REMARKS

ON

ENCYSTED VESICAL CALCULI, WITH AN ACCOUNT OF TWENTY-SEVEN CASES.

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IN 1891¹ I published an account of 6 cases of encysted vesical calculi. Since that date I have had 13 other cases under my care, and, by the kindness of my colleagues at St. Bartholomew's, have been able to describe 8 other cases, most of which I had the good fortune to see during their stay in hospital, making a total of 27 cases in all to form the materials for this paper.

As I pointed out in my former paper, the ordinary symptoms that we are accustomed to associate with vesical calculus are frequently absent in such cases, and consequently the diseased condition assumes oftentimes considerable proportions before it is detected. A stone which is fixed does not, as a rule, give rise to hæmaturia, and the acute pain, which is generally a consequence of the stone becoming grasped by the neck of the bladder, is usually remarkable for its absence. It may further be added that in some cases the stones are so deeply embedded in the bladder wall as to elude the beak of the sound, and only proclaim their existence when an attack of cystitis has supervened.

A perusal of the accompanying clinical histories cannot fail to convince anyone of the anomalous symptoms that are often present in such cases, and of the difficulties which must always beset their early recognition. It is at the same time a striking proof of the need of exploration in those cases of bladder disease which do not yield to the ordinary recognised modes of treatment.

CASE VII.—J. J., aged 62, was sent to me in May, 1893, with history of four months' trouble with micturition. The prostate was slightly enlarged. A small amount of pus in the urine at times. May 15th. He was sounded, and a small stone detected on the left side of the base of the bladder. It was not easy to feel it, and it could not be seized with the lithotrite, or made to shift from its position. Suprapubic cystotomy was accordingly performed. When the bladder was opened the small end of a calculus which was embedded at the prostate could be seen sticking up into it a little below the orifice of the left ureter, which appeared to open just at its margin. At first it seemed as if the stone could not be shifted at all, but by carefully moving it about with the finger it was eventually extracted, leaving behind a deep pit where it had lain concealed. The patient made an excellent recovery, leaving the hospital on June 19th.

Case VII.—Shows the situation of stone (about one-fourth natural size).

Two years later he came to see me, and on examining him with the cystoscope no trace of the sacculus could be detected. The stone in question is formed of uric acid. After descending from the kidney it had in all

probability found its way into some small depression on the floor of the bladder, and there gradually increased in size, and slowly enlarged the sacculus to suit the needs of its growth.

CASE VIII.—J. B., aged 67, first came under my care in February, 1893. He stated that seven years previously he had suffered from hæmaturia, and on one or two occasions since. For the last six months he had suffered a good deal of pain in the region of the bladder, and had frequent calls to micturition. His urine was foul, alkaline, specific gravity 1016, and contained a trace of albumen. His bladder was washed out frequently, but without affording him much alleviation. March 7th, 1893. Admitted into hospital; sounded with a negative result. As he did not improve, on March 23rd suprapubic cystotomy was performed. Deep down behind the prostate, and apparently almost outside the bladder, was found a stone of peculiar character. Its inner part was composed of oxalates, and it lay in a shell of phosphates, which had begun to redissolve, so the original oxalate nucleus was surrounded by a loosely-fitting crystalline phosphatic shell. In the process of extraction the shell was somewhat damaged. He recovered from the effects of the operation, and was able for awhile to get up and get about the ward; but the water remained foul and alkaline in spite of careful washing out of the bladder. Early in May of the same year he took to his bed again, and, getting gradually worse, sank from severe hæmorrhage on May 17th. The *post-mortem* examination demonstrated what was suspected at the time of operation, namely, that the pouch had practically perforated the bladder. The vesiculae seminales contained pus, and some pus was also found in the cellular tissue round the base of the bladder. The kidneys were not diseased.

