knowledge, might have been predicated; viz., that a larger proportion of these diseases terminate in health under restorative treatment than under depleting remedies. The propriety of the substitution of food and moderate quantities of stimulants, as routine practice, for the lancet, rests on the firm basis of results; and this firm basis is established without regard to the answer that may be given by science to the question, Is alcohol food or heart-stimulant, or a nerve-power supporter?

But, while admitting this general conclusion, the profession as a whole have not forgotten that there is no one treatment applicable to all cases of disease bearing the same name. They have not failed to see that the practitioner is distinguished from the routinist by his ability to discern when, with advantage to the patient, he may deviate from rules of practice generally applicable. No tables, however carefully compiled, however ably analysed, can teach a man how to treat *the* case of fever, or *the* case of pneumonia, now under his care.

A good illustration of the help yielded to us in the rational treatment of a special disease, from advances in our pathological knowledge in regard of that disease, is afforded by chronic pulmonary vesicular emphysema.

The diminution of the elasticity of the lung can, in many cases, be retarded; the exciting and determining causes of over-distension of the air-vesicles can be shunned; the causes of temporary impediments to the flow of blood through the pulmonary capillaries can be avoided; congestion of the heart, liver, kidneys, etc., can in this way be lessened, and, by direct remedies, still further diminished or removed. And thus sufferings are alleviated,—serious secondary lesions of structure in organs, the integrity of which is essential to life, in a great measure prevented, and life itself indefinitely prolonged.

The benefit derived from opening the trachea in croup, is another illustration of the value of rational treatment in the prolongation of life.

With reference to the power of our art to alleviate suffering, how great is the difference between the medicine of to-day and that of our youth! Who that has suffered from a painful local affection can think of the alleviation to his sufferings which followed on the subcutaneous injection of an anodyne, without gratitude? Who is there that has had to submit to the knife of the surgeon, whose heart does not overflow with gratitude to those who introduced and perfected local and general anæsthesia? The electric telegraph, the second greatest marvel of our time, was a thing which, in a rough way, scientific men had long thought possible; but to be cut for stone, and know nothing of the agony; to have a leg removed, and smilingly ask, when the operation is over, "When are you going to begin?" to have a toe-nail torn away, and look on and laugh when that most painful operation is proceeding,—these are marvels of which none dreamed. No extravagance of fiction equals this reality. The discovery of the value of the subcutaneous injection of anodynes, of local anæsthesia by ice and ether-spray, and of general anæsthesia by ether, chloroform, and nitrous oxide, are advances in alleviative medicine worthy to rank with the advances in preventive, curative, and prolongative medicine to which I have referred.

Keeping in view, then, those practical aims and objects for which medicine is esteemed by the public—viz., its power to prevent disease, to cure disease, to prolong life, to alleviate suffering—I feel that I have said enough amply to prove the truth of my assertion that the progress of medicine as an art has during the past twenty-five years* been second to that of no other science. And the present advanced state of medical education; the perfection of the means of physical research; the many new centres of knowledge being established in our colonial empire and in America; the widely diffused acquaintance of the profession with modern languages; the rapidity with which knowledge spreads; the confirmation, correction, or refutation which follows so quickly on the publication of novelties; the great ability; the absence of prejudice; the untiring energy; and the truthfulness exhibited by the younger workers in the field of our science,—render me hopeful that the next quarter of a century will be distinguished by far greater progress than has the last, great though that be. And I can even now in mind realise the day when most of us, our faculties numbed by age, shall take but listless interest in the then present—or be, as is perhaps to be hoped, where suffering has no place,—and when another, as full of sympathy for physical suffering, as anxious to relieve it, as we are now, shall stand in this place and tell how, twenty-five years before, one stood here and with exulting voice spoke of the advances of medicine in the preceding quarter of a century; but only to add that the sum of those boasted advances was but as nothing, compared to the strides the profession had made as a practical art since that far-away day.

