Macewen needle outside and then behind the vessel an alarming gush of blood occurred, filling up the wound; on withdrawing the needle the bleeding ceased. Each further attempt at passing the needle produced a similar result. I thought that the innominate vein or one of its tributaries was wounded, these parts having become adherent to the artery as a result of the former operation. The wound was closed without drainage as before, and healed uneventfully.

Third Operation, June 2nd.—A transverse incision was made above the clavicle directly over the aneurysm. When the aneurysm was reached, the dissection was carried on its inner side to the scalenus anticus, the outer half of which was divided transversely. The muscle and phrenic nerve being retracted inwards and the aneurysm outwards, about three-quarters of an inch of the artery was exposed and tied with two separate ligatures, the first half an inch from, the second close against, the aneurysm. Chinese twist was used, tied in a surgical knot. The wound was closed without drainage and sealed. Pulsation ceased in the aneurysm and in the arteries of the limb. The circulation in the limb, with the ordinary precautions, kept fairly good. The wound was dressed on the ninth day and found healed.

The man was kept under my personal observation until the middle of December, 1904, when he left Cardiff to live in Portsmouth. Pulsation never returned in the aneurysm, the sac gradually subsiding into a flat, slightly tender area of the diameter of half a crown. The pressure symptoms down the arm became much less. The pulse returned feebly in the right radial and temporal arteries. The man has done no work since the operation, and his doctor at Portsmouth, on attempting to find him for me the other day, was informed that he was away on a drinking bout. This accounts for my not being able, as I intended, to show the man here to-day. Time will only permit me to make exceedingly brief comments on the case.

As sepsis, with its appalling complication of secondary haemorrhage, is what is most to be feared, the precautions to procure asepsis should be most minute and thorough; the one or two special ones that I took I have indicated.

Asepsis being secured, cerebral trouble is most to be feared as a cause of death. To lessen this danger I suggest the ligature of the carotid about a fortnight before the innominate. Favourable cases are those in which the general condition of the patient is good, the vessels fairly healthy, and the aneurysm, although it may be large, circumscribed. Unfavourable cases are those in which there is marked debility with visceral disease, the aneurysm being only one feature of a generally dilated and diseased condition of the arteries.

Ligature of the innominate should only be done when lesser operative measures have failed or are impossible. If the vessel adjacent is healthy it can be ligatured close up against the aneurysm, and this might have sufficed for cure in my case. The central incision undoubtedly affords the best means of approach, and it can be prolonged if necessary so as to permit access to the anterior mediastinum by longitudinal and transverse division of the manubrium.

The ligature material must be certainly sterile, and sufficiently strong to stand the necessary strain. Fatal results have been attributed by operators to the ligature material when they have really been due to septic infection at the site of ligature. Silk appears to be the best material.

The question whether or not the inner coats should be ruptured in tying has been much debated. I think that injury to the inner coats only becomes a dangerous factor when sepsis supervenes. A study of the cases shows that since it has become the fashion to aim at occlusion only return of pulsation has become much more frequent. There is experimental evidence that the inner coats of the healthy innominate may safely be ruptured, and one of the successful cases shows that this may be done even when the vessel is extensively diseased.

With regard to the kind of knot, even the stay-knot is liable to slip, particularly when only two strands are used; I believe that it slipped in my case. The "breakwater" method is the best. Two separate ligatures are used; the first turn in the proximal one being held tight to keep back the blood while the distal one is tied completely; the proximal ligature is then completed. This necessitates a certain length of artery and entrusting part of the work to an assistant. Both these difficulties can, I think, be overcome in the majority of cases. Where separate ligatures are not possible, I think it more than ever advisable to divide the inner coats.

In conclusion, I must ask you to forgive me if the necessity for brevity has made me somewhat dogmatic, and to note that the conclusions which I have arrived at are formed not from my case only, but from as careful a study as I have been able to make of all the recorded cases and of all the experimental work which bears on the subject.

TOTAL ENUCLEATION OF THE PROSTATE FOR RADICAL CURE OF ENLARGEMENT OF THAT ORGAN:

WITH A REVIEW OF 206 CASES OF THE OPERATION.*

By P. J. FREYER, M.A., M.D., M.Ch.,

Surgeon to King Edward VII's Hospital for Officers; and to St. Peter's Hospital.

