The most noteworthy feature of this case appears to be the occurrence of this malady in a strong and otherwise healthy boy, in whose family no history of nervous disease can be obtained.

THE RELATIVE ADVANTAGES OF CATHETERIZATION AND OPERATION IN THE TREATMENT OF PROSTATIC ENLARGEMENT.

By HERBERT T. HERRING, M.B., B.S.,
LONDON.

DURING the last ten years the operation of prostatectomy—which had previously fallen into disrepute—has been revived, owing largely to the advocacy of Mr. Freyer, who has published long lists of successful cases; and it is now accepted as the routine method of treating all sufferers from enlarged prostate. Signs are not wanting, however, of a coming revulsion in favour of a less drastic treatment, namely, the habitual use of the catheter. There are, apparently, two principal causes for this:

1. The serious nature of the operation, and the existence of doubt as to its after-effects, both immediate and remote.
2. The good results obtained from sterile catheterization.

I.

The operation of prostatectomy is severe and the mortality, even with modern improvements, is not less than 10 per cent., and would be far higher if every case throughout the country were recorded. It necessitates prolonged confinement to bed; six weeks would not be overstating the time required for convalescence, and six months must elapse before the patient's health and strength are completely established. Moreover, it is usually performed when the expectation of life is not long, and the sacrifice then of six months, part of which is spent in considerable discomfort, is a matter of consequence. Finally, there remains the all-important question that has never been answered as far as I am aware, What is the proportion of complete cures of those who survive the operation? Innumerable records have been published of the condition of patients six weeks or two months afterwards, but with the exception of 32 cases recorded by Mr. W. G. Richardson,¹ no statistics are forthcoming of the state of those same cases at the end of two years or more.

From my experience, both in regard to patients on whom I have operated and those I have seen after prostatectomy by other surgeons, as well as from isolated reports furnished by friends, I have no hesitation in saying—and I believe this will be corroborated by others—that, brilliant as this operation sometimes is, it does not invariably relieve patients of their urinary troubles, and sometimes ends in miserable failure. During the last few months I have collected particulars of the following cases:

A large phosphatic calculus removed a year after prostatectomy.

Two cases of suprapubic fistula.

One case of great irritability of bladder both by day and night, as bad as or even worse than that caused by partial retention.

One case of vesical hæmorrhage.

Four cases in which the urine was still septic.

I cannot say, of course, whether these cases had been reported as successful or not; yet they suffice to prove that a proportion of patients passing out of the surgeon's care continue to suffer from urinary troubles. Until it is clearly proved that comparatively few suffer from after-troubles we should not too lightly advise a patient to submit to prostatectomy. In the successful cases the patient is freed once and for all from the ties of catheter life, which is a very great advantage and appeals strongly to very many.

II.

In the alternative treatment—the habitual use of the catheter—there is little or no danger to life, and no 10 per cent. mortality to face, provided sterility is maintained. The patient after two or three days' rest, while learning the art of sterile catheterization, is able to resume his ordinary occupation. His health is not in any way impaired by long confinement; in fact, a general improvement begins directly the bladder is emptied and he is relieved of the nocturnal frequency. With the exception of having to use the catheter two, three, or four times in the twenty-four hours for the rest of his life—the premium he pays for escaping operation—he has nothing to fear.

This statement will be challenged, for everyone has seen the terrible local and constitutional symptoms which more often than not follow the use of the catheter. But those symptoms, the manifestation of cystitis and similar inflammatory processes, are due to sepsis alone; and since they occur so frequently after instrumentation, the inference must be that the micro-organisms have gained access to the urinary passages by the agency of such instruments, and therefore that the preparation of the catheter, or the manner in which it has been introduced, is at fault. If, in the past, disaster has attended the use of the catheter, then it is time that some more efficient method of sterilization should be adopted, for success or failure depends entirely on this point. If it is possible to maintain sterilization with certainty, then it appears that catheter life is preferable to operation in the majority of cases of prostatic retention.