* Too narrow a limit must not be given to the twenty-five years, as the writer intended rather to fix a time within which the illustrations given had become part of the stock knowledge of the profession, than fix with accuracy dates when each fact was published by its discoverer.

ON THE DETECTION AND TREATMENT OF FOREIGN BODIES IN THE BLADDER:

WITH REMARKS ON THE USE OF THE ENDOSCOPE.*

By EDWARD LUND, F.R.C.S.

THE endoscope, as we now use it, is an instrument of modern improvement. In its present form, it is the invention of Dr. Cruise of Dublin; but, long before he succeeded in bringing it to perfection, many other observers, and especially the late Mr. Avery, had attempted the same thing by very similar arrangements. To be able to view, with exactitude and precision, the interior cavities of the body, must be in some cases of great importance; yet the very limited range of vision thus obtainable will ever keep this instrument as one to be employed more as an aid to other methods of diagnosis, than for constant use. There are many little details of management in Dr. Cruise's endoscope which need not here be referred to; but among these I may especially mention the fact, as he has stated it, that we can obtain a greater illuminating power from the flame of a lamp when its thin edge is placed towards the mirror, than by using its broad surface; and also that no fluid is so useful for combustion, and gives so good a light, as pure petroleum, in which about ten grains of camphor have been dissolved in each fluidounce.

There is one source of difficulty in using this instrument which may cause much annoyance. It is that, in order to see an object with the endoscope, in the bladder filled with urine or water which has been injected into it, it is necessary that the window of the endoscope-tube should be brought into very near contact with the body to be examined; indeed, the tube should first be used as a sound or searcher to find the foreign substance; and then, having got some clue to its exact position in the bladder, we may hope to have it properly illuminated. If this is not done, the water by which the window of the tube is surrounded absorbs the light so completely that, to use Dr. Cruise's own words in a letter to me on this subject, "you can see nothing but darkness until the window of the speculum touches some object, such as the mucous membrane, a stone, or the like." This property of water to absorb the rays of light is well known to opticians; for it is said that, during the operation of diving in deep water, at a certain distance below the surface, all the light from above is cut off, and darkness prevails; and this same condition may exist in diving about in the bladder with the endoscope-tube, seeking to discover some foreign body, when, if it happen to be of a dark colour, we may imagine that we are really viewing it, while all the time the black colour produced is the result of the light being shed out into the mass of water through the window of the speculum-tube.

T. W. H., aged 17 years, was admitted into the Manchester Royal Infirmary, under my care, on August 28th, 1868. He was an intelligent, well-educated boy, of rather reserved taciturn disposition; and all I could ascertain in reference to the case was that, about four days previously in the evening, while in a dark room, he had passed a piece of India-rubber tubing, such as is used for infants' feeding-bottles, along his urethra; the penis becoming suddenly erected, the tubing slipped into the bladder, and he could not recover it. He did not have any pain; and it was not until two days afterwards, when he could not pass urine, and was suffering great distress from the distension of the bladder, that a surgeon was sent for, and he confessed to him what he had done. A catheter was used. It could not be passed quite into the bladder, for it seemed as if the urethra was blocked up by some foreign body; but, on withdrawing the instrument, the urine flowed off, with occasional interruptions, until the bladder was emptied; and after this he had no further difficulty in the passage of the urine. The boy stated that the piece of tubing was about six inches in length, and of the diameter of a common writing-quill.

On August 29th, I examined him with the endoscope while lying on his back in bed. I did not give him chloroform, and he bore the examination very well. I could see a dark mass in the bladder on his left side, with a sharp outline or edge; while all the other parts of the interior, where the mucous membrane could be seen, were of a pinkish salmon colour. This I thought must be the foreign body which I sought for, coiled up in some way so as not to give the outline or exact form of a tube; yet this was very doubtful. The urine was clear, acid, free from mucus or other deposit. The patient did not suffer any pain, except a vague general feeling of weight or uneasiness in the region of the bladder just above the pubes, neither relieved nor increased by pressure.