FOUR years ago, in a lecture delivered at the Medical Graduates' College and Polyclinic, and published in the BRITISH MEDICAL JOURNAL of July 20th, 1901, I first placed before the profession at large my operation of total enucleation of the prostate for radical cure of enlargement of that organ, and described the anatomical and pathological conditions that rendered the operation practicable. Four successful cases of the operation were then detailed. Since then I have periodically published lectures and papers on the subject, dealing with series of cases of the operation, gradually increasing in number as time has gone on; and a record of my work in this direction has been presented at each of the last three annual meetings of this Association. In the paper read by me at the Oxford meeting last year the record was brought down to my 110th case. I have now the honour to present for your consideration a further series of 96 cases operated on by me, of which 19 were in hospital and 77 in private practice. Details of the first 60 cases of this series have already been given in the JOURNAL of May 20th, 1905, so that to-day I shall refer to them merely for statistical purposes. There remain 36 cases, of which I give a tabular statement containing the more important features of each of them; but I wish to bring to your notice in detail a few of the more important cases, illustrating some important features of this operation; and I shall conclude with a brief review of the results obtained in 206 cases of the operation performed by me to date.

CASE CLXXV.

A well-known London surgeon, aged 68, consulted me in 1903, on the advice of the late Dr. T. Gilbert Smith, for prostatic symptoms which had existed three years. No operation was then considered advisable, but he was directed to empty the bladder by catheter once or twice daily if necessary. The symptoms having slowly but gradually increased, I was again consulted on March 1st, 1905. There was much irritability of the bladder, urine being passed every two hours by day and five or six times in the night. Latterly there was some blood at the commencement of micturition. Residual urine, 4 oz., contained some albumen. Prostate decidedly, though not greatly, enlarged per rectum; bilobed, smooth, rather hard, but movable; felt bimanually. Patient extremely averse to entering on so-called "catheter life," preferring operation to the annoyance and danger connected with the habitual use of the catheter.

On March 9th, Dr. Dudley Buxton being anaesthetist and Mr. Percy Jakins assisting, I enucleated the prostate, which weighed 1½ oz. entire in its capsule. On opening the bladder I found that the prostatic outgrowth therein was 1 in. long, deeply grooved along its upper surface, resembling an epispadian penis. The urethra behind the veru montanum was removed with the prostate. The time occupied from commencing the suprapubic incision till the prostate was delivered from the bladder was five minutes. There was scarcely any bleeding or shock.

Recovery was rapid and uneventful. Some urine passed per urethram on March 16th, and entirely in this way after March 28th. On April 6th he left the surgical home perfectly well, passing and retaining his urine, which was normal, as well as he ever did. He is now in perfect health, in active pursuit of his profession, and recently at a medical society spoke in most eulogistic terms of the result of the operation in his own case.

CASE CLXXIII.

Gentleman, aged 62, who had come from Rio de Janeiro for the purpose of having his prostate removed; seen March 14th, 1905. Prostatic symptoms had existed five years. Had retention of urine six months previously in Rio; metal catheter tied in for three days; cystitis followed; laid up in hospital several weeks. Catheter employed since then. Residual urine, 10 oz., contains pus and mucus, fishy in odour. General health good. Prostate much enlarged per rectum; bilobed, smooth, soft, movable, felt bimanually.

On March 17th—Dr. Gould May (London) and Mr. R. McCausland (Dublin) being present—I enucleated the prostate easily and rapidly, entire in its capsule, with a thin band of the sphincter of bladder adherent. The time occupied from commencing the suprapubic incision till the prostate was delivered from the bladder was four minutes. The prostate, which was pear-shaped, presented in the bladder like a hypertrophied cervix uteri; weight 2½ oz. There was considerable bleeding—much more than usual—but no shock. On March 28th he passed some urine per urethram; wound dry April 3rd.

* This paper Mr. Freyer was unavoidably prevented from reading at the Leicester meeting of the Association. It is now published in its original form.

On April 13th he left the surgical home in excellent health, able to pass and retain his urine, which was quite normal—"better than he ever did before," as the patient put it. On June 18th he wrote from Rio de Janeiro: "I can pass water so easily that I often forget that until recently it was very much the reverse, and my dreadful sufferings are now but a faint recollection."

CASE CLXXIV.

Eminent scientist, aged 82, seen in consultation with Mr. G. H. Makins and Dr. E. A. Roberts (London), March 25th, 1905. He had suffered for fifteen years from prostatic symptoms, the most pronounced of which was gradually-increasing frequency of micturition. A catheter had been passed on March 23rd and $1\frac{1}{2}$ pints of urine drawn off. Next day the temperature rose to 101° F., and there was much difficulty in passing the catheter. I introduced a coudée No. 8 with some difficulty, and drew off 15 oz. of thick urine containing pus and mucus; specific gravity low. The prostate per rectum was much enlarged, broadly bilobed, smooth, soft, movable; felt bimanually. Patient thin but wiry; high-tension pulse. Bowels moved when he strained to pass urine. Obtained scarcely any sleep from constant desire to pass water. The case was regarded as one very suitable for removal of the prostate; but, as the patient was suffering from acute septic absorption from the bladder, we considered that it would be advisable to postpone operation if possible till this condition should have passed off. But the difficulty and pain attending the introduction of the catheter decided us on fixing the operation for March 28th. On March 26th, however, the temperature rose to 102° F., and this was accompanied by nausea, vomiting, loss of appetite, drowsiness, and scanty secretion of urine; there was, in short, partial suppression of urine. Under these circumstances we decided to postpone operation for the time, lest the shock attending it might cause complete suppression of urine. The patient was extremely disappointed at the postponement, became much depressed, and his strength began rapidly to fail. We consequently decided that the proper course was to risk operation, the extreme gravity of the situation being fully placed before his relatives.