The introduction of soft gum elastic catheters into this country some seventy years ago greatly benefited those who used them, but they also rendered the problem of cleanliness more difficult. The old-fashioned metal instrument, with its brightly polished surface, was more readily cleaned and did less harm on that account than the painless and easy-passing soft catheter, with its cotton or silk foundation coated with layers of varnish. The same danger exists to day; chemical antiseptics, now so universally employed, will possibly sterilize the metal, but certainly not soft instruments, for the rough and oil-sodden interior alone offers to the micro-organisms a safe harbour against all chemical action for an indefinite time. Soft instruments prepared in this way cannot be safe, and their use for the treatment of prostatic retention will end sooner or later in failure—that is, in contamination of the urine or tissues. India-rubber catheters are as bad, for though the lumen is not rough and the material offers less protection to the organisms, yet they swell under the influence of grease, become sticky, lose their polish, and moreover require much fingering on account of their extreme flexibility.

The easiest and safest method of producing sterility is by boiling every instrument in water, and in my opinion catheterization as a method of treating prostatic retention is not given a fair trial unless this precaution is taken. There are, however, certain other points which must be attended to, if success is to be attained:

The lubricant must be boiled and applied mechanically, and not with the fingers.

The catheter must be introduced with a minimum amount of handling; certainly the first 4 in., which pass through the prostate, should never be touched.

The fingers of the operator and the orifice of the penis must be scrupulously clean.

These few details the patient must learn before he can be trusted to relieve himself with the catheter. In order to demonstrate what may be accomplished by a systematic use of the catheter sterilized by boiling, I venture to record the cases which have come under my care during the past year. The results are not perfect, for the limitation of the use of the catheter has not been reached, and improvements in the method can and will be achieved in the course of time, yet they indicate that a man may lead an active life in comfort, even if he is compelled to use a catheter, and may live to a very ripe old age without the terrible symptoms which have been witnessed in the past. All are living at the present time. The youngest patient is 46 and the oldest 96. The average age is just under 70. The longest time for which the catheter has been used is forty years, and the average of the series seven years. Most were septic when the treatment began, very often with foul urine and grave constitutional symptoms, and all invariably improved rapidly, as the records show.

The list is divided into three classes:

- (a) Those who have recovered the power of natural micturition after treatment.
- (b) Those who pass their water partly naturally and partly by the catheter.
- (c) Those who have to rely on the catheter alone.

In the first two classes the gradual fall in amount of the residual urine in some instances is worthy of note. The bladder seems to regain its power to some extent under the influence of regular catheterization (Cases III, IV, V, VI, etc.). For example, the residual urine may be 12 oz. at first, and after a week or two it will fall to 6 or 7 oz., or even may

disappear altogether (Cases I, II). This may be explained either by a decreased resistance in the prostate, caused by a lessening of the congestion in that part, or by a regaining of muscular power, owing to the bladder having been systematically relieved of a load which it had carried for so long—that is, the muscle recovers its power, having been relieved of the strain of a constant burden; whereas, if the weight remained, the muscle would gradually grow weaker, and more urine in consequence would accumulate.

In some cases the prostate has increased in size, or, if not actually in size, at any rate the enlargement of the glands within its substance has pressed increasingly upon the urethra, and has raised the resistance, and thereby the natural power has been lost or very much impaired; the patient is therefore compelled to rely more and more on the catheter (Cases IX, XIII, XVII, etc.). But in no case has the increase given rise to any of the serious difficulties or inconveniences so frequently attributed to it. A large prostate does not necessarily produce symptoms; it only does so when it interferes with the function of micturition. Most men have some enlargement (which begins at a very much earlier age than is suspected, for the same changes may be noted in the glands of the comparatively young man as occur when disease is well established after middle life), and the condition may never be discovered. The best results, in that the patient has not had anything to complain of, are naturally obtained by those who have never been infected—that is, patients who have adopted boiling water as the sterilizing agent from the beginning, and it is this class which offers the best chance of the bladder regaining its powers. Nevertheless, septic cases have done exceedingly well, and the fact that no less than 16 out of these 20 cases were septic when first seen is a strong argument in favour of the contention that the ordinary technique connected with instrumentation is sadly deficient.

A.—Those who have Recovered the Power of Natural Micturition after Treatment.