CASE IX.—J. P., aged 66, came under my care with all the ordinary signs of enlarged prostate complicated by cystitis. He said he had been quite well up to two months previously. He was admitted to St. Bartholomew's Hospital on July 10th, 1893. His bladder was regularly washed out, but he did not make much progress. August 5th. He was sounded and examined with the cystoscope. The bladder would contain only 4 ounces of water. No satisfactory view could be obtained, and no evidence of stone was discovered with the sound. August 7th. Suprapubic cystotomy was performed, and two stones were found in a cyst behind the prostate. There was a well-marked prostatic enlargement at the entrance of the bladder, which was partly cut off and partly burnt away with a cautery. His recovery was prolonged but uneventful. The suprapubic wound took a long time to heal, and he did not leave the hospital until November 24th. At this time most of the urine had to be passed by catheter.

Subsequent History.—He has been seen on several occasions since; the last time rather less than a year ago. He has regained almost complete power of natural micturition, but usually passes a catheter before going to bed, and occasionally washes out his bladder. He states that there is often no residual urine.

CASE X.—J. P., aged 68. (Sent to me by Dr. Lancelot Rolleston.) November 7th, 1893. He stated that some four or five years ago he had some irritability of his bladder, and applied to a surgeon in New Zealand, where he was living at the time. He was sounded, but no stone was found. His symptoms disappeared almost entirely for several years. In 1889 he was again sounded by the same surgeon and a stone discovered. He came to England and placed himself under the care of a surgeon who had had a very large experience of such cases. His stone was crushed, but though he remained some months longer in England the symptoms never quite disappeared. He was assured by the surgeon who had operated on him that there was nothing more in his bladder, and that by the time he reached New Zealand he would be quite well. This did not prove to be the case, and in 1893 he placed himself under my care. I sounded him on two occasions, and on the second the sound seemed to touch a rough surface on the bladder wall. I advised suprapubic cystotomy, and on November 26th, Dr. L. Rolleston being present, the operation was performed, and two faceted stones were removed from a pouch behind the prostate. Their upper surface was smoothed, presumably by the stone which had been removed by lithotripsy two years earlier. On January 9th, 1894, he sailed for New Zealand, where he has enjoyed excellent health ever since. He was last heard of in November, 1898.

Case X.—Two faceted stones removed from pouch behind prostate (slightly less than natural size).

CASE XI.—A.C., aged 64, was sent to me by the late Mr. Marrant Baker, under whose care he had been on several occasions on account of some prostatic trouble of several years' duration. In March, 1893, when I first saw him, he was complaining of an aggravation of his symptoms, and I sounded him and touched a calculus on the back wall of his bladder. An operation was advised, and on March 18th suprapubic cystotomy was performed, Mr. E. Willett giving the anæsthetic. He was sounded again at the time of operation, but no stone could be felt. His condition, however, seemed to warrant an operation. When the bladder was opened a stone was, after some little difficulty, found imbedded in the back wall of the bladder. Its free surface was so covered with inspissated mucus, the result of a recent attack of cystitis, that it was quite easy to understand how it was that the sound had failed to detect its presence a few minutes previously. It was eventually removed from the sac in which it was embedded, but I must confess with no small misgivings on my part as to the future of the case, as I feared lest an attack of peritonitis should supervene. The sac wall was quite loose, and when the stone was extracted it easily turned inside out and bulged into the interior of the bladder. Under these circumstances I seized it with a pair of pressure forceps, which were left on for forty-eight hours and then removed. Barring

some trouble that was experienced with his bowels, which may have been due to a slight attack of peritonitis, he made an excellent recovery, and left my hands about five weeks later. I saw him a year afterwards in excellent health. The stone was mainly composed of uric acid, but the surface which lay exposed in the interior of the bladder is coated with a layer of phosphates.

CASE XII.—J. G., aged 71, came under my care in December, 1894. He was admitted to the hospital on December 7th. He looked very ill and emaciated.