Fig. 1.—Prostate weighing $2\frac{3}{4}$ oz., removed from a patient aged 82; A, right lobe; B, left lobe; C, C', pedunculated outgrowths in bladder.

On March 29th, in consultation with Mr. Makins and Dr. Roberts Dr. Hewitt being the anaesthetist, I removed the prostate, both lobes of which were very prominent in the bladder. The enucleation was easily accomplished, the time occupied from commencing the suprapubic incision till the prostate was delivered from the bladder being six minutes. There was scarcely any bleeding and no apparent shock. But there was much nausea and vomiting for some days, and on March 31st the patient brought up some altered blood from the stomach; next day there was blood and mucus in the stool after a dose of castor oil. At this period we had the advice of Sir Thomas Barlow in consultation. These symptoms were regarded as uraemic in origin. After the bowels were opened there was a profuse discharge of urine in the dressings, so that the functions of the kidneys were re-established. From this period onwards the patient made sure though slow progress towards recovery. Though the wound kept perfectly clean throughout, the temperature did not sink to normal for a

fortnight, till, in fact, the septic poison that was absorbed before operation had been eliminated from the system.

On April 22nd, on inserting the nozzle of the irrigator in the suprapubic wound and filling the bladder, the lotion was passed per urethram in a continuous stream. On April 26th 8 oz. of urine were passed naturally. The wound was dry on May 1st and 2nd, and all urine was passed naturally; but it reopened on May 3rd. On May 7th a rubber catheter was tied in, and kept there till May 14th, all urine being passed by this means.

The catheter was removed on May 14th, when the suprapubic wound was thoroughly healed, and all the urine subsequently was passed naturally. The patient is now in excellent health, able to pass and retain his urine as well as ever he did.

The prostate (Fig. 1), which weighs $2\frac{3}{4}$ oz., is symmetrically enlarged, each of the lateral lobes presenting a pedunculated outgrowth in the bladder the size of a cherry.

CASE CLXXX.

Gentleman, aged 66, seen in consultation with Dr. J. J. Macgregor, of London, April 11th, 1905. Has had difficulty in micturition twelve years. Ten years ago catheter passed, followed by rigors. Since then has employed catheter regularly; entirely dependent thereon for eight years. Has had orchitis twice, cystitis repeatedly, and haematuria occasionally. Patient's condition very distressing; great loss of flesh and appetite during last two months; extreme dryness of mouth and throat; urine turbid, specific gravity 1010, contains pus and albumen; prostate enormously enlarged, bilobed, smooth, soft, rather dense, but movable; easily felt bimanually.

On April 21st, Dr. Silk being the anaesthetist and Dr. Macgregor assisting, I removed the prostate entire. On opening the bladder the prostate was found projecting into it like an enormously hypertrophied

Fig. 2.—Prostate, weighing $8\frac{1}{2}$ oz., removed from patient aged 66. A, B, right and left lobes respectively. The transverse constriction is the boundary between the intravesical and extravascular portions.

cervix uteri, the left lobe being more prominent than the right. The inner orifice of the urethra was distorted into an irregular deep slit between the lobes. The enucleation was easily accomplished, but much difficulty was experienced in delivering the prostate from the bladder. Eventually it was grasped by one lobe and withdrawn like an open oyster. There was considerable bleeding, and the time occupied was eight minutes, five of which were spent in delivering the prostate from the bladder. Some urine was passed per urethram April 22nd, but the suprapubic wound was slow in closing. It was thoroughly healed by June 7th, after which all urine was passed naturally.

The patient left for home on June 21st in excellent health, passing and retaining his urine, which was quite clear, as well as he ever did. The prostate (Fig. 2), which weighs $8\frac{1}{2}$ oz., is a fine specimen of almost symmetrical enlargement of both lobes. The enormous size of the gland, considering the age

of the patient, is very remarkable. It is obvious that the enlargement had considerably advanced before the age of 50.

CASE CLXXXV.

Gentleman, aged 57, seen with Mr. E. D. Madge, London, May 5th, 1905. Prostatic symptoms for seven years: complete retention of urine in August, 1904, relieved by catheter, which had to be employed for some weeks, during which patient was laid up in bed with cystitis. Since this several attacks of pyrexia from urinary sepsis. Much blood in urine a fortnight ago. I introduced a catheter and drew off 8 oz. residual urine, acid, specific gravity 1012, containing pus. Prostate much enlarged, bilobed, smooth, soft, movable, easily felt bimanually. General health fair.