CASE I.—L. L., aged 62. Urine passed naturally four to five times in twenty-four hours, and is healthy. The prostate is large, soft, and round. For five or six years patient had indications of commencing prostatic trouble. In October, 1905, I saw him with Dr. Lush, of Hampstead, when he had retention; his bladder was greatly distended; catheterization was very difficult, and accompanied with severe hæmorrhage. The difficulty was overcome, and he continued, after being taught, to use his catheter at first three times, then twice, then once, a day, and, finally, as he could empty his bladder completely, it was discontinued. Since the beginning of 1906 he has passed the instrument once a month to make sure that he cleared the bladder. In December, 1908, he had retention, and was relieved. He has no trouble whatever.

CASE II.—R. W. E. (C 274), aged 64. The urine passed naturally five or six times in the twenty-four hours, is healthy, and the prostate full, round, and elastic. I saw him with Dr. Harold. He complained of nocturnal incontinence, and there were 10 oz. of residual urine. Catheterization was performed regularly three times a day, and at the end of six months he could empty his bladder by his own efforts.

B.—Those who Pass their Urine Partly Naturally and Partly by Catheter.

CASE III.—N. B. (C 236 S), aged 46. Catheter has been used for three years twice in twenty-four hours; urine passed naturally two to three times; it is clear; the prostate small and firm. He commenced in 1906 to pass the catheter in the ordinary way, and did so twice daily. Troubles soon began—pain, irritability of the bladder, fever, etc., and he was strongly advised to submit to prostatectomy. To this he objected, and in February, 1907, learned to sterilize and pass his catheter properly. The residual urine (8 or 9 oz. in amount, which up to this time was foul) gradually improved, and is now about 6 oz. He is in good health, and actively carries on his business.

CASE IV.—M. L. (C 341 S), aged 62. Has used catheter twice in twenty-four hours for nine months, and passes urine which is nearly clear three to four times in twenty-four hours; the prostate is large and round. For six months previously he had passed his catheter occasionally without any aseptic precautions. Ten days before I saw him he had done so, and was just recovering from a severe attack of fever associated with irritability of bladder, pain, and straining. The urine was thick and offensive, and the residuum was fully 2 pints. He rapidly improved under sterile instrumentation three times a day, and has now regained, to some extent, the power of natural micturition, and uses his catheter twice in the twenty-four hours to clear the organ. He is doing well.

CASE V.—J. O. (C 362 S), aged 62. Catheter has been used four times every twenty-four hours for three-quarters of a year. Urine passed naturally once or twice in twenty-four hours, it is very slightly cloudy; the prostate large, round, and elastic. I saw him with Dr. Sheldon, of Notting Hill, in September, 1908.

He had been troubled with frequency of micturition for two and a half years, but never had any treatment. While staying from home in August he had a catheter passed to relieve retention. Rigors and fever followed the introduction, the urine became foul, and his general health began to suffer. Dr. Sheldon taught him to pass a sterile catheter four times a day, from which time he made an uninterrupted recovery. At first the residual urine was 2 to 3 pints. It is now 18 or 19 oz., and he can pass a little naturally. He is in excellent health.

CASE VI.—J. W. (C 206 S), aged 65, has used catheter twice in twenty-four hours for three years. Urine passed naturally two to three times. At present it is a little turbid; the prostate is large, elastic, and uniformly enlarged. He began to use the catheter habitually once a day in February, 1906, but without any antiseptic precautions. His condition rapidly got worse, and in consequence of the foul state of his urine was advised to wash out the bladder, likewise without any regard to cleanliness. By August of the same year his condition was so bad that he was compelled to rise eight or nine times in the night, and could only hold his urine from five to fifteen minutes while moving about in the day. Natural micturition was associated with intense pain and straining. He had frequent attacks of high fever, and was totally incapacitated from following his occupation of a blacksmith. The urine was stinking. He was strongly advised to have the prostate removed as the only means of saving his life. He, however, learnt to pass the catheter properly and rapidly recovered, and is now quite well and strong.

CASE VII.—E. F. (B 158), aged 65, has for nine years used catheter four to five times during twenty-four hours, passing a little urine naturally occasionally, its present condition being cloudy; the prostate is small, round, and firm. For the first four years of catheter life he took very inadequate precautions against sepsis, and consequently the difficulty in instrumentation increased. In 1904 he had severe attacks of cystitis, and a phosphatic stone formed which was removed by lithotripsy. Afterwards he was more careful, but still not sufficiently so, and he had slight chronic cystitis, with occasional hæmaturia, and also some irritability of the bladder, necessitating the too frequent use of the catheter. During the last two months he has commenced to carry out a proper system of sterilization, with the result that the catheter already goes more easily, and is less frequently required.