History.—He had had urinary trouble off and on for fourteen years. Six years before he underwent lithotomy at St. Peter's Hospital. Four years before he underwent a second operation at St. Peter's. Two years before he had a third operation at St. Peter's, and was informed that two stones had been crushed. On each occasion he was considerably benefited, but since the last operation had been obliged to pass most of his water by catheter. On December 5th he was sounded by me, and a stone was felt in the prostatic urethra. A lithotrite was introduced and a small stone was crushed and washed out, but the remainder could not be seized, and appeared to be fixed to the bladder wall. Under these circumstances I decided to perform suprapubic cystotomy, and opened the bladder without any difficulty. Three stones were found firmly encysted in the bladder wall some little distance behind the prostate, and two small ones were lying loose on the top of the others. One of them is smooth and not coated by rough phosphatic material like the others. In all probability it had only recently come down from the kidney. The other four were thickly coated with mucus when they were first extracted. The patient grew gradually weaker, and died on December 11th.

Post-mortem Examination.—Both kidneys were in a condition of pyonephrosis. There was no peritonitis or sign of injury to the bladder wall.

CASE XIII.—General C., aged 60, first consulted me in 1890 on account of some bladder trouble. He had had a stricture, and had been told his prostate was enlarged; but as he was able to empty his bladder as a rule he was loth to make use of a catheter; and though he had had repeated slight attacks of cystitis he declined to submit to any treatment. I only saw him on two occasions, and then lost sight of him until I heard of his death in 1894 under the care of Dr. Jowers, of Brighton, from peritonitis, which had been set up by the ulceration of a stone from a pouch on the back wall of his bladder into his peritoneum.

CASE XIV.—June 20th, 1894. Colonel C., aged 80 (sent me by Dr. G. Coates, of Kensington), was suffering from an enlarged prostate, and had used a catheter at times for seven years. He had lately had to use it a good deal more often, and to get up frequently at night. His bladder held about 4 ounces of acid urine, 1021; a trace of albumen. As he declined at first to undergo a complete examination, his bladder was washed out daily and he was treated with alkalies and diluents, but he did not improve. July 2nd. He was sounded under an anæsthetic, and a stone just touched behind the prostate. An unsuccessful attempt was made to seize it with a lithotrite, and suprapubic cystotomy was performed. A stone was found tightly fixed to the wall of a pouch behind the prostate and removed. His recovery was a prolonged one, but he left London on September 2nd, and a month later was able to go out shooting. He remained perfectly well for two years when an attack of cystitis supervened, and he died at San Remo.

CASE XV.—J. S., aged 60.

History.—He first attended in my out-patient room in 1894. He stated that for three years past he had had trouble with his water. He had been obliged to get up at night several times to pass water, and had frequent calls to micturate during the daytime. A catheter was passed, and he was found to have 6 ounces of foul residual urine. The prostate was considerably enlarged *per rectum*. He was instructed to wash out his bladder

Case xv.—Shows stone embedded in prostate (size about one-fourth).

regularly, and to draw off his residual urine before going to bed; and under this line of treatment he rapidly improved, and his urine became quite natural. About a year later (1895) his symptoms returned in an aggravated condition, and he was admitted into the hospital. Considerable difficulty was experienced in introducing a catheter, and no amount of washing out could make his urine healthy. His bladder was carefully

examined on more than one occasion for stone, but none could be discovered. The cystoscope was also introduced, but no clear view could be obtained even after frequent washings out. The enlargement of the prostate rendered the passage of an instrument an exceedingly difficult procedure, and he was quite unable to pass any instrument for himself. Under these circumstances castration was advised, and he consented to the operation. It was performed on June 29th, and he sank gradually three days later.

A *post-mortem* examination was made on the following day. The kidneys displayed well-marked interstitial nephritis. Acute cystitis was present, and imbedded behind the prostate was found an encysted calculus. It was contained in a pouch which only communicated with the bladder by a very small aperture. The tip of the stone protruded into the bladder, and was thickly coated with mucus. It is doubtful whether even this slight protrusion was not due to the shrinkage which had already begun to take place in the prostate.

