OBSERVATIONS ON SUPRAPUBIC LITHOTOMY.

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MR. PRESIDENT AND GENTLEMEN,—I owe the Society an apology for addressing it upon a subject of which I have but a limited personal experience. When your President, however, invited me, I willingly promised to do my best to present some considerations of general interest in this important matter. I desire to invite discussion on the present position of the high operation for stone, and the place it is likely to occupy in the future as a recognised surgical procedure.

Suprapubic lithotomy is an operation comparatively rarely performed. Gunther, from 1561 to 1851—a period of nearly 300 years—could only discover 260 cases of the high operation. My first experience of the operation made a strong impression upon me. In July, 1886, I removed a mulberry calculus from the bladder of a boy of seven by this plan. The operation was performed with antiseptic precautions, and was accomplished with great ease. The wound in the bladder, the divided aponeurosis, and the edges of the skin were afterwards successively and separately sutured with catgut. The boy may be said to have experienced no discomfort afterwards; one might, indeed, say that he enjoyed the greatest comfort, having been previously much distressed by the stone. The wound united by first intention. A catheter was introduced on one occasion only, and within one week the child was running about the ward perfectly well. (*Lancet*, 1886, vol. ii, p. 582.) A simpler, safer, and more satisfactory issue to an operation than this was, it would be impossible to find; and, could such results be generally realised, the suprapubic operation would speedily supplant every other for the removal of vesical calculus.

Historical.—The high operation for stone, recently revived in this country, is a very old method of dealing with the disease. As the route to the bladder above the pubes is the shortest and most direct, it must have occurred to surgeons to undertake it from a very early period. Nevertheless, Chelius and others consider Pierre Franco as having been the first to perform it in 1561.

Cheselden (*A Treatise on the High Operation*, 1723) was one of the first to practise it in England, and he has left an interesting account of the revival and disuse in his time of the high operation. Frère Côme, in 1779, strongly advocated it, and had a large and fortunate experience. In the last century and the early part of this, many treatises appeared, advocating the merits of the "new" operation; but it was soon displaced by the lateral method, and finally restricted to cases where the great size of the stone prevents its extraction through the lower outlet of the pelvis.

The past history of suprapubic lithotomy illustrates how new operations obtain for a time great vogue, and then fall into disfavour. Recently, Bigelow's rapid method of crushing and evacuating stone, put cutting operations for a time to one side. The antiseptic method brought them again to the front. Since Braune, Garson, and Petersen have shown the way to protect the peritoneum from injury, the high operation has been again revived and proposed, not only for large but for small stones, so that to some it would seem the only good operation. The first consideration in deciding between the high operation and perineal lithotomy is the relative danger to life, the second to ascertain by which method the removal of the calculus is best accomplished.

The technique of the operation has been much improved. Formerly the *sonde à dard* of Belmas (Fig. 2) was introduced to lift up and afterwards perforate the front wall of the bladder, and on this as a guide it was incised. Few operators would employ this instrument now; it is supplanted by the preliminary distension of the bladder and rectum.

Even so early as 1685, Rousset, in place of using the sound, injected the bladder with some mild injection, to elevate it above the pubes, and Douglas, Cheselden, and Morand, all advised moderate injection of the bladder. They deprecated excessive distension as always very painful and often impossible.

Franco advised the stone to be pushed forward with the finger in

roduced into the rectum. Blunt hooks and a special gorget (Fig. 1) were used for holding the bladder up after being opened, but the forefinger of the left hand is preferable to any form of instrument. In order to afford additional space, transverse incisions were sometimes practised in the deeper structures, either the aponeurosis or the muscles; but these are rarely needful, and they predispose to the occurrence of hernial protrusion through the cicatrix. In no case was an attempt ever made to close the vesical wound; charpie or unravelled linen was passed from the external surface to the bottom of the bladder, and the dressings renewed three or more times a day.

Fig. 1.—Retractor to hold up the superior angle of the wound in the bladder.

