instruments we employ; thirdly, the appearance of the normal parts when viewed by aid of these instruments; fourthly, the exact mode of applying the instruments, directions for which will be much more intelligible after the laryngeal image has been described than earlier; and lastly, I shall give cases illustrative of the pathological conditions in which these instruments are of value.

I.—Principles of the Laryngoscope.

The principles on which the laryngoscope is constructed and applied require but little explanation; they require for their comprehension no complex knowledge of optics; the only law that we must bear in mind being that when a ray of light is reflected from a plane surface, the angle of reflection is equal to the angle of incidence. A small mirror mounted on a long handle, having been previously warmed in order that the watery vapour expired from the lungs may not condense upon it, is held in the pharynx on a level with the soft palate, in such a position that the rays of light which it receives through the open mouth are reflected down into the larynx and trachea. An image of the parts so illuminated is formed in the same mirror, and is seen by the eye of the observer placed opposite the mouth, without the aid of lenses or any other medium. This image, of course, appears to be placed at the same distance behind the mirror as the object reflected actually is in front of it; and it is of the greatest importance when we are making and recording our observations in pathological cases, that we should remember that the image represents the parts in an inverted position. Although I should have imagined that any one giving the subject the least consideration would have comprehended at once the relation between the various parts of the larynx itself and of its reflection in the mirror, there appears so much confusion in the writings of some of the foreign laryngoscopists, that I introduce the accompanying diagram to make the matter clearer.

If the mirror were held in a vertical position at the back of the throat, the image of the larynx would be inverted antero-posteriorly, and the most anterior part of the larynx, the epiglottis, would be the furthest from us in the image; but, with the mirror in this position, the image would be out of the view of the observer. If, again, the mirror were held horizontally, an equally impracticable position, an image would be formed, in which the epiglottis would be immediately over the true epiglottis at the most anterior part of the image, and the arytenoid cartilages immediately over their actual position

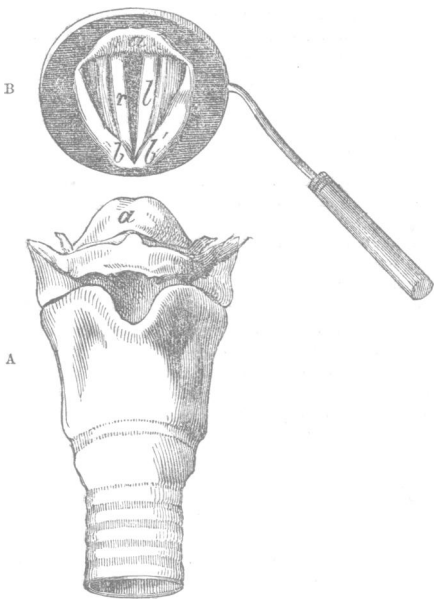

Fig. 1.—A. Anterior view of larynx; *a*. Epiglottis. B. Opening of larynx as inverted in mirror; *a*. Epiglottis; *b b'*. Arytenoid cartilages; *r* and *l*. Right and left vocal cords.

at the hindermost part of the image. The mirror being held, however, in a position intermediate to these, an image is formed in which the parts, instead of being arranged from before backwards, are seen in a vertical plane; the most anterior part of the larynx, the epiglottis (*a*), being at the highest part of the image, and the arytenoid cartilages (*b*, *b'*) being the lowest. The antero-posterior version that is talked of does not, therefore, actually take place; and certainly, as we pass the mirror back into the fauces, the parts come into view as they are situated in the larynx, the epiglottis first, and then the other parts in the order in which they lie, back to the arytenoid cartilages. The lateral inversion is that which requires most consideration; but it will, I think, be at once intelligible on reference to the diagram, in which A represents the larynx under observation, B the image of the same as formed in the mirror. Now, *r* the right and *l* the left vocal cord, are seen on the right and left sides of the mirror exactly opposite to their true position (that is respectively on the *left* and *right* hand of the observer); but *r*, the true right vocal cord, is the left, and *l* similarly is the right vocal cord of the image, as we see if we turn the diagram upside down, and look at the image B as though we were looking at the front of the larynx and epiglottis; that is, if we suppose the image to be placed in the same position as the larynx A. The same inversion of course takes place of the right and left aryteno-epiglottidean folds, of the right and left arytenoid cartilages *b*, *b'*; and of all other lateral parts of the larynx. An ulcer or any other morbid appearance situated on the left vocal cord (*l*) of the larynx (A) appears to be on the right vocal cord of the image (B), although of course it is situated on the same side of the mirror as of the larynx under examination.

It is, I think, the confounding the position of the parts in the *mirror* with their position in the *image*

which has led to the confusion in the description of the relations between the larynx and its image to which I have alluded. Experience is necessary to enable us at once to correct the false representation given in the mirror; but with this experience, we make the necessary corrections with almost as little consciousness of mental effort, as when we mentally convert the inverted image which is formed upon the retina into the true representation of the various objects which surround us in every day life.

DIPHTHERIA.

By Wm. Newman, M.D.Lond., St. Martin's, Stamford.

Having already given to the readers of the British Medical Journal (September 14th, 1861) a statement of those cases of diphtheria which had occurred in my practice—then at Fulbeck, near Grantham—in the first six months of 1861, I wish now to lay before them the series noted in the second half of the same year. And I do this with the hope of some resulting good; since the instances thus put upon record, being the product of a widely spread agricultural district, offered to the same observer, subjected to the same external influences, and modified by an unvarying plan of treatment, may be supposed to exhibit a fair record of the disease throughout a year of its ordinary history.