* Being the substance of a paper read before the Medical Section of the Manchester Royal Institution on April 7th, 1869.

On September 5th, the urine contained a little mucus; and on the 11th this had become muco-purulent, with a very slight trace of albumen. On the 19th, I again used the endoscope; but I could not, after the most careful search, discover the dark black mass which I had before seen; and from this I concluded that there had been some error in my previous observation, and what I had thought to be a foreign body must have been only the darkness of the un-illuminated bladder. He now complained, for the first time, of pain along the penis and in the glans after micturition, and also a sensation as if something solid were about to enter the urethra with the flow of urine; but none of these symptoms were constantly present.

On the 28th, I made another examination; and now I was convinced that I could see the tube in the bladder, as, in the window of the endoscope, one-half the space was dark, with a sharp edge, the rest being of the colour of the mucous membrane; and in this I was confirmed by the testimony of Mr. Fennell, our house-surgeon, who recognised the same appearance. But, on attempting to move the instrument about to catch another view, the foreign body slipped out of reach, and I could not refix it in position, even after much perseverance; so that I was compelled to be content with this single observation. Acting chiefly, therefore, on information thus obtained, on October 2nd the patient was placed under chloroform, and lateral lithotomy was performed in the usual way. I found a foreign body in the bladder; felt the end of the tube; drew it down by means of a blunt hook with which I had provided myself; and extracted it with a small pair of nasal polypus forceps. The external wound was rather small; there was no hæmorrhage; and he did well. From this date, the boy made a good recovery, and left the hospital on November 9th, 1868, thirty-eight days from the date of operation.

The chief interest surrounding this case, from the first, was connected with the fact that, it was not absolutely certain the patient had really passed the piece of tubing into the bladder. It was thought to be quite probable that, although he had made the attempt to do so, the tube might have fallen out of the urethra as soon as he felt any pain from its introduction, instead of having entered the bladder—much in the same way that cases have occurred in which persons have declared a pin had been passed into the ear and there remained, when in truth as soon as ever the pin had touched the deeper and more sensitive parts of the meatus, it had fallen from the grasp and dropped on to the floor, leaving behind a very persistent impression of its continued actual presence in the ear. Again, it was thought to be very improbable that so pliable and soft a material as India-rubber-tubing of such a size and length could have been passed into the bladder in the manner described; and it is difficult to understand how this could have been done unless we call to mind how other substances have been introduced along the urethra, and into the bladder in a way almost involuntary. Some have declared that the transit of such bodies along the canal of the urethra is due to a sort of vermicular movement in its submucous muscular fibres; and it is not very long since a discussion took place in one of the journals between the present Sir Henry Thompson and Mr. Christopher Heath on this very question, the one arguing that the contractions of the urethra were so arranged as to facilitate the passage of fluid and solid matters towards the bladder; and the other, with equal force, contending that their action would have a precisely opposite result, and lead to the expulsion externally of anything lying in the urethra. Now I think that the turgid state of the penis, which is apt to result where the point of a foreign body touches the deeper parts of the canal of the urethra, causing a partial or complete erection of the organ; its increased length and subsequent retraction to its former size as the turgescence subsides, together with the narrowness of the urethra, which would embrace the foreign body most firmly, are rather to be regarded as the true factors in these movements. A solid body of elongated or cylindrical form, such as a tube, or a small pencil, piece of tobacco-pipe, or the like, would be held more tightly by the orifice of the urethra than by any other part of the passage; and once propelled beyond this spot, the tendency will be rather for it to advance towards the bladder as the penis returns to its flaccid state, than for it to re-appear externally. The use of vulcanised India-rubber catheters proves how easily such flexible tubes can accommodate themselves to the curves of the urethra if urged onwards with a due amount of force.