On May 15th, Mr. Thomson Walker assisting, and Mr. Madge being present in consultation, I enucleated the prostate, weighing 2 oz., entire in its capsule, the time occupied being 3½ minutes; scarcely any bleeding or shock. During the first fortnight there was not an unfavourable symptom; in fact, healing was more rapid than usual, urine being passed freely per urethram May 26th, and the suprapubic wound being dry next day. On May 29th, whilst straining at stool, some blood was passed in the urine, and this continued off and on for some days. The tying in of a soft catheter temporarily relieved the bleeding; but on June 3rd large clots blocked the catheter, and there was much painful spasm and straining in spite of repeated washing out of the clots. I therefore reopened the suprapubic wound, which was firmly healed, under an anaesthetic, and inserted a large-sized drainage tube. After this bleeding entirely ceased. The tube was removed after a week. On June 14th the suprapubic wound was quite healed, and all the urine passed naturally.

On June 24th patient left the surgical home, passing and retaining his urine as well as he ever did, and he is now in excellent health.

The secondary haemorrhage was due to the too rapid closing of the suprapubic wound, and straining to get rid of a hard faecal mass, which caused rupture of a vessel in the prostatic cavity. Haemorrhage at this stage has occurred in three or four cases, and has been dealt with in the same manner—namely, first, by tying in a soft catheter in the urethra, which, by allowing a free flow of urine, relieves the spasm that is liable to occur when the suprapubic wound closes before the prostatic wound has sufficiently healed to permit of the bladder functioning normally; and, secondly, should this fail, the suprapubic wound should be reopened, and a large drainage tube inserted for a few days.

CASE CLXXXVI.

Gentleman, aged 81, consulted me May 15th, 1905, on the advice of Dr. D. Leighton Davies (Wisbech). Four years previously had retention of urine, which was relieved by the catheter. Cystitis supervened, necessitating the bladder being washed out twice daily for a month. Catheter employed since then. In December, 1904, had a severe rigor, followed by fever and great pain. An abscess formed in the corpus spongiosum, which was opened, a penile fistula remaining. All urine passed by catheter since then. The prostate was felt only slightly enlarged per rectum; it was very dense, but smooth and movable.

On May 18th—Dr. Davies assisting—I removed the prostate easily and rapidly, the time occupied being only 2½ minutes. Both lobes were slightly prominent in the bladder. The prostate, which only weighs ½ oz.—the smallest I have removed—is a pretty specimen, entire in its capsule, the portion of urethra behind the veru montanum being adherent thereto. There was very little bleeding or shock. Some urine passed naturally June 2nd, and the suprapubic wound was permanently closed by June 16th.

On June 26th the patient left for the seaside in good health, able to pass and retain his urine normally.

CASE CLXXXVII.

On August 3rd, 1904, I was summoned to Colchester to see, in consultation with Dr. E. G. Renny, a gentleman, aged 86, who had been suffering from prostatic symptoms for five years. The catheter had been used off and on for six months. I drew off 16 oz. residual urine, turbid but acid. The prostate was much enlarged per rectum, bilobed, smooth, movable, and bimanually was felt the size and shape of a medium-sized pear, with the apex in the bladder. Patient's general health was good, and the case was regarded as a very suitable one for operation; but as he was not inclined for this, I advised the catheter being employed three or four times daily. I was again consulted on May 15th, 1905. All the urine had been passed by catheter since August, 1904. Patient was now in great distress, having to pass the catheter every half to one hour night and day, with resulting loss of sleep. He had lost ground decidedly during the last six months; his general health was broken; heart irregular and intermittent; both the lower limbs oedematous. Had recently suffered from phlebitis of left thigh. Urine acid, specific gravity 1.012, contained pus and albumen. The case was therefore a very grave one; but, as the patient had come to the end of his tether as far as the catheter went, I determined to operate.

Consequently, on May 22nd, Mr. C. Braine being the anaesthetist, Dr. Renny assisting, and Colonel J. Moorhead, I.M.S., being present, I enucleated the prostate entire, easily and rapidly, the time being five minutes. On commencing the suprapubic incision, the pulse and breathing ceased, and artificial respiration had to be adopted; but I pro-

ceeded with the operation, and the enucleation of the prostate seemed to stimulate breathing. There was scarcely any bleeding, and after the operation the pulse was stronger and more regular than before. The prostate was pear-shaped, symmetrically enlarged, one-half of it lying in the bladder, and weighed 3½ oz. No unfavourable symptom supervened till May 30th, when the temperature rose to 102° F., due to an attack of bronchitis, which, however, gradually subsided in a fortnight. The wound was perfectly clean and healthy throughout, but the fistula was very slow in closing, owing to the feeble health of the patient. Began to pass urine per urethram June 30th; wound closed July 9th, and the whole of the urine passed naturally.