CASE VIII.—N. B. (B 289), aged 66. Catheter used for four years, about twice each twenty-four hours, and he relieves himself naturally three to four times; the urine is cloudy; the prostate is large and regular. The first symptoms of enlarging prostate occurred in 1900, and from that time until 1904 he relieved himself occasionally by means of a catheter whenever retention threatened. In May of that year, being from home, he was catheterized at hospital, where the instruments had been prepared by soaking in a strong solution of perchloride of mercury. No urine was withdrawn, and he was told that there was no retention. However, during the evening, when he had returned to his home, his symptoms became so distressing that he was forced to seek advice. The penis, and especially the mucous membrane, was then so swelled and congested that a catheter could only be introduced with the greatest difficulty, and notwithstanding repeated trials the retention was not relieved. Suprapubic cystotomy was therefore performed, but he declined prostatectomy. The prostate was of the exciseman's inkstand or os uteri class. He rapidly recovered from the operation. At first he passed all his urine by catheter, but gradually the bladder regained power, and he is now only using it twice a day. He is exceedingly energetic, and travels much on the Continent. I saw this patient with Dr. Crowley of Highgate.

CASE IX.—B. F. (C 192 S), aged 67. Catheter has been used for three years three times in twenty-four hours, and he passes urine naturally two to three times a day; it is clear; the prostate is large and round. Previous to 1906 this patient had a good deal of urinary trouble. In that year I removed a phosphatic calculus of moderate size, and Dr. Clayton of Hampstead taught him to use the catheter, which he has done ever since, though rather more frequently recently, as there is an increase in the residual urine. He is quite well.

CASE X.—A. B. P. (C 286), aged 71. Catheter has been used for two years once in every twenty-four hours; urine passed naturally four to five times; it is normal; the prostate is moderately enlarged. I saw him with Dr. Evans of Weybridge. He had great frequency at night, which disturbed his sleep. Since using the catheter he has no trouble, and the residual urine has diminished from 11 to 7 oz.

CASE XI.—R. G. (C 254), aged 72. Has regularly catheterized himself twice a day for two years and passes urine three or four times; it is slightly cloudy; the prostate is round and full. He was formerly troubled with frequency both by day and night, also occasional incontinence and pain in the peritœum. There were 12 oz. of residual urine, and a small stone of uric acid and oxalate of lime, which was removed by lithotripsy. He had one mild attack of cystitis, owing to carelessness in the preparation of the catheter. I saw him in consultation with Dr. Harold.

CASE XII.—E. W. P. (B 166 S), aged 73. For seven years catheter has been used three times in twenty-four hours, and he micturates naturally two to three times; it is clear; the prostate has not been examined lately. Symptoms of prostatic retention commenced in 1897, but he did not use the catheter until 1903, when there were about 8 oz. of quite clear residual urine. At the end of the year he had a sharp attack of cystitis, afterwards he adopted aseptic precautions and has had no trouble since.

CASE XIII.—W. H. (A 416 S), aged 76, has catheterized himself three times in each twenty-four hours for five years, very little urine passing naturally. The urine is clear, and the prostate is large and round. Lithotripsy was performed twice—April, 1897, and November, 1904. The first stone was pure uric acid, the second had a thick coating of phosphates; for five or six weeks previously he was advised to employ a catheter to withdraw 4 oz. of urine, which he did in a most careless manner without being taught. Cystitis naturally resulted. After the removal of the stone and proper instrumentation, he rapidly recovered and remains well.

CASE XIV.—G. C. (A 308 S), aged 78, has for fourteen years used catheter once in each twenty-four hours, urinating naturally three to four times; the prostate has not been examined recently. For many years he has had attacks of retention relieved by the use of the catheter. Urinary troubles invariably followed (cystitis, haemorrhage, and grave constitutional disturbance). Fourteen years ago he commenced habitual catheterization, and two years later adopted strict asepsis and has had no complication since. He was an old patient of the late Sir Henry Thompson.

