

## CLINICAL LECTURE

ON

## LEITER'S ENDOSCOPE IN THE TREATMENT OF VESICAL DISEASE.

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GENTLEMEN,—Some important improvements have been recently made in endoscopic apparatus for examining the various cavities of the body. During the thirty years that I have been connected with the hospital, I have from time to time demonstrated here the various contrivances which have been adopted for this purpose. They have long been used for the more accessible cavities, notoriously for the throat, ear, and vagina; but they have been also used for cavities which are more difficult to enter, such as the bladder, and more recently the stomach. The first instrument that I brought here, some twenty-five years ago, was the well-known endoscope of Desormeaux, of Paris, and it was employed in the wards under my care. It was used not only for the bladder and the urethra, but occasionally for the rectum. I cannot say that I think it was of much service; but it was, of course, desirable and necessary that in a great medical school men should see such inventions tested. Then Dr. Cruise, of Dublin, improved the illuminating power of the instrument, and we found it better than the other. We had also a small endoscope designed by Mr. Warwick, which was much less costly than the others, and answered nearly every purpose. After this no great change took place in endoscopic appliances until 1879, when it was reported that Mr. Leiter, of Vienna, the well-known and skilful instrument maker there, had devised a very remarkable apparatus for examining the bladder and stomach. I made it my business that autumn to visit Vienna, and had the advantage of using Leiter's instrument in the Allgemeine Krankenhaus, with my friend Professor Dittel, the distinguished surgeon there. I found it difficult to use successfully, although far more efficient than its predecessors. I therefore ordered one, and exhibited it for the first time in the theatre here in April, 1880, on living patients. It was a large and cumbersome machine, but by means of it an incandescent wire heated by electricity was introduced into the interior of the bladder. In all preceding instruments the source of light had been outside, and a ray was thrown by a mirror or a prism into the bladder, the observation being made only by transmitted light. But Leiter, with whom was associated Dr. Nitze, succeeded in illuminating the bladder by direct rays. The heat, however, arising from the incandescent wire rendered it necessary to provide a current of cold water constantly flowing in a minute channel round the instrument, from the outside to the extreme end of the sound, and returning to make an exit through the handle, otherwise the bladder would have been injured. This involved a very costly and complicated apparatus. Moreover, it was too unwieldy to be carried about in a carriage, a condition which limited its usefulness considerably. But more recently Leiter has succeeded in simplifying the process and the machine, and now without difficulty a tiny Swan lamp, sufficiently small to lie within the apex of a hollow sound not more than No. 22 or 23 in size (of the French scale), can be introduced into the bladder. Moreover, no constant supply of water is now required to reduce the temperature; but it is still necessary to follow certain rules in order to ensure safety and to obtain good results.

In the apparatus now before you the electric current is supplied by a battery of four or six cells (a bichromate is employed), besides which there are the connecting wires with two sounds, one supplied with an opening to show the anterior wall, sides, and floor of the bladder, and one to show the posterior wall.

The first step is to move the handle of the battery, which sinks the elements of each cell into the exciting fluid and furnishes the current. The rheostat must then be adjusted so as to produce the

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maximum of resistance, that is, to diminish the current as much as possible before making contact with the little electric lamp, which would be destroyed by too large a charge. The amount of light displayed will show you whether you require more, and if so you will move the slide until sufficient brilliancy is attained. The apparatus is now ready for action.

But certain rules must be followed in order to employ the apparatus safely and efficiently.

First, it is necessary that the bladder should contain fluid; the light cannot be employed in an empty bladder, as a considerable degree of heat is produced; a quantity not less than six ounces is desirable, eight or ten may sometimes be better.

Secondly, the fluid must be transparent; it is desirable to remove all cloudy urine, and more especially if any source of hæmorrhage exists there, to wash out the bladder so gently as not to excite, if this be possible, any fresh flow of blood. Since the examination is, as we shall presently see, chiefly useful for the discovery of papillomatous growths, or for ascertaining the fact of their absence, the greatest care and gentleness must be employed in every step of the process.

Thirdly, this having been done, the sound No. 1 must be carefully passed into the bladder before the circuit is completed and the light produced; otherwise injury might be inflicted on the urethra by passing the lighted sound along the canal. For the same reason the light must be extinguished before the sound is withdrawn from the bladder. The best way is to pass the sound before attaching to it the connecting wires, and to do this latter only when it has been placed in proper position.