CASE XVI.—W. J. T., aged 57.

History.—He stated that he had had a stricture for 20 years, and had had to have his water drawn off from time to time. Six years ago he was thrown out of a cart, and injured his perineum, since which time his urine had had to be drawn off by catheter.

Present Condition (April 10th, 1895).—No. 6 passes to bladder. Two strictures, one $\frac{2}{3}$ inches from meatus and one in the deep urethra; urine 1010, alkaline, offensive, contains pus. His bladder was washed out daily, but he died ten days later. He was at first under Mr. Langton's care, but I saw him, in Mr. Langton's absence, on two occasions before he died.

Post-mortem Examination.—Signs of peritonitis, and some recent subacute peritonitis as well. The adjacent viscera were firmly adherent to the bladder. The kidneys showed signs of interstitial nephritis; the ureters were not dilated. Bladder hypertrophied and dilated, and contained nearly two pints of fluid. At the upper left side there was a considerable pouch, from which the peritonitis had started. Its interior was very ragged from ulceration and sloughing of the mucous membrane. There were two calculi in the pouch. There was no direct opening into the peritoneum.

CASE XVII.—R. W., aged 64, was admitted to St. Bartholomew's Hospital, under Mr. Butlin's care, suffering from hæmaturia and frequent micturition. August 2nd, 1896. A severe attack of hæmaturia supervened, and, being on duty for Mr. Butlin, I was summoned to see the case. His bladder was almost full of clots, which could not satisfactorily be washed out with an aspirator, and he was obviously suffering from cystitis. Under these circumstances I decided to perform suprapubic cystotomy without delay. The bladder was opened, and found to be filled with clotted blood and highly-offensive urine. When this had all been cleared away two stones were found lying in a pouch behind the prostate, from which they were only extracted with difficulty. One was about the size of a filbert, and the other somewhat smaller. A pedunculated middle lobe of the prostate was found and removed. The cause of the bleeding was not clearly determined. It was probably due to the congested piece of prostate, which was removed, and which appeared to have had its pedicle partially twisted. He was discharged about six weeks later, able to micturate usually without the aid of the catheter. He was in the habit of washing out his bladder daily. Three months later I saw him again, and he told me he felt perfectly well, and only used the catheter once a week as a matter of precaution.

CASE XVIII.—C. S., aged 64. October 30th, 1897.

History.—Two years ago he began to have pain and difficulty in micturition, which soon became very bad at night. In John Ward for cystitis. Bladder examined with cystoscope with negative result. Bladder washed out regularly, and some improvement occurred.

Present Condition.—Emaciated. Complaints of great deal of pain over region of bladder. Urine 1014, alkaline, albumen, pus, triple phosphates, ammoniacal, and foetid. Residual urine 5viij. Bladder washed out without much result. Cystoscopic examination negative. The urine was so thick that no satisfactory examination could be obtained.

November 22nd. Patient placed in Trendelenburg's position, and perineal cystotomy performed. A vaginal speculum was passed in through opening, but no good view could be obtained of interior of bladder. February 9th. A second examination made of the interior of bladder, as the patient's condition had scarcely improved at all. Patient gradually sank and died seven days later.

Post-mortem Examination.—A large sacculus was found in connection with the bladder on its back wall. The sacculus held when distended nearly half a pint of fluid. The opening by which it communicated with the interior of the bladder was circular and about $\frac{1}{2}$ inch in diameter, and closely adjacent to the orifice of the left ureter. The sacculus contained two stones coated with phosphates, one about the size of a walnut and the other quite a small one. There was suppurative nephritis of both kidneys.

CASE XIX.—J. P., aged 67. August 3rd, 1898.