Various ingenious but wholly inadequate means were adopted with a view to guard against infiltration of urine, which, next to wounding the peritoneum, was properly regarded as the chief source of danger. Belmas held that the median wound should be carried as far down as the root of the penis, to obviate the chances of extravasation, which of course it had no effect in preventing.

For the purpose of better draining the urine, Pallucci thrust a trocar from within the bladder outwards, near its neck, so that there might be an opening in the perineum by the side of the anus, into which a cannula was inserted.

Civiale injected the bladder, but did not distend the rectum. The *sonde à dard* (Fig. 2) having been introduced, he made an exactly median incision, three or more inches in length, terminating just above the pubes. After exposing the aponeurosis, the linea alba was incised by the aponeurotome (Fig. 3) and the recti muscles separated. The extremity of the sound was now made to project in the wound, and the dart or stylet protruded through the bladder wall, the wound in it being subsequently enlarged by a knife passed along the groove in the stylet. The forefinger was then introduced into the upper angle of the bladder to hook it up, or the hooked gorget was introduced for this purpose, and also to protect the peritoneum.

Modern Method.—In the operation as now performed, the pubes should first be shaved, the surface disinfected, and strict antiseptic precautions taken throughout. Sir Henry Thompson does not, however, attach paramount importance to these. The rectum should be distended by means of an india-rubber bag. This is of various shapes; I prefer an elongated sausage-form, which resembles in shape the distended rectum. Ten to twelve ounces of fluid is a proper average quantity to inject, and the bladder is to be emptied of urine, washed out, and moderately distended with boric solution—6, 8, or 10 ounces, according to the capacity of the viscus. The quantity injected should in a measure be determined by the resistance offered. The bladder will then project as a tense, rounded tumour, easily felt above the pubes.

It is recommended to elevate the pelvis, it is said, and that the operator should stand on the left side of the patient; but this is inconvenient, nor does it possess advantages over the ordinary position, where the operator stands on the right. It is safer, in point of fact, to cut from above downwards than in the converse direction, and the left hand will be better placed to control the wound, both in the superficial parts and in the bladder.

Fig. 2.—The *Sonde à dard* of Belmas.

verse direction, and the left hand will be better placed to control the wound, both in the superficial parts and in the bladder.

The incision must be precisely median, two to four inches in length, according to the age and fatness of the patient, and should terminate just over the upper margin of the pubes. When the subcutaneous fat has been cut through, the linea alba is exposed and afterwards divided throughout the length of the external wound. There is no difficulty in incising the linea alba without risk to the peritoneum; it is constantly done in all cases of abdominal section. The line of junction of the recti muscles should be sought for, and the muscles separated and retracted. The transversalis fascia is now exposed; make a small opening in it near its lowest part, and introduce a Key's director, on which the fascia may be divided with perfect safety. The subperitoneal fat bulges forward in greater or less abundance, and the bladder may be felt as an elastic tumour filling the bottom of the wound, covered by areolar tissue containing a variable quantity of fat, according to the thinness or fat condition of the patient. This may be divided with the knife or separated with a blunt instrument. In the former method, several veins may be divided; they are often abundant in this situation, and usually run in a vertical direction; but they can be secured without difficulty. If the fat be merely pushed aside, the bladder-wall may be insufficiently exposed, and when the fatty tissue is abundant it will lie at the bottom of a considerable hole. The fat must also be bruised, and hence becomes more prone to septic influences and to infiltration, when it has been thus pulled about. While incising this layer of fat, the left forefinger may be introduced into the upper angle of the wound; the peritoneal fold is thus pushed upwards, and all risk of injury to it avoided. But in point of fact it does not usually come within the field of operation at all. When the bladder surface is exposed, it is easily recognised by the arrangement of the muscular fibres. Care should be taken to avoid disturbing the loose cellular tissue between the pubes and the bladder, as by doing so the risk of infiltration of urine is considerably increased, as also of suppuration at a later stage. Two loops of thread should next be passed through the muscular coat of the bladder near the upper portion of its exposed surface, and retractors being used to hold apart the edges of the external wound, the scalpel may be plunged briskly in at right angles to the surface, its edge directed downwards, and an incision made of the required length, long enough to permit the easy extraction of the stone without force, and if possible without bruising the margins of the wound, nor should the wound in the bladder be forcibly dilated or torn with the finger, as this will interfere with its subsequent closure. On making the incision, fluid escapes, the bladder collapses, and would sink down into the pelvis, were it not held up by the loops of thread, which also serve to keep the margins of the incision well apart. These, however, must not be strongly pulled upon, for the bladder may be thus incised too near the neck, or the threads may be torn out. If preferred, two tenacula, or even one sharp hook, can be employed instead.