Though this patient is still feeble, so far as his general health is concerned, he is making steady progress towards complete recovery.

CASE CXCH.

This gentleman, aged 67, who had come from California on the advice of Dr. Tom Davis, Los Angeles, for the purpose of having his prostate removed, consulted me on May 31st, 1905. Prostatic symptoms had existed fifteen years. Retention of urine 6 years ago, since when he has employed the catheter; entirely dependent thereon four years. Has had repeated attacks of cystitis, and latterly difficulty in introducing the catheter. The prostate was much enlarged per rectum, bilobed, smooth, soft, movable; easily felt bimanually, being very prominent in the bladder. General health fair; thin but wiry.

On June 5th, in the presence of Professor J. Kaarsberg and Drs. A. Helsted and A. F. Just, of Copenhagen, I removed the prostate entire in its capsule, rapidly and easily, the time from commencing the suprapubic incision till the prostate was delivered from the bladder being three minutes. There was practically no bleeding and no shock.

The recovery was uneventful, some urine being passed naturally on June 16th, and entirely in this way after June 22nd. By June 29th he was walking about, passing and retaining urine, which was quite clear, as well as he ever did. He is now in excellent health.

The prostate (Fig. 3), which weighs 3½ oz., is an interesting

Fig. 3.—Prostate weighing 3½ oz., removed from patient aged 67. B, left lobe; A, right lobe, terminating in bladder in the outgrowth C, so-called "middle" lobe.

specimen, displaying a large so-called "middle" lobe (C) the size of a Tangerine orange, growing mainly from the right lobe. This portion, which lay entirely in the bladder, was merely covered by mucous membrane.

CASE CXCV.

Gentleman, aged 87, seen in consultation with Dr. H. Roger Smith, Hampstead, May 31st, 1905. Bladder symptoms for seven years. Stone crushed by another surgeon five years ago. Since then has had to use the catheter, at first once daily, gradually increasing in frequency till he now passes it six times daily. Passes a little urine naturally, accompanied by much pain and spasm. Urine alkaline, fetid, contains much pus and mucus. Has passed blood frequently. Patient's condition most distressing; feels, as he says, that he can no longer go on with the catheter. Prostate much enlarged per rectum, bilobed, soft, smooth, movable, felt bimanually. General health fair, but troubled

with bronchial catarrh. Suffering from double inguinal hernia and double hydrocele.

On June 6th, Mr. C. Braine being anaesthetist, Mr. Thomson Walker and Dr. Roger Smith assisting, I enucleated the prostate entire in its capsule easily and rapidly. There was a small phosphatic stone, weighing 23 gr., found in the bladder. Time occupied, including removal of calculus, five minutes. The prostate was the size of a large Tangerine orange, almost symmetrical, and weighed 2 oz. There was scarcely any bleeding, and no shock. The recovery was unaccompanied by any unfavourable symptoms, the temperature remaining practically normal throughout. In fact, the patient scarcely felt the operation in any way. He passed urine naturally June 20th, and the wound was dry July 1st.

After July 3rd he was sitting up and walking about his room. He is now quite well, able to pass and retain urine as well as he ever did. The urine is normal. The ease with which the operation was borne and the rapidity of convalescence are extremely remarkable at this great age.

CASE CXCIV.

This gentleman, aged 74, who is a resident of New Jersey, was sent for operation by Dr. Thos. P. Fitch (East Orange, U.S.A.), and seen with Dr. James Moorhead (London), June 3rd, 1905. Prostatic symptoms for seven years; entirely dependent on the catheter six years. Catheter used every three hours, with much pain and occasionally bleeding. Urine alkaline, fetid, containing much pus and mucus; suffering from double inguinal hernia and hydrocele; prostate not felt per rectum, but easily felt bimanually, very prominent in the bladder and very movable; general health fair.

On June 13th—Dr. Moorhead assisting, Dr. George Luys (Paris) and Colonel P. A. Weir, I.M.S., being present—I opened the bladder suprapubically, and found four uric calculi, weighing 316 gr., which were removed. The prostate was entirely intravesical, gutter-shaped, and terminating in the form of four rounded polypi. It was easily and rapidly enucleated entire in its capsule, the whole being merely covered by mucous membrane. Time occupied, including removal of the calculi, five minutes. The prostate weighs 2½ oz.

The recovery was uninterrupted by any unfavourable symptom. Some urine passed per urethram June 20th; wound dry June 30th. Left the surgical home July 10th, in excellent health, passing and retaining his urine, which was quite clear, as well as he ever did.

CASE CXCV.