No.	Sex and age.	Occupation.	When first seen.	Ill before first visit.	Result.
1	F., 6	Labourer's child.	July 6		Recovered.
2	F., 4	Farmer's child.	July 11	24 hours.	Died.
3	M., 22	Gentleman.	July 15	24 hours.	Recovered.
4	M., 14	Farmer's son.	July 29		Ditto.
5	M., 45	Gentleman.	July 31		Ditto.
6	M., 30	Labourer.	Aug. 1	2 days.	Ditto.
7	M., 13	Miller's child.	Aug. 5		Ditto.
8	F., 27	Labourer's wife.	Aug. 7		Ditto.
9	F., 19	Domestic servant.	Aug. 9		Ditto.
10	F., 44	Farmer's wife.	Aug. 21	24 hours.	Ditto.
11	F., 26	Domestic servant.	Aug. 28	3 days.	Ditto.
12	F., 20	Domestic servant.	Sept. 12		Ditto.
13	M., 33	Groom.	Oct. 7	1 day.	Ditto.
14	M., 65	Wheelwright.	Nov. 8		Ditto.
15	F., 19	Publican's daughr.	Nov. 9		Ditto.
16	M., 20	Butcher.	Nov. 10	3 days.	Ditto.
17	M., 15	Errand-boy.	Dec. 3		Ditto.
18	M., 28	Groom.	Dec. 26		Ditto.

Sex has little influence. Of the patients, ten were males, and eight females.

Age. The ages of the patients are shewn in the subjoined table:—

Age.	Number of cases.	Per cent.
0 to 5	1	5.55
5 to 10	1	5.55
10 to 15	3	16.66
15 to 20	4	22.22
20 to 25	1	5.55
25 to 30	3	16.66
30 and upwards	5	27.77
	18	99.96

Mortality. There was one death in 18; or 5.55 per cent.

In the data of age and mortality, the cases now noticed stand in almost direct opposition to those given in my last paper. The causes of this difference will be noticed further on.

To some of these cases, I would draw more direct attention; they are of interest, as much from individual peculiarities as from their combined value.

Case II. This was the only fatal one in the series—fatal, too, from direct affection of the larynx; death resulting within twenty-four hours. But for due examination of the throat, the case would have been looked upon as one of ordinary croup. There had been no history of prior illness, no failure in general power, until the clanging cough and stridulous breathing were noticed; yet there was enlargement and soreness of the submaxillary glands, and the *débris* of very well marked exudation on the uvula and tonsils.

If the writings of French physicians be consulted, they tell us that croup is, with but very rare exceptions, the sequel of, and dependent upon, pharyngeal diphtheritic deposit—a matter, in short, of local extension. This is the sole case I have seen tending to bear out this view.

Cases III and V. Both derived their affection from the same source. In both cases the local deposit and suffering were but slight; yet each of them had very characteristic depression and constitutional disturbance. Coincident inflammation of the parotid gland only on one side was also present.* Case III was well in three weeks or less. Case V was much more tedious in convalescence. The whole system was unhinged, and strength was very slowly regained by free administration of tonics and abundant supply of food. Six months later, a large abscess, with deep burrowing sinus, formed in the upper and inner part of the left thigh. I am strongly disposed to connect, certainly the severity of this local affection, if not indeed absolutely, its occurrence with the extreme debility consequent upon the throat-disorder.

Case VI. Local œdema and very rapid and abundant appearance of exudation were here noted. The man's state was for some days very precarious; and, though prior to this illness an athletic powerful man, he was very seriously prostrated. No nervous sequelæ showed themselves.

Case VIII presented partial loss of power in both lower extremities, sensation being more damaged than motor power. Some time passed over before this symptom disappeared; the throat-disorder having, however, been far from severe.

Case IX. I had seen, as reported in my last paper, one instance of secondary abscess in the neck. In this person abscess formed, three or four days after the exudation had cleared away, in the soft palate; and attained such a size as to produce very great inconvenience both in respiration and deglutition. The subsequent recovery, after the discharge of the pus, was rapid.

Case X is noteworthy, from the coincidence, almost from the very commencement of the throat-malady, of excessive sickness; no matter what was taken, it was immediately rejected. I could but trace its existence to some irritation of the par vagum. Internal remedies seemed of little or no avail; external counterirritation was certainly of some service.

But little of especial interest is attached to the other cases.

The rates of mortality noted in the two series of cases—1 in 5, and 1 in 18—differ widely enough; admitting, however, of easy explanation on reference to certain conditions.

a. Age. The majority of those reported on the last occasion were young children, having proportionally little vital power, and therefore succumbing rapidly to any form of blood-poisoning. On the other hand, most of those now mentioned were over fifteen years of age.

b. Varying Conditions of Access. In the earlier instances, in 23 out of 35, the disease was endemic, with a resulting mortality of 1 in 4·3; while, in the present group, the affection was uniformly sporadic.

These conclusions may, on the whole, be fairly drawn.

The severity of diphtheritic affections, and indeed

* A case of this kind was reported by Dr. Gibb to the London Pathological Society. (*Medical Times and Gazette*, Feb. 18, 1862.)