When the bladder is emptied, the prevesical fold of peritoneum, previously invisible, often presents in the upper angle of the external wound, and, were care not taken, might inadvertently be injured.

It is usually easy to extract the stone with a short lithotomy forceps, selected according to the size of the calculus to be removed. The interior of the bladder may then be readily examined with the finger, or inspected to see that all foreign bodies are removed. The edges of the bladder-wound should now be examined, any bleeding points tied, and the cavity washed out with 3 per cent. boric acid solution.

The after-treatment of the incision in the bladder is very important. Primary antiseptic suture may be adopted, with or without a permanent catheter in the urethra, or drainage effected through the bladder-wound or urethra, or both, or the wound left open without drainage. These points are all open to further consideration.

In young persons, those in whom the urine is healthy, and the bladder-wall also healthy, an attempt should be made, I think, to procure immediate union. This will be best done by inserting interrupted sutures of fine carbolised silk through the muscular coats, not penetrating the mucous lining, after Lambert's method. It is important that these stitches should be numerous and sufficiently near each other thoroughly to close the wound.

The object of vesical suture is two-fold. We desire, by a hermetic closure of the bladder, to exclude urine from the external wound, and thus shut out one source of septic poisoning; and, secondly, to shorten the duration of treatment by the immediate union of the abdominal wound. Suturing the bladder is difficult, especially in children, on account of the thinness of the bladder-wall and the limited extent of the external wound, and it prolongs the operation. During the introduction of sutures, all undue pulling upon the bladder must be avoided. The number must be considerable; for although the sutures may appear close enough in a collapsed bladder, they become separated on its distension, and leakage will occur. A careful trial by injection should,

therefore, take place to make sure that the bladder is watertight; if any leakage occur, additional sutures should be inserted. The common practice in the adult is to retain a permanent catheter in the bladder for a week or longer; but the disadvantages of this proceeding are obvious, and its benefits doubtful, if the suture be perfect. I think the necessity for continuous drainage of the bladder has been over-estimated; probably the patient will urinate quite well without the use of the catheter, or, if necessary, a catheter may be passed from time to time. A catheter *à demeure*, and, still less, a perineal puncture, as formerly recommended, are seldom needful. In children who are restless, and strain so much as often to eject the catheter, it is difficult or impossible to retain it, besides the instrument gets blocked from its small size or from clots; for these reasons, many regard it as better practice never to sew up the bladder-wound. If sutures be introduced, the edges of the external incision can be afterwards united in the usual manner by interrupted suture, and a short drainage-tube introduced, so as to emerge at the upper angle of the wound, thus affording a position where it will be better protected by the antiseptic dressing. This should be applied so as to cover the lower part of the abdomen, the groins, and genital organs, leaving an aperture for the penis. In other cases, the wound is simply left open, or a drainage-tube introduced.