History.—Three years he had had trouble with micturition. He had been getting steadily worse lately. He had lately been unable to pass his water without catheter. Urine foul, ammoniacal, specific gravity 1015, contains pus and albumen. Prostate enlarged; has his water drawn off twice daily; amount varied very considerably. August 9th. Cystoscopic examination revealed general cystitis. Drainage advised; patient's friends would not consent till he was too bad to undergo operation. August 13th. Died.

Necropsy.—Bladder small and contracted. Large sacculus containing upwards of 2 pints of foetid urine. It communicated with the general cavity of the bladder by a small hole just above the trigone, which would just admit the index finger. It contained five small phosphatic calculi. Ureters and kidneys full of pus.

CASE XX.—J. E., aged 71.

History.—He had a stone crushed at the Middlesex Hospital in 1874. Remained free from all trouble until early in 1897. In May, 1897, he was admitted, under the care of Sir T. Smith, into St. Bartholomew's Hospital, with cystitis, and was twice sounded and examined with the cystoscope, but without anything being discovered to account for his cystitis, with the exception of some enlargement of the prostate. He was accordingly instructed to wash out the bladder. The following year, October, 1898, he came to my out-patient room with his urine in a very foul condition. His

prostate was very hard and tender. Before arrangements could be made

CASE XX.—Shows largest stone, which had almost perforated the prostate. The stone is drawn a little smaller than it should have been. It was nearly $\frac{2}{3}$ inches in its longest diameter.

for his admission to the hospital, he took to his bed and died a few days later. I obtained permission to examine his bladder, and found a large stone almost buried in a retroprostatic pouch. The lower part, which was embedded in the prostate, consisted of uric acid, whilst the upper part, which was contained in the bladder, was shaped like the calyx of a flower, and was composed partly of uric acid and partly of friable phosphates. Extreme prostatic tenderness was obviously to be accounted for by the position of the stone.

CASE XXI.—F. P., aged 49 (under Mr. Langton and Mr. Cripps). *History.*—He had had attacks of irritability of the bladder for many years. These attacks were at first attributed to a stricture. In 1887 he passed a small calculus, and a few months later he was admitted under Mr. Langton's care. Mr. Langton removed a stone by lithotripsy, but the symptoms referable to his bladder still persisted. In Mr. Langton's absence, Mr. Harrison Cripps performed suprapubic lithotomy, and re-

CASE XXI.—Shows a sacculus in an unusual situation—semi-diagrammatic (size about one-fourth).

moved a stone from a sacculus which lay above the urethral opening behind the pubes. In September, 1892, some more fragments were removed by lithotripsy, amounting to about $\frac{1}{4}$ ounce. In November, 1892, suprapubic cystotomy was again performed by Mr. Harrison Cripps, and another stone removed from the sacculus above referred to. I was present on this occasion, and was able to look into the sacculus in question. The patient made an excellent recovery.

CASE XXII.—W. W., aged 60 (under the care of Mr. Butlin). He was admitted into St. Bartholomew's Hospital on November 5th, 1897, with symptoms of great irritability of the bladder; was unable to hold his water more than a few minutes. His prostate was somewhat enlarged.

He stated that his bladder had been very irritable for several years past, water often thick, urine alkaline, containing pus. He was sounded on the following day, and a stone (apparently of large size) was detected lying behind the prostate, but it could not be grasped by the lithotrite or moved from where it was lying. Under these circumstances suprapubic lithotomy was performed, and a stone was found lying in a sacculus and tightly gripped by its walls, so that it was only after some difficulty that it was dislodged by the aid of a scoop. Convalescence uneventful. Patient left the hospital on December 16th, passing all his water *per urethram*.

CASE XXIII.—W. B., aged 57. He came under Mr. Butlin's care in November, 1893. His bladder was examined by means of a cystoscope and with a sound. An epithelioma occupied its base, and an encysted stone occupied the left side of the base in close proximity to the orifice of the left ureter. The patient was very ill, and refused operation. He died a few days later, and the condition was verified at the *post-mortem*.

