form a radical curative operation by excising the whole segment of the urethra involved by the contracting process, and to bring together and suture the normal-calibred healthy ends which are left, just as is now done in enterectomy for stricture followed by end-to-end union of the bowel. This procedure was carried out without difficulty, and with the best results in the following case.

W. G., gasfitter, aged 52, had suffered from a tight stricture for many years. About 20 years ago he underwent external urethrotomy in the Wolverhampton and Staffordshire General Hospital, and had subsequently passed catheters himself. On May 18th, 1898, he was again admitted to the hospital, having passed no urine by the urethra for 48 hours, but two pints had been drawn off by suprapubic puncture the previous day, after which the state of his tongue and pulse had improved. On admission his pulse was good, and general condition pretty fair. The finest urethra instruments, both soft and metallic, were tried, but could not be made to even enter the stricture, which began abruptly at the bulbous portion. Under ether a median incision was made from the root of the scrotum nearly to the anus, and the bulb exposed after splitting and drawing to each side the bulbo-cavernosus muscle. The stricture could then be easily felt between the finger and thumb, as a hard gristly mass about half an inch in length. The urethra was now separated from its attachment on each side, and traced back between the layers of the triangular ligament. As the membranous portion was considerably dilated and thickened behind the stricture it was easily isolated and followed back. Rather smart hæmorrhage was controlled by forceps. It was now easy to make a small longitudinal cut into the membranous urethra immediately behind the stricture, and through this a soft rubber catheter, No. 8 English size, passed at once into the bladder, and evacuated over a pint of fairly clear urine.

A second opening was now made into the urethra just in front of the stricture, and attempts were made to pass a fine probe through the stricture, but although the strictured portion was held between the finger and thumb while this was being done, it was quite impossible to find any passage. The contracted part of the urethra and about a quarter of an inch of healthy urethra at each end of it was now dissected off the triangular ligament and bodily excised with scissors, the hinder cut passing through the longitudinal cut in the membranous part. The soft catheter was then passed through the whole urethra into the bladder, and the divided ends accurately brought together by about six silkworm gut sutures, the first passing through all the coats of each end in the median dorsal line and being cut short; the remaining sutures were passed through the fibrous and spongy coats, without including the mucous membrane, and the ends were left long and brought out through the perineal wound. The bulbo-cavernosus muscle was sutured, but the skin left partly open. A Cathcart's exhausting apparatus was rigged up by the patient's bedside and attached to the end of the rubber catheter. By this means not a drop of urine escaped through the perineum for ten days, when the catheter was left out, and the patient taught to pass it himself every time he wished to relieve himself.

Convalescence was uninterrupted and free from pyrexia. The sutures gradually came away, but some only after several months, when the wound had healed all but a small sinus. A single suture still remains and keeps open a small sinus, but gives rise to no trouble, and there has never been any leakage of urine. The remaining suture is probably that which was first inserted, and cut short inside the urethra; and in any future case it would be wiser to leave all the ends long. The most satisfactory feature of the case is the complete absence of any stricture. Although there has been no passage of dilating instruments since the operation, at the present date—over twelve months since the operation—a full-sized urethral sound passes into the bladder with perfect ease.

The segment of urethra removed was preserved and exhibited. Allowing for shrinkage due to the preservative fluid, it consists of nearly an inch of the urethra at the junction of the bulbous and membranous parts. Even with the specimen in the hand, it is only with difficulty that a fine probe can be passed through the dense fibrous mass which represents what should be a tube of nearly a-quarter inch calibre.

Admitting the superiority of this operation over that of Wheelhouse or any other mode of external or internal urethrotomy, is it always practicable? I am inclined to think that there are few cases of single stricture which cannot be treated in this way, but multiple strictures situated at some distance from each other are obviously unsuited to this treatment, and the same may be said of cases in which the strictured portion of the urethral tube exceeds 2 inches in length. Such cases are, however, rare. When multiple strictures exist the actual obstruction is always at the most posterior one, which seldom involves the membranous part, or at any rate more than the anterior half inch of the latter. The membranous part is fixed by the triangular ligament, and cannot be mobilised or stretched except to a slight extent; but any part of the urethra anterior to the triangular ligament can be freed from its attachments and carried backwards sufficiently to close a gap of at least 2 inches or even more.