The most recent and detailed account of the treatment of stone in children is by Schmitz (*Langenbeck's Archiv*, vol. xxxiii, 1886), who records the experience of the Prince Peter Oldenburg Children's Hospital in St. Petersburg from 1870 to 1885. During this period, there were 98 cases of calculus, of which 91 were boys and 7 girls. Twelve were not operated upon. Of 86 submitted to treatment, the high operation was selected in 38 cases, the median in 15, the lateral in 13, lithotomy in 18, urethrotomy in 11. Schmitz has collected 57 cases of suture of the bladder; 47 recovered, 8 died; mortality 14.8 per cent. In adults, there were 25 cases, with 6 deaths; mortality 24 per cent. In children 30, with 2 deaths; mortality 6.7. The bladder wound healed by first intention in 17 cases, of which 4 were adults and 13 children. The permanent catheter was used 23 times; 8 times the wound united by first intention, 15 times the wound did not thus heal. In 13 cases a catheter was not employed, and of these only 3 united by first intention. In 20 cases silk suture was used; 10 of these healed by first intention. Twenty-three times catgut was employed, with only 4 successful results. In 10 of the 17 cases in which union by first intention occurred, the mucous membrane was not included in the suture; in 2 cases it was included, and in 5 it is not stated whether it was included or not. When the sutures gave way, this happened generally on the fourth day. By this time the danger of infiltration is mainly over, so that even in cases where suture failed to procure immediate union, it was otherwise advantageous.

Bergmann sutures the bladder wound, but prefers not to close the external wound for two days. He fills it with iodoform gauze, and in this way considers suppuration is avoided.

In about two-thirds of the recorded cases of suture of the bladder, the wound re-opened. In the remaining third, it united by first intention.

It has been asked, why should an operation have been abandoned which, when successful, furnishes an ideal result, rapid, complete recovery without any ill consequence? The two chief objections are the possible injury to the peritoneum, and the danger of infiltration. Dulles mentions thirteen cases of injury to the peritoneum in his 478 collected cases. Schmitz observed two cases of wound of the peritoneum, caused indirectly during the extraction of a large stone. In regard to infiltration, urine, when fresh and unchanged, no doubt causes no damage to a wound; but altered urine produces superficial necrosis of the tissues, and septic processes with general infection may follow. Infection is generally associated with decomposition in the urine, but infection of the wound may also come from without. Blood, too, is apt to collect in the loose cellular tissue, or urine may escape from an imperfectly closed bladder into the external wound, and septic changes, when they occur, take place in close proximity to the peritoneum.

Before operation Schmitz prescribes a strict milk diet for two or three days, and in cases of cystitis, benzoic acid is given internally. On the day before the operation he administers castor oil, and the next morning an enema, followed by a few drops of tincture of opium. Under an anæsthetic, the bladder is several times washed out with warm 3 per cent. boric solution, and then filled with the solution until the vertex reaches half way between the pubes and the umbilicus, as may be ascertained by percussion and palpation. The quantity required varies with the age of the child. Schmitz has never found it necessary to use Petersen's rectal tampon. The length of the external incision varies, of course, according to the size of the stone.

The linea alba having been exposed, is divided with a free hand, the recti muscles separated, avoiding, if possible, opening their sheath. The pre-vesical fat is now reached, and a blunthook is introduced into the upper angle of the wound, which is drawn strongly upwards. If the peritoneal reflection be within the area of the wound, it will then become plainly visible as a transverse line, and can be pushed upwards out of harm's way. Generally it is not seen. The pre-vesical fat must be now divided. It is often in great quantity, and may have to be carefully cut through before the position of the peritoneal reflection is discovered. In accordance with Rousset's advice, Schmitz insists that all rough manipulation of the cellular tissue between the bladder and symphysis must be absolutely avoided, as in this way the door is opened to urinary infiltration. The division of the pre-vesical cellular tissue may be best effected by cutting it carefully between two pairs of rat-toothed forceps; all bleeding points are at the same time carefully seized and secured before the bladder is opened. The bleeding is sometimes embarrassing. In nine of thirty-eight operations, the primary hæmorrhage was considerable, and in four cases severe secondary bleeding occurred. Hæmorrhage may be prevented to a large extent by not incising the bladder too low down behind the symphysis, or approaching the neck of the bladder, where the vessels are large and numerous. Even when the loss of blood is

over, it will then remain quite still. Carbolised sponges are applied to collect the fluid, and changed every two or three hours, and the bladder is frequently washed out with boric solution. The drainage-tubes are removed on the fourth or fifth day. At the end of a week the prone position may be given up; urine begins to flow from the urethra at the end of the first or during the second week, sometimes as early as the second day. The wound in the bladder definitively closes the second, third, or fourth week, and the external wound in the course of the fifth week.