Fourthly, when the beak of the sound is felt free within the partially distended bladder, it should be pressed in nearly as far as it will go, and then the wires attached connecting it with the current; after this the little handle is moved which completes the circuit, and then if all is right, the light instantly appears. If the fluid is clear, the observer will, on looking through the external end of the sound which contains a small telescope, obtain a distinct view of the anterior part of the vesical wall. This view is obtained by means of a small prism situated at the angle between the shaft and beak, so that the rays of light are transmitted from the surface to the observer's eye. By gentle movements, which must be learned by practice, and cannot be verbally taught or described, different portions of each lateral wall and of the floor can be observed at pleasure. But the posterior third of the cavity is outside the sphere of vision through sound No. 1. No. 2 must be introduced, and be managed in the same manner as the former, if it is required, employing for it the little telescope removed from the first instrument for the purpose. Mind also that you do not forget when the lighted sound is within the bladder, that the beak should not be permitted to rest at any spot for more than a few seconds in close contact with the wall of the cavity, lest it should be slightly injured thereby; it is wise to keep the beak gently moving. And when the sound is removed from the bladder, should it be relighted, the beak must be placed in a vessel of water, otherwise the Swan lamp or the crystal covering it, may suffer from undue heat. The light should never burn above one minute in air. If it is not wanted for a minute or two, turn off the current or put the light under water.

[A male patient, about 60 years of age, was now brought in under ether, whose case was a suitable one for exploration. Eight ounces of warm water were introduced into the bladder after withdrawing the urine. Seated between the patient's lower extremities, which hung over the end of the operating table, the lecturer introduced the sound and, having lighted it, was able after a minute or two to say that the fluid was clear, no trace of blood having appeared, that the mucous membrane presented a healthy tint of pale pinkish yellow, but that there was an unusual amount of fasciculation of the muscular fibres in every direction, probably caused by some obstruction of the prostate to the natural outflow. This, indeed, was very well marked; no other morbid condition was present. This description was verified by a number of persons present who in turn examined the organ through the endoscope. This done, the lecturer proceeded:]

You will naturally ask, In what cases is it likely that the instrument will be chiefly useful? Certainly before all others in the case of those small bleeding tumours, respecting the presence of which, but more especially the extent of their development, it is often difficult to arrive at an accurate conclusion. I refer especially to the papillomatous tumours, the distinguishing character of which is their history of

repeated attacks of hæmaturia during a considerable period of time. They may develop slowly for two, three, or four years before the loss of blood becomes considerable. They are often for a long time unaccompanied by pain or by frequency of passing water. The way by which you generally arrive at a positive knowledge that the bladder contains such a tumour is not by sounding as for stone, because the sound is not capable of appreciating a small soft tumour. The mode of determining the fact is to search for a tiny shred of the growth expelled with the urine, and it is very strange indeed if you do not find one after the expenditure of a little time and patience, and are able to identify the structure of papilloma, which is quite characteristic. When you have found this you may be certain that there is more or less of the morbid product there. But you cannot tell whether you have to deal with one growth or two, or more, or whether it is large or small, because neither the sound in the bladder nor the examination by the rectum will afford you any information whatever on these points. In such cases it has been sometimes necessary to make an incision into the urethra by the perineum in order to obtain these data, and I think this will still be necessary in some examples; but in others, perhaps in most, we may now be able to ascertain the facts by means of this instrument. Still when, as not infrequently happens, the tumour is so vascular that the introduction of the instrument produces a considerable outflow of blood, it is useless to pretend that the endoscope will enable us to realise the number or size of the growths in the cavity. If, on the other hand, we succeed by very gentle manipulation in washing out the bladder, clearing it of all opaque matters, and introduce six or eight ounces of fairly clear water, then I think the instrument will enable us to obtain the information required.

One word more in relation to tumours. So far as cancerous vesical growths are concerned—those tumours which you can feel the presence of from the rectum and elsewhere—little or no occasion exists to use an endoscope; and it would mostly be the means of inflicting suffering without adequate advantage to the patient to examine the cavity. Thus, I do not say that it might not be of use sometimes, but, as a rule, that is a condition in which the proceeding might well be spared.

[The second patient brought in was one from whom a considerable portion of the prostate had been excised by suprapubic operation about a fortnight before, by Mr. Christopher Heath, who was present and joined in the examination of both patients. The external wound had nearly healed; nothing, however, could be seen, from the patient's inability to retain more than four ounces, and owing to the presence of blood oozing from the prostate, although the sound passed without any difficulty.]

Here, then, you see an example of the effect of blood to interfere with visual examination, just referred to; and it is a condition commonly met with in cases of papillomatous tumours.