Then as to the difficulty which I experienced in being quite sure that I had seen the tube in the bladder when I last used the endoscope, and also as to the difficulty of fixing it for further observation, or recognising it by the sense of touch in the operation of sounding the bladder in the usual way—it was noticed that the tubing, after it had been extracted, had a fixed curve impressed upon it, which was the segment of a circle of at least four inches in diameter, so that, as it lay passively at the bottom of the bladder, spread out towards the sides of the cavity, the

beak of the revolving sound or the endoscope tube, as it chanced to touch it, could only do so for a moment, for the elasticity of the India-rubber would soon cause it to slip away again to its old position. This, no doubt, was the reason why, in all examinations, this foreign body was so rarely brought within the range of the endoscope. Lastly, it was suggested, by those who were present, even just before the operation, that it would be more prudent to wait until the substance, if really in the bladder, had become covered with phosphatic deposit from the urine, so that it could be detected by a sound, than to run the risk of attempting a dangerous and perhaps fruitless operation, when the constitutional and local distress were so slight. The only reply which could be made to this line of argument was, that I firmly believed what I had seen with the endoscope on my last exploration was really the foreign body in question, and that it was in the bladder; and moreover, that, in my experience, the rapidity with which any substance so placed would become covered with phosphates would depend greatly upon its exact physical characters. If it were of a porous nature—for example, a piece of soft wood—each time the bladder emptied itself, a certain quantity of old or stale urine would remain behind in the recesses of the porous body, this being in effect outside the body, or rather held away from contact with the living tissues of the bladder, would readily undergo putrefaction, act as a ferment to the new urine as it trickled down from the kidneys, rendering it alkaline, with all the consequences of further deposit, and thus the foreign body would be very rapidly encased in a calcareous crust. Not so, however, if it were a piece of India-rubber, ivory, sealing-wax, or such like body, for then its *non-porous* nature would *not* allow it to absorb and retain any moisture; there would be no urine left in the bladder to suffer chemical change, and the substance so placed could only lead to the production of an alkaline urine, by exciting, through its mere presence in the bladder, inflammation in its mucous membrane. In this case I was, therefore, of opinion that we might have had to wait an indefinite period before the India-rubber would have retained upon its surface a sufficient deposit to give to the sound the ring of a calculus; and although I could not be certain that the foreign body which I saw in the bladder was really an India-rubber tube, such as the patient declared had been introduced, or at least, I could not alone, on such evidence as this, have ventured to cut the boy as if for lithotomy; yet, the information thus obtained by the use of the endoscope was, in this particular instance, a valuable aid to diagnosis, and a guide to treatment.

There is yet another subject, akin to this, to which I am anxious to direct attention; and it can be stated in a very few words. I have observed, upon more than one occasion, in sounding the female bladder in cases of suspected calculus, that if we use a female catheter, or a hollow female sound, nearly straight or only slightly curved; if the bladder contain much fluid, either urine, or water which we may have injected; if with this there be present, as is so constantly the case, much vesical irritability, so that the bladder is ready to expel its contents with great force on the slightest stimulus; and if by chance, in moving the hollow sound or catheter, so as to explore the bladder, we allow a small quantity of fluid to pass out at the end of the instrument, stopping it suddenly with the finger to check its further escape, each time this is repeated, a sense of concussion is at once experienced, often accompanied by an audible note, very similar, indeed, if not impossible to distinguish from that caused by an ordinary calculus, or the presence and contact of some hard and solid body within the bladder. I do not think any one, who has not felt this peculiar concussion, can have any idea how very much it resembles the click and ring of a vesical calculus. It will be observed, however, that two conditions are necessary for its production. The sound, or instrument, which we employ, must be hollow, so as to allow the urine to pass through it with more or less force, according to the contracting power of the bladder; and the noise is only observable at the exact moment when the current, thus flowing with a certain velocity, is arrested by the contact of the finger with the orifice of the instrument, or when the instrument, the fluid still flowing through it, is suddenly driven onward into the bladder. It is clearly, therefore, a phenomenon which may be compared, on an extremely minute scale, to that which is well known to happen in our high pressure water-pipes, so often as a badly constructed tap is suddenly closed while the water is flowing rapidly; a concussion is produced, with a loud noise or bang, with great danger of bursting any weak part of the pipes, and the idea is suggested to the mind that we have really been dealing with a solid rather than a fluid, among the particles of which the concussion has occurred, whereas we know it is only caused by the sudden stoppage and rebound of the wave of water. We see it also in the water-hammer toy. In the case of the water-pipes, the artisan will tell you that it is because "there is air in the pipes", which is indeed just contrary to the facts, for it is the elasticity of the