Much variety of opinion prevails as to the value and importance of rectal distension. Garson (*Edinburgh Journal*, October, 1878) first described the influence of rectal tamponade in raising the pre-vesical fold of peritoneum.

Two years later Petersen published his experiments (*Trans. German Surgical Society*, 1880). He comes to the same conclusions as Garson, although not aware, apparently, of his paper.

Bergmann caused experiments to be made by Mannheim on the bodies of children from 2 to 8 years of age; and Fehleisen (*Langenbeck's Archiv*, vol. xxxiv) has done the same in adults, by means of frozen sections.

Barwell (*Trans. Med. Chir. Soc.*, 1886) contends that distension of the rectum causes no notable elevation of the anterior vesical reflec-

Fig. 4.—Bladder moderately full, containing 300 cub. cent., or 10½ fl. oz. Rectum empty. *a.* Position of the reflection of the peritoneum from the anterior wall of the bladder. *b.* Line of reflection of the peritoneum on the posterior wall. The dotted lines indicate the position of the urethra so far as it is not included in the section.

slight, it is important to prevent it filling the meshes of the pre-vesical cellular tissue. When this occurrence takes place, and the presence of urine is added, it is easy to understand how readily septic changes may take place. Means are taken to prevent sinking of the bladder-wall into the pelvis, not merely to facilitate the extraction of the stone, but also to aid in an examination of the interior of the bladder, in the arrest of bleeding, and in the subsequent suturing of the wound. If allowed to sink downwards, considerable damage may be done to the soft parts in drawing it up again. If not drawn up, the bladder may be pushed before the finger, the opening in it missed, and the bladder-wall separated from the pubes. Schmitz never sutured the bladder. He regards the abdominal position as recommended by Trendelenburg in 1877, as a good one to secure efficient drainage. If the child be restrained till the effects of chloroform are

Fig. 5.—Bladder contains 200 cub. cent. Rectum distended with 480 cub. cent., or 16½ ounces of fluid. *a.* Anterior reflection. *b.* Posterior reflection. *c.* Distended rectum.

tion of the peritoneum; never more, he says, than a quarter of an inch, and oftener an eighth of an inch. In my own experiments, this was only true when the bladder was empty; and Fehleisen's investigations, mentioned further on, seem conclusive on this point. It should be recollected that in fat persons the uncovered part of the bladder is much greater than the average, and less distension is required, while in old and thin persons the contrary obtains. In fourteen suprapubic operations on the dead body, the bladder and rectum being distended, and in nine on the living, Petersen never saw the peritoneal reflection exposed, and therefore it was never injured. In the cases which I have seen, the peritoneum was not exposed.

Trendelenburg, on the other hand, disregards the rectal tampon, and states that a moderate distension of the bladder renders the peritoneum absolutely safe. Schmitz also found it unnecessary to distend the rectum; but all his operations were performed on children.

Fehleisen's investigations completely verify Garson's original ex-

periments, and appear conclusive as to the matter in dispute. He has published (*Trans. German Surg. Assoc.*, 1884) the results of several careful experiments made by means of frozen sections in adults. I have reproduced his interesting plates, which were obtained by means of direct tracings on the frozen surface of the section, and have converted the decimals into English measure.