Even if excision of the urethra be found impracticable, it is better to seek the urethra behind the stricture by deliberate dissection and tracing back of the unopened urethral tube (a sufficiently large and recognisable anatomical structure) rather than by following a probe or sound passed through what may be, and often is, a false passage, or by trusting simply to the direction of the knife, as in Cock's operation. It is very desirable to have the whole length of the stricture and part of the urethra behind it accurately

exposed before traversing or dealing with the stricture itself. In the case related above a soft rubber catheter was passed with ease from the perineum into the bladder without any guide but moderately good eyesight and an elementary knowledge of anatomy.

NOTE ON A CASE OF OBLITERATION OF THE MALE URETHRA.

By RICHARD H. KENNAN, M.D.DUB.,

Assistant Surgeon, Sir Patrick Dun's Hospital, Dublin; late Resident Medical Officer, Park Hill City Hospital, Liverpool.

"OBLITERATION," Sir Henry Thompson says in his work on *Stricture*, "is a different condition occasioned by different causes to that of stricture, usually, indeed, by some severe traumatic lesion. It is not common, but it is not so rare as some writers seem to have supposed who have quoted single cases by Chopart, and another by Cruveilhier, to illustrate the observation." And again he observes: "But you may have complete obliteration of the urethra, which, as before said, is not stricture. This is a very unusual condition, but it occasionally happens, and chiefly after injury in the perineum, as by perforation or severe bruise, or any wound dividing or lacerating the urethra. If the opening remains pervious, and gives exit to all the urine, a cicatrix may follow, sealing the anterior opening of the divided urethra, and obliterating the canal for a short distance in front of the fistula." This very clearly indicates the distinction which is to be drawn between the so-called impassable or impermeable strictures and the condition of obliteration.

Liston's opinion on the subject of "impermeable" stricture is too well known to need repetition. He seems to me to assume that complete obliteration results only from traumatism. As has already been stated, before obliteration can take place a fistula must have been established; nevertheless, fistulae may exist for long without the urethra becoming completely obliterated. A case is quoted by Sir H. Thompson in which no urine had passed "for years" except by numerous fistulae, yet in which the obliteration of the urethra was not complete. Erichsen cites that of a man with a very tight stricture and extravasation, on whom no catheter had been passed for eight years, and yet at the *post-mortem* examination a very minute urethral canal was found.

I use these cases to illustrate the point that the urethra stoutly and for long resists obliteration rather than to show the extent to which its resistance may be overcome, which would appear to have been the principal object of the authors.

The patient, J. W., aged 48 years, from whom I obtained the genital organs represented in the sketch, was admitted to the Park Hill Hospital, Liverpool, on December 26th, 1897, suffering from dysentery.

Condition on Admission.—He was a sailor on a steamer trading with the Southern States, and was accompanied by three shipmates all "in the same boat" as regards the dysentery. He was received in the afternoon. He made no complaint of trouble or difficulty in micturition. The day following his admission I was told that no specimen of urine could be got from him; that he was passing his water in bed. On examining him I found his penis was cedematous and swollen; there was brawny infiltration of the perineum, and on the left side of the penis an inflamed area with a dark centre, which had given way and was oozing. He said he had suffered for many years, and had been treated for stricture the result of gonorrhoea. There were some scars in the perineum, but he denied ever having had fistula, or any operation performed on him. He stated that while leaving the ship he slipped, and though he did not fall, felt a severe pain in the perineum. No instrument could be passed. The dark slough increased rapidly, and the amount of oozing increased, while factor became marked.

Operation.—The same afternoon an incision was made in the middle line of the perineum. A sound passed down to the stricture was made protrude through the perineal wound. The proximal portion of the urethra could not be found, the difficulty of its identification being aggravated by the condition of the tissues, and by the fact of its being no longer distended. Several incisions were then made on both sides of the first, and the patient was put back to bed. He expressed himself as much relieved.

Death.—The combination of dysentery with urinary extravasation was, however, too great a strain on his vital forces, and he died on January 9th, 1898.

On removing the lower urinary tract I was able to pass a catheter down to the stricture and out through the opening which had been made at the operation, and with some difficulty to pass another through the proximal portion of the urethra from the bladder out through the rupture. Anxious to see what the lumen of the urethra was like at the stricture, I cut the corpus spongiosum across in front of the proximal

rupture in the urethra and also behind the distal end of the stricture. I was unable to trace any sign of a canal on the surface of the sections.