air which prevents this occurring each time we shake up water in a phial, while in the partial vacuum of the water-hammer, the beautifully elastic cushion of the air has been purposely removed.

The conclusion to be drawn from these observations is, that it is not safe to explore the interior of the bladder in the female with a catheter or hollow sound, while there is any chance of the fluid escaping and being suddenly stopped during the operation. This rule does not apply to the case of the male bladder, on account of a male catheter being generally so much curved as to prevent the urine flowing through it at any great velocity. If, however, in examining the bladder for stone, we always use a solid sound, there can be no such error; or if, which is in effect the same, we keep the plug in the hollow one while it is moved about in the bladder, these concussions will not occur, and a possible fault of diagnosis will be avoided.

ON LOCOMOTOR ATAXY.*

By J. LOCKHART CLARKE, M.D., F.R.S., etc.

CASE I.—R. L., aged 35, and a very intelligent man, carrying on the business of a shoemaker at Richmond, was sent to me by a practitioner of that town. About seven years back he began to feel what he called rheumatic pains, caused, as he supposed, "by working in a draughty shop." These pains were first experienced in his feet and legs; seldom in his thighs. They come on suddenly and violently, like electric shocks, but may be absent for several days together. As in most other instances, there are two kinds of pains—the one gnawing or "rheumatic", the other lancinating. Sometimes they begin in the knee-caps, sometimes at the back of the knee-joints, and always shoot upwards from below. He has scarcely ever experienced any pain in either of the upper extremities. For the last five or six months he has had numbness all over his feet, reaching above the ankles. For the last twelve months or more he has felt, as he says, "great weakness in his legs", so that he could not walk properly, but swayed about like a drunken man. He feels exceedingly nervous and stiff when he first starts, but walks better as he proceeds. His movements are somewhat jerking or spasmodic, and he feels exhausted after walking a short distance. He has no hold of the ground upon which he walks, but nevertheless it feels hard. When he stoops to pick up an object, his feet seem to slip from under him. He can walk without looking at his feet, and generally walks without doing so. He can stand, also, with his feet close together, although unsteadily, when his eyes are open; but, when he shuts his eyes, he reels, and would fall if not supported.

His upper extremities are as strong as they ever were, and he has perfect use of his hands in working at his trade; but, nevertheless, the ends of all his fingers, except the thumbs, have been feeling a little numb for some weeks. For the last eighteen months or more, he has felt occasional gnawing pains round the chest and waist, with numbness and constriction, and has occasional pains in the loins. He has never suffered from piles, as many of these patients do, but he has frequently incontinence of urine; and, on the other hand, has frequently a difficulty in passing it, although the desire be urgent. He married a year ago, and has one child. There is no loss of sexual desire or power. His habits are temperate, and he smokes moderately. His father died of phthisis, but he knows nothing about the death of his mother.