Figs. 4 and 5 show the influence of the empty and the distended rectum on a moderately full bladder. In Fig. 4 the rectum is quite empty; the bladder contains 10½ ounces of fluid; it is rounded. The internal meatus is 1 centimetre higher than the lower border of the symphysis and 4 centimetres behind it. The fundus is almost horizontal, and the lowest point of Douglas's pouch, *b*, about the same level, while the pre-vesical fold of peritoneum, *a*, is only half a centimetre above the superior border of the symphysis.

In Fig. 5 the bladder contains 7 ounces of fluid, and the rectum about 16½ ounces, injected into a cylindrical tampon, which is better adapted for its purpose than the pear-shaped one. The bladder has lost its rounded form, and is somewhat pentagonal. The internal meatus is 4 centimetres (1½ inches) above the inferior border of the symphysis, and about 1 centimetre behind it. The bladder is close behind the abdominal wall, and the anterior fold of peritoneum *a* is also 4 centimetres above the border of the symphysis.

Fig. 6 shows how little the anterior fold of the peritoneum is

Fig. 6.—Bladder distended with 630 cub. cent., 22½ ounces of fluid. Rectum empty. *a*. Anterior reflection. *b*. Posterior reflection.

affected by a large distension of the bladder, the rectum being empty. About 22½ ounces have been injected into the bladder—as much fluid as was contained in the previous case in bladder and rectum together. The bladder is spherical, and the anterior peritoneal reflection is only 2 centimetres (about ¾ inch) distant from the pubes. This preparation shows that the bladder under these circumstances is distended backwards rather than upwards; the internal meatus remains on a level with the lower part of the symphysis, and the prostatic urethra is nearly horizontal.

Fig. 7 shows the effect of the combined distension of bladder and rectum. The former contains 14½ ounces of fluid; the latter, 17½ ounces. The distance of the anterior fold of peritoneum from the upper border of the symphysis amounts to 8½ centimetres, or 3½ inches. The form of the bladder is irregular, but the lateral pockets of Petersen were not formed. The fundus is more elevated than in Fig. 5. The internal meatus is 1 centimetre behind the symphysis,

and 2½ centimetres (1 inch) above its inferior border. The prostatic urethra is vertical. No section was obtained of an empty bladder and distended rectum. In Fig. 6, with a maximum distension of the bladder of about 22 ounces, the peritoneum has been raised only 2 centimetres above the upper border of the symphysis. Under pathological conditions, so much fluid could never be safely injected. So that in adults, at all events, dilatation of the bladder alone will not suffice to give adequate space for operative procedures. The same conclusion obtains if the bladder be empty and the rectum only distended. It is clearly needful, therefore, to distend both, and we have to determine what is the best method of doing so. Fehleisen thinks the rectal tampon should extend as high as the promontory of the sacrum. Into this he injects 14 to 17 ounces of water, a quantity sufficient to fill the hollow of the sacrum. This presses the bladder and prostate as far upwards as possible; and, as shown in Fig. 5, a comparatively limited injection of 7 ounces of fluid into the bladder will suffice to give a free space of 4 centimetres. This is the converse of Petersen's procedure, who first injects the bladder, which renders the subsequent distension of the rectum more difficult. It is always preferable to distend the rectum with the larger quantity of fluid, and the bladder with the lesser. By the double distension the floor of the bladder and the prostate can be effectively raised out of the pelvis, as Figs. 5 and 7 demonstrate. In Petersen's cases the

Fig. 7.—Bladder distended with 420 cub. cent., 14½ ounces of fluid. The rectum contains 500 cub. cent., 17½ ounces of fluid.

average gain with a larger quantity of fluid in the bladder was 3.1 centimetres; while, with a lesser amount of fluid, Fig. 7 shows a gain of 8.5 centimetres. Tamponade of the rectum, therefore, when the bladder is at the same time moderately distended, excludes the chance of wounding the peritoneum.

In order to estimate the effect of distension of the bladder and rectum, alternately and combined, I made the following experiments on the dead body.