Gentleman, aged 63, seen in consultation with Dr. D. W. Patterson (Newcastle-on-Tyne), March 1st, 1904. Prostatic symptoms for ten years. Residual urine, 4½ oz.; prostate much enlarged per rectum, particularly the right lobe, soft, smooth, movable, and felt bimanually. The case was considered a most favourable one for removal of the prostate, which was advised. Other counsels, however, prevailed. Acute retention set in in July, followed by severe cystitis. Perineal prostatectomy was performed by another surgeon in September, 1904. Patient apparently did well till the perineal wound healed, when there was great difficulty in micturition from stricture, which, however, yielded to dilatation. Since that time, however, he had not been able to empty his bladder, the residual urine varying from 4 to 14 oz. Bladder emptied by catheter and washed out daily for months, as the urine contained much mucus.

I saw the patient again with Dr. Patterson, June 26th, 1905. I drew off 10 oz. residual urine, containing much pus and mucus. I could find no trace of the prostate per rectum, but on bimanual examination I felt a lump the size of a walnut in the median line at the neck of the bladder, which was regarded as a portion of the prostate left behind.

On June 29th, Mr. C. Braine being anaesthetist, I opened the bladder suprapubically. The inner orifice of the urethra was found stenosed and surrounded by a beaded prostatic collar, from the base of which a test-like process projected into the bladder. This collar was forcibly burst open by the finger, and the remaining prostatic substance scraped out of the sheath by the finger-nail. This was a slow procedure, as, though the collar presenting in the bladder was easily detached from the mucous membrane, the anterior portions of the prostatic tissue were stoutly adherent to the sheath from cicatricial union, the result of the perineal prostatectomy. The remaining portion of the prostate came away piecemeal, and weighed ½ oz. After its removal the sheath felt quite smooth, and the neck of the bladder-gaped widely open. There was much more bleeding than in an ordinary case of enucleation of the prostate entire.

Recovery, though rather slow, has been uninterrupted. Some urine was passed per urethram on July 15th, and wholly in this way on July 24th. He can now pass his urine naturally as well as he ever did, and can retain it three or four hours. There is no residual urine.

GENERAL OBSERVATIONS.

Amongst this series of 36 operations there was one death, which occurred in a hospital patient (Case CLXXXVIII) aged 57, who had been for nine years entirely dependent on the catheter, and had frequent attacks of cystitis. On May 24th, 1905, I enucleated the prostate, which weighed 3½ oz., entire, easily and rapidly, the time occupied being three and a half minutes. There was more bleeding than usual, and the operation was followed by severe shock. Two hours after

operation the patient passed into a state of profound collapse, from which all efforts failed to revive him, death supervening in seven hours. No autopsy was obtained, but no doubt the kidneys were extensively diseased. The patient was of an extremely nervous temperament, and dreaded operation, which he had postponed on several occasions during the previous year, till driven to it by his sufferings.

I have now performed this operation on 206 patients, varying in age from 53 to 87 years, the average being 68 years. The prostates removed varied in weight from ½ oz. to 14½ oz., with an average weight of a little less than 3 oz. The great majority of the patients were entirely dependent on the catheter for periods varying up to 24 years, and very few were free from serious complications. I have in previous papers emphasized the fact, as the detailed records of the cases show, that most of them were in broken health and many moribund, the operation being submitted to as a last resort. The vast majority of them were, indeed, in such a wretched condition that life was simply unendurable. These facts have to be borne in mind when considering the mortality attendant on this operation.

Tabular Statement giving Particulars of a Recent Series of 36 Cases of Total Enucleation of the Prostate.