CASE XXIV.—G. E. (under Mr. Butlin's care). He was admitted into St. Bartholomew's Hospital on April 6th, 1894. Urine foul, alkaline, contained a trace of albumen and some pus. He had been sounded before admission, and a stone detected. An attempt was made to perform lithotripsy, but unsuccessfully, as the stone was encysted. The bladder was inspected with the cystoscope, and the stone clearly seen embedded in the back wall of the bladder. I was present at the examination and saw the stone. It was decided to perform suprapubic lithotomy a day or two later. In the meanwhile the man discharged himself from the hospital.

CASE XXV.—J. B., aged 40. (Under Mr. Walsham's care.) *History, 1893.*—Three years ago he had a stone crushed at St. Bartholomew's Hospital. February, 1896. For two years after last operation was quite free from all vesical symptoms, but has had some irritability of the bladder more recently. June 17th, 1896. The patient was sounded, but no calculus could be detected. A rectal examination revealed some considerable tenderness about the prostate. As this condition did not disappear by rest in bed, etc., Mr. Walsham performed median lithotomy five days later, and removed ten stones, which were tightly wedged together in a pouch behind the prostate. A month later the patient left the hospital perfectly well, and there is a note in Mr. Walsham's own handwriting: "The rectum is natural; the prostate feels small and harder than normal."

CASE XXVI.—R. W., aged 38. (Under Mr. Walsham's care.) September 10th, 1894. He was admitted into St. Bartholomew's Hospital suffering from occasional hæmaturia and frequency of micturition; was sounded and a calculus detected. September 12th. Lithotripsy. After a considerable amount of debris had been crushed and removed, some portions of stone remained behind which appeared to be firmly fixed to the bladder wall, and could not be readily seized with the lithotrite. Suprapubic lithotomy was performed, and on the left side of the base of the bladder a pouch was discovered. A stone was sticking out of it, the top of which had been removed by the lithotrite. It was extracted after some difficulty with lithotomy forceps, and a second stone was found lying in the same pouch and was removed. The patient made a good recovery, and left the hospital well on October 25th, 1894.

CASE XXVII.—May 10th, 1893. H. B., aged 14. *History.*—Six years ago lithotripsy was performed by Mr. Willett. Four years later the operation was repeated by Mr. Willett. One year ago Mr. Marsh removed a stone from a distinct pouch behind the prostate after suprapubic cystotomy. May 12th. Mr. Bowly sounded the patient, and found a stone firmly wedged at the neck of the bladder, and could not seize it with a lithotrite. He accordingly performed the suprapubic operation, and removed an oxalate stone partially coated with phosphates, which was embedded in the same pouch from which Mr. Marsh had removed the previous stone.

REMARKS.

Of the 6 cases that were recorded in my first paper, no fewer than 3 were due to pieces of bone that had found their way into the interior of the bladder from the surrounding structures. The other cases were instances of true encysted calculi, which had been formed presumably in the kidney, and then, finding their way into the bladder, had either dropped into a sacculus which was ready for their reception or had become fixed in some depression of the bladder wall, and had by their gradual growth formed a sacculus for themselves. It is probable that in at least one of the cases referred to in this paper—namely, No. 7—this was the way in which the calculus was formed; for when this bladder was inspected with a cystoscope two years after the removal of the stone no trace of a sacculus was to be seen. In Case No. 3, on the other hand, the sacculus was most likely quite independent of the stone, for stones were found on a second occasion in another part of the bladder, and the sacculus originally occupied was empty.

It has often been assumed that these sacculi are all due to what are called tunicary herniæ, and depend on the pouching of the mucous and submucous coats between the bands of muscular fibres. I am however convinced, after an examination of numerous specimens both before and after death, that the muscular walls very often form a constituent part of these sacculi. It is, moreover, often very difficult to determine with accuracy in all cases the nature of the sac walls owing to the inflammation which has been set up by the stone which has long lain there.