Dr. Earl, to whom I sent the piece, very kindly examined it for me, making sections from the middle and both ends. The normal tissue of the corpus spongiosum was found to have been completely replaced by fibrous tissue. Dr. Earl was unable to do more than suggest a possible site for the location of the absent canal, so completely had traces of it disappeared.

It was very difficult to get details and a history from the patient. His statements were sometimes contradictory and impossible of belief. It is hard to believe that during the interval between the time at which extravasation and the establishment of the fistula took place and death—that is, about sixteen days—would have been sufficient to allow of the changes which led to such complete obliteration of the

urethra and disappearance of its constituents at the site of stricture. It would appear much more probable—the patient's statement to the contrary notwithstanding—that one of the scars observed in the perineum represented the obliterated remains of a fistula which had been open for a considerable time, during which these changes occurred, and that before admission this fistula became blocked, leading to a second extravasation. The orifices of a perineal fistula, it is well known, are frequently so minute as to be difficult of discovery, the time between the occurrence of the recent extravasation and death allowing for the final obliteration of the original fistula. This seems to be a solution of the difficulty "in the line of least resistance." It is not one against which objection cannot be raised.

[For permission to use the notes on this case I am indebted to the kindness of Dr. N. Roberts, Visiting Physician to the Park Hill City Hospital, Liverpool.]

HARVARD MEDICAL SCHOOL.—The late Dr. Calvin Ellis, some time Dean of the Harvard Medical School, has bequeathed his estate, amounting to about £80,000, for the advancement of the department of anatomy, physiology, and pathology in the school.

EXTRACTION OF LIGATURES FROM THE BLADDER.

By MURRAY MACLAREN, M.D., M.R.C.S.,
St. John, New Brunswick.

MRS. J. A., aged 24, was operated on by me for pyosalpinx on November 6th, 1895. There was a history of attacks of pelvic inflammation for several years. The mass, which was considerable in size and consisted of abscess of the right Fallopian tube and ovary, could not be raised up from the pelvis; numerous ligatures of silk, therefore, were required to be applied across the broad ligament. Recovery from the operation was prompt and satisfactory. The temperature on the evening of the day of operation reached 100.2° F., but after that, up to the time of leaving hospital on November 28th, 1895, it was normal, with a pulse of about 73.

In July, 1897, one year and eight months after operation, symptoms of cystitis appeared. There was pus in the urine with frequent and painful micturition. A cystoscopic examination detected merely some vascular injection of the bladder wall.

On August 10th, 1897, a silk ligature was passed by the urethra. The knot was encrusted with calcareous salts. On November 20th a red swelling was observed by the cystoscope on the right side of the bladder wall. Across the centre of the swelling was a greyish mass, having the appearance of a slough. It was somewhat movable, but moderate traction with forceps did not detach the mass, although it separated some of the calcareous coating (Fig. a). The ligature with encrusted

a November 20th, 1897, calcareous deposit on knot of ligature. b November 27th, 1897, calcareous deposit on knot of ligature. c December 21st, ligature. d January 6th, 1898, no ligature.

e January 21st, prominent granulation in depression. f February 25th, ligature. g March 3rd, ligature. h March 19th, no ligature.

knot was passed by the urethra on November 25th; it was being protruded through the bladder wall when seen on November 20th.

On November 27th another ligature was found to occupy about the same position (Fig. b), and was pulled out with forceps. The knot was somewhat encrusted. On December 21st a further ligature was seen (Fig. c) and removed. Fig. d shows the red swelling as seen on January 6th, 1898. No ligature was then evident. On January 21st the swelling had largely subsided, leaving a prominent granulation situated in a depression (Fig. e).

On February 25th (Fig. f) and March 3rd (Fig. g) further ligatures were removed. The last three specimens showed hardly any calcareous deposit. Fig. h shows the appearances on March 19th, when no ligature was present. The forceps used in extracting the ligature were Turck's laryngeal forceps.

It will be observed that in the case of the earlier ligatures there was a distinct swelling about the point of exit, and that later after passage of several ligatures (which were the largest) the swelling was followed by a depression with a prominent granulation in the centre, from which the remaining ligatures were protruded.