Serial No.	Date of Operation.	Age of Patient.	Medical Man with whom Seen, or by whom Sent.	Weight of Prostate.	Result of Operation.
	1905	Yr.		Oz.	
171	March	68	The late Dr. T. Gilbert Smith, London	1½	Successful.
172	"	13	Dr. J. Dudley Price, Dudley	1½	"
173	"	17	"	2½	"
174	"	29	Sir Thomas Barlow, Mr. G. H. Makins, Dr. E. A. Roberts, London	2½	"
175	"	30	Dr. E. L. Adeney, Tunbridge Wells	3	"
176	April	5	Hospital case	2½	"
177	"	11	Dr. C. Dudley Burney, New Cross	2½	"
178	"	19	Hospital case; Dr. R. Julian George, Port Isaac	4½	"
179	"	20	Dr. H. E. Friend, London	3½	"
180	"	21	Dr. Macgregor, Colchester	3	"
181	"	24	Mr. W. P. Cowper, London	2	"
182	"	27	Dr. J. F. Wolfe, Heavitree	2	"
183	May	3	Sir Henry Blanc, Cannes; Dr. Powlett Wells, London	1½	"
184	"	4	Dr. H. Fraser, Slough	4½	"
185	"	15	Mr. E. D. Madge, London	2	"
186	"	18	Dr. D. Leighton Davies, Wisbech	2½	"
187	"	22	Dr. E. G. Kenny, Colchester	2½	"
188	"	24	Hospital case	3½	Death.
189	"	25	Mr. H. Huxley, London	2½	Successful.
190	"	30	Mr. E. F. White, Putney	1½	"
191	"	31	Hospital case	1½	"
192	June	1	Dr. F. Falconer, Lytham	3½	"
193	"	5	Dr. Tom Davis, Los Angeles, California	2½	"
194	"	6	Dr. H. Roger Smith, Hampstead	2	"
195	"	13	Dr. Thomas P. Fitch, East Orange, New Jersey, U.S.A.; Colonel J. Moorhead, I.M.S., London	2½	"
196	"	14	Dr. H. H. Phillips, Penze	3½	"
197	"	19	Dr. E. A. Bell, New Brighton	3½	"
198	"	28	Dr. P. W. Cockle, Ealing	1½	"
199	"	30	Dr. D. Wells Patterson, Newcastle-on-Tyne	8	"
200	July	1	Dr. E. G. Hewer, Stratford-on-Avon	1½	"
201	"	3	Dr. D. Gentle, Edinburgh	1½	"Under treatment.
202	"	12	Dr. A. J. Campbell, Ross, Hereford	1½	"
203	"	12	Hospital case	1½	"
204	"	15	"	1½	"
205	"	16	Hospital case	2½	"
206	"	21	Drs. J. D. Davis and F. J. Wadham, Ryde, I.W.	3½	"

*The 6 cases marked "under treatment" have all been successful.

Excluding 3 undoubted cases of cancer of the prostate (of which 1 died and 2 made good recoveries), there remain 203 operations, in connexion with which there were 16 deaths, about one-half of which were due to contingencies of old age apart from the operation. But, accepting them all in connexion therewith, there is a mortality of less than 8 per cent. Amongst my first 100 cases there were 10 deaths, or a mortality of 10 per cent.; amongst the last 103 cases there were 6 deaths, or less than 6 per cent.; and amongst the present series of 36 cases, details of which I have just given, there was only 1 death, or a mortality of less than 3 per cent., so that the results have markedly improved as time has gone on. In a previous paper I ventured to forecast that: "As the operation became more widely known and more popular patients will no doubt seek relief therefrom at an earlier period of the disease, whilst their constitutions are sound and, above all,

the kidneys unimpaired, with a much greater prospect of success. Increased experience and dexterity in operating, improvement in the details of the after-treatment, and a greater perfection in the nursing are all factors that will undoubtedly tend to reduce still further the death-rate." It will be observed that my hopes in this respect have been fully realized.

Amongst these 206 cases there were 14 octogenarians, varying in age up to 87 years, in all of which the operation was completely successful. One of the most remarkable features, indeed, of the operation is the manner in which it is borne by persons of this advanced age.

REVIEWS.

HYGIENE IN ELEMENTARY SCHOOLS.

ONE of the results of the public interest aroused during the last few years in the question of physical degeneration has been the awakening of the central educational authority to a sense that it has responsibilities with regard to the teaching of hygiene in elementary schools. Whether the Board of Education as yet appreciates the extent of its responsibilities may be doubted, but it is a distinct step in advance to have the subject specifically mentioned in the *Code of Regulations for Public Elementary Schools for 1905*, though it is assigned a subsidiary place. Article 2, laying down the curriculum for scholars other than infants, contains the following paragraph (9):

"Physical Exercises, including exercises in proper breathing. As a rule, the official syllabus of physical training should be followed. Physical training should be accompanied by instruction in the elementary rules of personal health in respect of food, drink, cleanliness, and fresh air; and by careful cultivation of a correct posture at writing and other lessons."

It may seem to some an inversion of the natural order to make instruction in the elementary rules of personal health in respect of food, drink, cleanliness, and fresh air, a kind of appendage to physical training, but we are too glad to have the subject recognized officially to quarrel with the manner of its recognition. The code is of universal application, though it may be modified "when the Board is satisfied that the needs of the scholars or the circumstances of the school require it." It is difficult to imagine needs or circumstances which would render physical training unnecessary, and from this point of view it may even be a matter for satisfaction that hygiene is to be linked with physical training, since it ought to ensure that wherever the latter is given it will be accompanied by the former.