There is another class of cases for which the apparatus may possibly offer on rare occasions some service. We now and then meet with foreign bodies introduced into the bladder, of which, for some reason or other, a clear history is not always obtained. I have met with several instances of foreign bodies, in my time, most of them broken catheters, and have rarely had any difficulty in removing them; in one only was it serious; it occurred in this hospital more than twenty years ago. A hairpin lay right across the bladder, so that I could not move it when seized by the lithotrite. I then did the high operation, and removed the hairpin with some difficulty. I found it lying transversely right and left, with its pointed ends embedded in the mucous membrane, so that it was impossible to remove it by the natural passage. Sometimes, as I have said, only a doubtful history is furnished; there is some reason for reticence, both in regard to the body supposed to be in the bladder and the method by which it arrived there. I remember a case in the country in which a boy had introduced an ear of oats or rye, the spikes of which lying in the right direction ensured its rapid progress to the cavity. In another case in this hospital I cut out a piece of sealing-wax. The history of this was not clear, and we did not quite believe the story given, but sounding revealed the presence of a hard mass. I performed median lithotomy, removing a phosphatic calculus, with an inch of sealing-wax for its nucleus. I may say that I have twice removed sealing-wax thus, and also twice removed a hairpin. In cases of this kind, when you are uncertain as to the fact and desire further information, you may ascertain the nature of the foreign body by this instrument.

Then occasionally there may be a suspicion of impacted calculus. This is a very rare condition, and should not be too

readily suspected to be present. Yet here, too, the endoscope may sometimes throw valuable light—literally—on the situation.

How much it may be necessary to use the instrument for the urethra is a matter of individual opinion. I should say that it is very easy to use it unnecessarily. If, however, you propose to employ it in any given case, it will be generally desirable first to apply a solution of cocaine, of 4 or 5 per cent., for some eight or ten minutes, in order to prevent pain. The urethra is a very delicate tube, and only now and then wants inspection. I do not think you ought to require the instrument for stricture, unless in cases of exceptional difficulty; for all ordinary cases are managed with the least amount of irritation to the passage when treated with simple instruments by a sensitive and intelligent hand. I have never yet, throughout my experience of urethral stricture, met with a case in which I have derived the slightest advantage by inspection. This, of course, refers to the old endoscopic appliances, and I will not say that the present may not be superior in this respect. But I know the urethra well enough to be aware that the introduction of a tube disturbs the relations of the minute orifice, and is by no means so advantageous in practice as by theory it appears to be. The kind of handling which I have found invariably successful for the narrowest and most difficult stricture cannot be adopted when the canal is occupied by a metal tube. But there are other conditions besides stricture for which the endoscope may render some service. The passage is sometimes the subject of little papillomatous growths and congested conditions, which may be removed by an application, say, of some caustic, and you may ascertain the particular spot with ease, and touch it at the same time, by means of this instrument.

In conclusion, I think you will have already arrived at the conviction that it will not be necessary very frequently to employ the apparatus I have shown you in the diagnosis of vesical disease. For the fact is not to be altogether overlooked that its employment taxes the urethra and bladder more severely, for example, than the ordinary operation of sounding for stone, and should, therefore, not be resorted to without adequate necessity. In relation to the presence of papilloma and some other obscure conditions, it may sometimes render essential service; but do not regard it as an instrument that is in any case to be used for diagnosis, except as a special resource when other and ordinary resources have failed. Do not give up in any respect the simple means of prosecuting diagnostic research hitherto employed; but by all means keep it in reserve for certain exceptional cases when other usual methods have been tried and have proved unsuccessful. You may then occasionally find it a valuable ally.

**CORK (Population, 81,200). Decreasing Prevalence of Typhus.**—Dr. Donovan states that the mortality returns for 1886 are very satisfactory, and bear favourable comparison with those of other towns. There was a marked improvement in the death-rate of the city compared with other years. The annual death-rate from all causes was 20.8, the infantile death-rate 2.4, and the zymotic death-rate 0.9. Typhus fever, which has always been very prevalent in Cork, only caused 5 deaths during the year, 83 cases being the total number reported. In 1881, 1,261 cases of this disease had come under notice. Dr. Donovan attributes the decline of this fever to the reduction which has taken place in the overcrowding of congested districts, the improved condition of tenement houses, and the system of regular inspection to which these houses are subjected. Typhoid fever was unusually prevalent, and caused 17 deaths. The precautions taken proved effectual in preventing the spread of the disease, which at one time showed signs of becoming epidemic. Scarletina was much less fatal than in 1885, the deaths being nearly 50 per cent. less than in that year. Many instances were met with during the year where patients suffering from scarlatina were lying a few feet from pans of milk exposed for sale; and in one case the manager of a large dairy in the city was removed to the hospital suffering from the disease. In all these cases the sale of milk was immediately stopped. Dr. Donovan has devoted a considerable portion of his report to the question of domestic scavenging. If his efforts are successful in securing the removal of the offensive privies and middens, and the general substitution of water-closets, the health of the city will undoubtedly be benefited.