1. A very thin woman, aged 83. The bladder being empty, the anterior peritoneal reflection was found to be on the level of the upper margin of the symphysis pubis. Ten ounces of fluid were first injected into the bladder, which raised the peritoneal reflection less than ¼ inch. Fifteen ounces of fluid were then injected into the rectal bag, and this raised the peritoneal reflection 1 inch, and pushed the bladder well forward.

2. A young woman, aged 23, rather thin. The anterior reflection

is $\frac{1}{2}$ inch below upper border of the symphysis pubis. The rectal bag was first injected with 15 ounces of fluid; this produced no change whatever in the position of the peritoneal fold. Ten ounces of fluid were then injected into the bladder, which raised the reflection $\frac{3}{4}$ inch above the pubes.

3. A man, aged 40, of average habit of body. The reflection is $\frac{1}{4}$ inch below the upper margin of the symphysis pubis. The rectal bag was first injected with 15 ounces of fluid, but this produced no change in position of the peritoneum. On injecting 10 ounces of fluid into the bladder, the peritoneal reflection was elevated 2 inches above the symphysis. The fluid was now let out of the rectal bag, and the bladder sank downwards and backwards to the level of the pubes. On re-injecting 15 ounces into the rectal bag, the peritoneal reflection of the bladder again rose, this time to $1\frac{1}{2}$ inches above the level of the symphysis.

4. A very fat man, aged 43. The anterior reflection of the peritoneum was $1\frac{1}{2}$ inches above the level of the symphysis. The bladder was first injected with 10 ounces of fluid, which raised the reflection $1\frac{1}{2}$ inches more. On the rectal bag being injected with 15 ounces, the reflection was raised another inch, total 4 inches.

5. A very fat man, aged 39. There was a small quantity of urine in the bladder, and the reflection was ascertained to be 2 inches above the level of the pubes. Injecting the bladder with 10 ounces of fluid did not seem to raise the reflection, but distended the organ backwards. An injection of 15 ounces into the rectal bag then pushed the bladder forwards and upwards. The rectal bag was now emptied and an injection of 10 ounces more into the bladder merely pushed it further backwards. On now re-injecting 15 ounces into the rectal bag, the bladder being very full, 4 inches of its anterior surface were ascertained to be uncovered by peritoneum.

Summary.

No.	Quantity of Fluid in the Bladder.	Quantity in the Rectal Bag.	Elevation of Reflection.
1	10 ounces	15 ounces	1 inch
2	10 "	15 "	$\frac{3}{4}$ "
3	10 "	15 "	2 inches
4	10 "	15 "	4 "
5	10 "	15 "	4 "

In order to estimate accurately the effects produced, the exact position of the peritoneal reflection was first determined by means of the finger introduced through a small opening made halfway between the pubes and the umbilicus. After the distension was effected, the lower portion of the abdominal wall was divided in the middle line, and the bladder exposed. These trials left no doubt in my mind that when the bladder alone is distended the peritoneal reflection is somewhat but not sufficiently raised, the bladder being chiefly distended backwards, as Fehleisen describes. Distension of the rectum alone seemed in these five cases to produce no palpable effect on the vesical fold; and to obtain the maximum result, distension of both bladder and rectum seems necessary. The dilatation of the rectal bag is plainly seen to push the moderately distended bladder forwards and upwards against the abdominal parietes, its enlargement backwards and downwards being prevented, and the uncovered portion becomes visibly increased.

I was, unfortunately, not able to obtain any bodies of children. I am sure it is both unsafe and unnecessary to employ such considerable quantities of fluid to inject the bladder and rectum in the living subject, as in the experiments detailed have been commonly had recourse to on the dead body. In the five experiments I have quoted, the rectum seemed dangerously tense when the tampon was distended with 15 ounces. Something, too, depends on the shape of the bag; more fluid may be safely injected into a long cylindrical tampon than into the shorter pyriform one. In children, 3 to 4 ounces is a sufficient quantity to distend the rectal tampon with, and about the same quantity may be injected into the bladder. In adults, 10 to 12 ounces will, as a rule, be amply sufficient to distend the rectum, and 6 to 10 ounces may be injected into the bladder, according to the resistance experienced.