It follows, then, that in future all elementary school teachers will be expected to make themselves competent to give instruction in "the elementary rules of personal health in respect of food, drink, cleanliness, and fresh air." This will render necessary some modification of the ordinary curriculum of the training colleges, a point rather laboured by the President of the Board of Education in his reply to the medical deputation last year. But the Board has really gone beyond this, for in the *Suggestions for the Consideration of Teachers*,¹ issued a few months ago, we find a very excellent chapter on the school and the health of the scholars. It shows very clearly that the Board expects teachers to do something more than give theoretical lessons in elementary hygiene; it expects that they will be guided in the conduct of their classes and the management of their class rooms by a practical knowledge of the principles of healthy living. Teachers are told that it is their duty to have constant regard to the ventilation, lighting, and heating of the schoolroom, to the shape and position of the desks, and to the posture of the children as they sit at them; that they must learn the nature of the symptoms which should at least arouse a suspicion of infectious disease; and that they should insist on the personal cleanliness of the scholars.

If the policy embodied in the *Suggestions* is to be carried out, teachers must be thoroughly grounded in elementary hygiene. The information imparted to them need not be extensive, but it should be correct. There is reason to fear that in too many instances this is not the case. The lecturers employed to

give special courses are often persons who have themselves had no thorough grounding, and their teaching is therefore amateurish, wanting in method and even in accuracy. One of them was heard not long ago to inform the class that in the evening, after a day's labour, the cerebro-spinal fluid became milky! Suitable textbooks have hitherto been wanting. There has been nothing between textbooks of physiology or textbooks of hygiene intended for the use of candidates for the examinations in those subjects of the Science and Art Department and little primers or pamphlets written down to the intelligence of young children, or *Readers* not usually very judiciously compiled. This want is met by the *Textbook of Hygiene for School Teachers*,² which Mrs. WATT SMYTH has published this week.

We have often been led to think that the faults to be observed in the methods and the matter of lectures on elementary hygiene were due to the speakers not possessing any accurate knowledge of elementary physiology. Mrs. Watt Smyth is undoubtedly right when she says in the introduction to her volume that: "Physiology is the science of the action of the body in health, hygiene the practical application of this science; it is obviously impossible to understand the laws of hygiene without a knowledge of the fundamental principles of physiology." She has written from this standpoint, and throughout the book her aim has been to give first a brief account of the physiology of the subject discussed, to point out special characters of the physiological processes in the child, and then to inculcate the hygienic principles and practices which rest upon these foundations. Presented in this logical order the teaching of hygiene becomes simple and easily grasped, since the reason for every rule and recommendation has been fully explained.

As an example of the method the section on respiration and air may be taken. The nose, larynx, trachea and lungs are first briefly described; then the mechanism of respiration is explained and the nature and amount of the respiratory exchanges are stated; next the constitution of the air, its humidity, and the common impurities are enumerated, and this leads on naturally to the discussion of ventilation and heating, and of the ill-health, the wandering of the attention, and the debility traceable to prolonged hours spent in ill-ventilated class-rooms. The circulation, the digestive system, and the nervous system are dealt with on the same principle; their physiology is briefly but adequately described, and the causes which may derange their action explained, so that when the means which should be taken to maintain health are finally stated they must appear obvious to any person of average intelligence. In the section on the special senses a good deal of space is given to vision, and the exceptional importance of the subject fully justifies the somewhat fuller treatment. The anatomy of the eye, and the action of its parts in accommodation are well described, and refraction, its errors, and the school conditions which tend to produce or aggravate them, are fully explained.

The subject which has been treated in the most original way is the muscular system. Mrs. Watt Smyth has based her description on the *Syllabus of Physical Exercises* issued last year.

The muscles are described not by enumerating their anatomical relations to each other in the kind of meaningless Chinese puzzle which used to be presented to medical students in their first year—a method not yet, we fear, altogether obsolete. How many enthusiastic young men will not have their ardour damped during this session by the cart-before-the-horse way in which the anatomy of the muscles is taught? This muscle arises by a flat tendon from the rough surface on such and such a part of such and such a bone, the tendinous bundles extend rather further downwards on the posterior than on the anterior surface; the belly of the muscle has a somewhat flattened form, but tapers towards the end, and terminates in a rounded tendon inserted into the *x* tuberosity of the *y* bone. On its outer side it is in relation with muscle *a*, on the inner with muscle *b*, posteriorly it rests upon muscle *c*, and anteriorly it is crossed by the lower part of the belly of muscle *d*. Quite incidentally, perhaps in some other part of the book its action is given, often incorrectly. This is, we submit, not only a dry, uninteresting way of teaching anatomy; it is the converse of the right way. It might not be scientific to say, This muscle exists to produce, or to assist other muscles to produce,

¹ *Suggestions for the Consideration of Teachers and Others Concerned in the Work of Public Elementary Schools*. London: Wyman; Edinburgh: Oliver and Boyd; Dublin: Ponsonby. 1905. Price 8d. (Cd. 2, 638.)

² *A Textbook of the Principles of Hygiene, Based on Physiology, for the use of School Teachers*, by Mrs. Watt Smyth. Illustrated by sixteen Special Plates and Numerous Diagrams in the text. London: Simpkin, Marshall and Co. Demy 8vo, pp. 272. 6s.