The ocular affections of this patient, which are very striking and interesting, came on *subsequently* to the pains and the muscular incoordination. When looking straight at me, there is slight internal strabismus of both eyes—very slight in the left, and rather more in the right eye; but in this position he can see me only as a dim figure, or rather only part of me dimly; but if he turns his head half round to the right, he sees me perfectly, and then there is no squint. When he turns his head half round to the left, he can scarcely see me, the right eye being turned, but only partially turned, outwards, while the left eye turns fully inward, so that there is a very considerable squint. In the same position in front of me, when the *left* eye is covered, he can see me with the right eye *pretty distinctly*; when the right eye is covered, he can see me *perfectly* with the left; but with both eyes, while looking in the same direction, I appear double. He almost always sees double when moving about indoors or outdoors; but never sees double when he reads. Sometimes the side of a house, or a wall, does not seem to be one-third of its proper distance. His sight is very good, for he reads the smallest print with facility. Both pupils are contracted to the size of large pins' heads. His smell, taste, and hearing, are perfect.

CASE II.—The second case was a man named Hurst, 45 years of age, and by trade a draper. He was married, and had two children. Four

years ago, he had a heavy fall on his back, from which he felt no immediate effects. About five months after, however, he began to complain of weakness in his legs, but his manner of walking was not then altered. The weakness gradually increased, until he was wholly unable to walk, or even stand. After a time, however, he got much better, and regained the power of walking. He never had any pains either in his arms or legs, and was never affected with strabismus or amblyopia. When I first saw him, although he had regained the use of his legs, he was unable to walk without the support of a person's arm or of two sticks. His legs were rather numb, but he could feel that he was walking on hard ground. He had some weakness of the arms, and slight numbness of the finger-ends. His hands always felt numb when he awoke in the morning; but the movements of his hands and fingers were not much affected, and he could button his clothes without much difficulty. He complained of a heavy pain at the back of his neck, and extending round the back of his head. There was total loss of sexual power and desire from the commencement of his illness. He had frequent incontinence of urine, and sometimes of faeces. In walking, the movements of his legs had the peculiar prancing and spasmodic or jerking character that belongs to the advanced stages of locomotor ataxy. The patient died rather suddenly of inflammation of the lungs.

Post Mortem Examination.—On opening the head, some fluid was found on the surface of the brain: the arachnoid was thick and opaque in certain parts, with effusion of lymph beneath it. Some of the superficial veins were very full of blood. There was some atrophy of nearly all the convolutions, and the grey substance was of a slate-colour. With these exceptions, all parts of the brain-substance presented their usual appearance.

There was a large quantity of fluid in the thorax pressing on the lungs, which, in some places, contained tubercles of different sizes, and had evidently been recently inflamed. There were extensive adhesions of the pleura. The heart was rather large, with a considerable quantity of fat on its surface. The ventricular walls were thin, but not otherwise unhealthy. The tricuspid valves were atheromatous, but not sufficiently so to impede their proper action. The semilunar valves were healthy. The liver was rather uneven on its surface, and somewhat nutmeggy. The kidneys were healthy. The pia mater and arachnoid membranes of the spinal cord were thickened and adherent to each other; the former was much congested. The posterior columns, through the whole length of the cord, had undergone, to a considerable extent, the grey degeneration and disintegration peculiar to locomotor ataxy. But, besides this alteration of the posterior columns, the grey substance was in every region more or less softened and damaged by disintegration, but particularly in the lower dorsal and lumbar regions, about the centre of each lateral half and around the

Fig. 1.

canal. Fig. 1 represents a transverse section of the upper part of the lumbar enlargement. The posterior columns, from *a a* backward to the surface, had lost a large proportion of their nerve-fibres, and were much more transparent than the rest. In the centre of the section was a large, irregular, and transparent area of granular disintegration, represented black in the figure. It extended from the middle of each lateral half of the grey substance (*b, b*), between the anterior and posterior cornua, across the deep strata of the posterior columns. Other small and irregular patches were scattered around the central canal *c*.

This case is one of exceeding interest; for the symptoms are such as might easily lead to a doubtful or erroneous diagnosis, while the real

* Continued from page 4 of number for July 3rd.