[To be continued.]

UNIVERSITY OF DURHAM AND ITS COLLEGE OF MEDICINE.—The Dean and Chapter of Durham, with the consent of the Bishop of Durham, have passed a statute, constituting the Professor of Medicine of the University of Durham an official member of the Senate of the University. At the same time, the College of Medicine, Newcastle-upon-Tyne, will retain the right of having a representative in the University Senate. The President of the College, Dr. Heath, was elected to this office at a meeting of the members of the College, held on February 23rd.

REMARKS

ON THE

DIGITAL EXPLORATION FOR TUMOURS OF THE BLADDER.¹

By SIR HENRY THOMPSON, F.R.C.S.,

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I HAVE just read with much interest the complete and elaborate *Note Communiquée au Congrès Français de Chirurgie sur le Diagnostic et le Traitement des Tumeurs de la Vessie*, par M. Le Professeur Guyon, and I must be permitted to observe at the outset how happy an illustration it affords of a truth which we may do well to remember sometimes, when brought into the region of controversy—for myself how unwillingly always I cannot express, since life is too short and too precious for controversy unless absolutely necessary—namely, that between men of large experience, whose work must be equally serious and honest, there is always less real difference than at first sight appears; and this difference is often intensified when two such *confrères* belong to different countries, express their thoughts in different languages, and have not the advantage of personal communications on the subject in question. It is then generally found, when the opportunity of explanation is afforded, that there is really much less disagreement than had been imagined, and that most of what has existed has been due to misapprehension.

The "note," which has for its subject the title above quoted, is, in fact, an endeavour to show that "digital exploration of the bladder" by way of the perineum, as proposed and practised by myself, is a proceeding rarely, if ever, applicable to the diagnosis and treatment of tumours of the bladder.

Now, having read it carefully, I find to my surprise, and, I will certainly add, to my gratification, that Professor Guyon and I have been occupied with two wholly different subjects. That which I have advised in respect of "digital exploration" has no reference whatever to the tumours of which he treats, and that which he has said concerning that little operation does not bear, or but very slightly so, on those cases for which I have applied it.

This I will now proceed to explain. At the close of his article, Professor Guyon states that he has operated on fifteen patients with tumour of the bladder, of whom no fewer than thirteen were the subjects of cancer or of epithelioma (p. 668). But, for cases manifestly cancerous, I have always refused to operate, or if I have done so, have merely opened the bladder to relieve pain, and provide easier exit for the urine, and have not reckoned it an operation; limiting that term to denote an operation which has for its object the removal of the tumour itself. I have emphatically stated, in my work on Tumours, p. 73, partially—only partially—translated into French, my objection to operating for cancer, repeating it on several occasions, notably at the Clinical Society in London only a month ago.

By choice and by intention, I operate only for "papilloma," the formerly so-called "villous" tumour—a light floating, often single, pedunculated but exceedingly vascular growth, much more common with us, as the cause of dangerous hæmorrhage, than cancer and epithelioma.

I now perceive why Professor Guyon lays so much stress on the value of the "toucher rectal." Naturally so; because, in the case of carcinoma, it furnishes indication which almost suffice to determine the nature of the disease. When by this means I have found induration and thickening of the coats of the bladder, showing that the morbid deposit has its seat in the walls themselves, I have never consented to operate, except with the very rare proviso above alluded to, for temporary relief. Of course, there is no occasion to make any digital exploration of the bladder, when one can ascertain by the "toucher rectal" that its coats are involved in a hardened or nodular deposit.

I have now operated on thirty-four patients for the removal of tumour, not including those for whom I have merely made an opening to give temporary relief. In every one of the thirty-four cases, the tumour has been examined by one or other of the most experienced pathologists in London, and every one forms a preparation in two or

¹ This article appears in French also in the *Annales des Maladies des Organes Génito-Urinaires*.