When operating on these cases there is one point which must always be considered, namely, what is to be done with

the empty sac from which a stone has been removed. There is no doubt that many of these sacs, especially when prolonged attacks of inflammation have destroyed their epithelial lining, tend to contract and cicatrise of their own accord if their orifice is of sufficient size to preclude the possibility of pus stagnating in their interior. If on the other hand the orifice of the sac is small and contracted and the sac itself of large size, some means must be adopted for its independent drainage, and the route which is selected must depend on the condition of the patient and the position of the sacculi. As most of these sacculi are situated near the base of the bladder, it will probably be advisable if they demand drainage to drain them through the perineum, and to make a temporary channel between the bladder and rectum if this is possible.

Table of Cases.

Number.	Patient.	Surgeon.	Prominent symptoms.	Result.
1	W. M., 55	Bruce Clarke	Stones removed on two occasions successfully. Died three years later	R.
2	E. H., 67	"	Stricture. Encysted stone found at post-mortem examination	D.
3	H. H., 57	"	Stricture; stones removed from cysts on several occasions	R.
4	—	"	{ All dependent on pieces of bone that	D.
5	—	"	{ had protruded into bladder and be-	R.
6	—	"	{ come nuclei for stones. One died }	R.
7	J. J., 62	Bruce Clarke	Frequent micturition; some pyuria	R.
8	J. B., 67	"	Pain; hæmaturia; foul urine	D.
9	J. P., 66	"	Cystitis; enlarged prostate	R.
10	J. P., 68	"	Pain and cystitis two years	R.
11	A. C., 64	"	Prostatic trouble several years	R.
12	J. G., 71	"	Symptoms fourteen years; lithotripsy on two previous occasions	D.
13	Gen. C., 60	"	Repeated slight attacks of cystitis. No operation	D.
14	Col. C., 80	"	Enlarged prostate seven years; catheter	R.
15	J. S., 69	"	Enlarged prostate four years; castration	D.
16	W. J. T., 57	Self, and Mr. Langton	Stricture six years. No operation	D.
17	R. W., 64	Self and Mr. Butlin	Severe hæmaturia	R.
18	C. S., 64	Bruce Clarke	Two years cystitis off and on	D.
19	J. P., 67	"	Three years cystitis. No operation	D.
20	J. E., 71	"	Stone crushed twenty-two years before death; cystitis one year. No operation	D.
21	F. P., 49	Mr. Langton and Mr. Cripps	Stricture; recurrent attacks of cystitis	R.
22	W. W., 60	Mr. Butlin	Recurrent attacks of cystitis	R.
23	W. B., 57	"	Stricture; cystitis some months and epithelioma of bladder. No operation	D.
24	G. E., 61	"	Cystitis. Left hospital	*
25	J. B., 40	Mr. Walsham	Lithotripsy three years previously; cystitis three months	R.
26	R. W., 38	"	Hæmaturia and cystitis for several months	R.
27	H. B., 14	Mr. Willett and Mr. Bowlby	Lithotripsy twice; lithotomy twice within eighteen months. Stone removed from retroprostatic pouch	R.

* The result of Case No. 24 is unknown.

The cases Nos. 7 to 27 are referred to in the present paper.

On looking over the symptoms which these cases presented it is difficult to single out any one sign which might be held to be of considerable diagnostic value. Cystitis of longer or shorter duration appears to have been present in every one of the cases, but as the great majority of them—namely, 16 out of 21—were above 60 years of age, and had in addition some evidence of enlargement of the prostate gland, the cystitis was naturally in the first instance ascribed to that condition, and not to the presence of a calculus. In several undue tenderness of the prostate gland when examined *per rectum* and rectal tenesmus were marked symptoms. Only 3 of the cases were under 40 years of age, one of them being but 14. The only two cases in the list between the ages of 50 and 60 had suffered from stricture; and it is noteworthy that 2 of my first 6 cases also had suffered from stricture, and were likewise between 50 and 60 years of age.

The difficulties of diagnosis were also enhanced by the fact that in several instances washing out the bladder was quite sufficient temporarily to restore the urine to a healthy condition. It is, perhaps, also worthy of note that in several instances the stones when extracted proved to be so thickly

coated with mucus, that even when they lay upon the table no audible note could be obtained when they were struck with the beak of the sound. This affords a ready explanation of the difficulty which may be experienced in detecting a stone in the bladder under certain conditions.

In 6 of the 21 cases no operation was performed in most instances, because the patient's condition was too bad to admit of any chance of alleviating his symptoms. Of the remaining 15 that were submitted to operation, 4 died and 11 recovered.

The fact that in less than half the cases was the existence of the stone known before the operation was undertaken, certainly affords an additional argument for exploration of the bladder in those cases of cystitis which do not yield to ordinary treatment.

In one instance (namely, Case xv) the patient had been castrated to relieve his prostatic symptoms, and the stone was only detected after death. It is quite possible that if his bladder had been explored at an earlier period he might have retained his testes and had his life prolonged after removal of the stone.

I have since that time made it a rule to explore the bladder in obscure cases of enlarged prostate which remain irritable after repeated washing, and have never had occasion to regret this plan of treatment, which I have no doubt largely accounts for this series of encysted calculi. Even if no stone is detected, the patient usually derives great benefit from the operation, owing to the rest which is afforded to the urethra.

REFERENCES.

¹ Latent Calculus in the Bladder. *St Bartholomew's Hospital Reports*, vol. xxvii, p. 117. ² See previous paper, *op. cit.*

ON ANTISTREPTOCOCCIC SERUM IN THE TREATMENT OF SMALL-POX.

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WHILE Resident Medical Officer at the Middlesbrough Isolation Hospital during the small-pox epidemic in that town and district during the earlier months of last year, I had opportunities of treating a large number of patients suffering from every variety of variola. It was soon evident that medicinal treatment did not influence the clinical course of the disease, and often did not alleviate symptoms. Attention was chiefly devoted to confluent cases, in which the prognosis is always doubtful, frequently most grave, since in mild cases no medicinal treatment was needed, and in hæmorrhagic none was of any avail. Drugs therefore giving unsatisfactory results, the clinical course run in these cases was closely observed in the hope of finding what, if any, form of treatment would be beneficial.

PRESENCE OF A PYOGENIC ELEMENT.

It was found that death most frequently occurred during a period of from three to five or seven days after the pustules began to dry and be absorbed. During this period the pustular "crusts" had disappeared from the face, the vesicles on the body had either ruptured or, the contents being absorbed in part, lay crinkled and dry on the skin as a sort of scab, the mouth and larynx, having lost much of their epithelium, exuded foul-smelling, blood-stained mucus. There was delirium, frequently violent, especially at night, universal coarse tremor, aphonia, often almost complete inability to move the limbs, great restlessness, refusal of food, the pulse, very rapid, weak, and generally failing, varied from 120 to 140 or more, the respiration was quick and shallow, varying from 30 to 40, or even 60 per minute. Death, as a rule, occurred apparently from sudden cardiac failure, which frequently gave no signs of its immediate approach. No organic disease of heart or lungs was found. Observing that this critical condition always occurred after the absorption of the pustules, it seemed reasonable to suppose that the specific virus of variola was reinforced by toxins of pyogenic organisms absorbed from the pustules, and that if this element of pyogenic septicæmia or pyæmia could be eliminated, the normal resistance of the tissues might, in certain cases, be able to cope with the effects of the variola virus successfully.

PROCESS OF PUSTULATION.

It was found that the purulent change occurred, first on