C.—Those who have to Rely on the Catheter alone.

CASE XV.—F. S. P. (B 380 S), aged 63, has used catheter for seven years four times in each twenty-four hours. The urine, none of which passed naturally, is nearly clear, and the prostate was large and full. In November, 1902, he was in a very serious condition, with frequent rigors and a temperature varying from 100° to 104°. His tongue was dry and coated. Incessant distressing and ineffectual calls to pass urine with much pain. Instruments had been used recently for purposes of examination. There were 60 oz. of residual urine, which was thick and foul. Prostatectomy was urged upon him as absolutely essential; but he preferred to try treatment, with the result that he is now quite well, bicycling, walking, etc.

CASE XVI.—Dr. L. (C 312 S), aged 72. Catheter has been used three to four times each twenty-four hours for two years. No urine passed naturally; it is clear; the prostate large and soft. He adopted strict aseptic methods from the commencement and has never had any trouble.

CASE XVII.—G. D. L. (B 351), aged 73, for seven years has used catheter three times in every twenty-four hours. Urine clear but none passed naturally; the prostate is firm and extending upwards. He has boiled his catheter from the first. The prostatic urethra is long and offers some resistance to the catheter. At first he used it twice, but recently three times, a day, and has lost the power of micturition entirely. He is in excellent health and full of activity.

CASE XVIII.—G. W. P. (C 31), aged 77. Catheter used for seven years three times in every twenty-four hours; urine clear, none passed naturally; the prostate is large and round. He was properly taught to use the instrument by Dr. Beaumont of Norwood. At first he employed it twice, but recently, as the prostatic resistance increased, three times a day. He has sugar and albumen in the urine, and, with the exception of slight haemorrhage on two or three occasions, has remained well.

CASE XIX.—Dr. D. (B 170 S), aged 86, for nine years has used catheter three to four times in every twenty-four hours. Urine slightly cloudy; none passed naturally. Fourteen days before I saw him he had used a catheter night and morning; this produced greatly increased desire to micturate, pain, difficulty with the instrument, and slight fever. The urine was thick. Under proper aseptic treatment he gradually improved, and now, notwithstanding his age, is very well.

CASE XX.—A. M. (A 85 S), aged 96, has used catheter for forty years four times in every twenty-four hours. Urine nearly clear, though none passed naturally. An old patient of the late Sir Henry Thompson. Previously to 1902 he was much troubled with stricture and could only pass a No. 5 catheter to withdraw the urine, which he used five times in twenty-four hours. He had many troublesome attacks of orchitis, fever, urethral discharge, and other complications which frequently confined him to bed. In the latter part of that year he had an attendant to prepare his instruments by boiling, and he has had no complications since; even the stricture has yielded, and he can now employ a No. 7 with comfort. He is in wonderful health considering his advanced age.

The question, "When should prostatectomy be advised or undertaken?" has still to be considered. I am entirely opposed to the practice of operating as soon as the gland is found to be abnormal, and before any marked symptoms have arisen. The enlargement has been detected very probably by rectal or cystoscopic examination, and it is contended that its immediate removal, while the patient is in good health, will prevent troubles hereafter; this deduction appears to be based on insufficient evidence, for a large number of men go to the grave in advanced years with an enlarged prostate, which has never given any trouble, nor has its existence ever been diagnosed.

Prostatectomy should not be undertaken unless the symptoms present are definitely ascertained to arise from that organ, and from nothing else. Urinary symptoms are very frequently attributed to the gland when in fact they come from quite a different cause. For instance—and this, perhaps, is the most common mistake—a patient

complains of occasional retention, haemorrhage, pain, etc.; a rectal examination is made; the prostate is found to be enlarged and is straightway accused, without further search, of being the cause of the trouble. What is the result? During the operation for removing the offending member a stone is found in the bladder, which could easily have been removed by lithotripsy and the patient restored to health in a week, whereas he is now condemned to pass through an unnecessarily severe ordeal. In skilful hands the *x* rays will nearly always eliminate such errors, even when the sound has failed to reveal the true cause.

Prostatectomy should be deferred until after treatment by catheter has been tried. The patient may recover his power, or he may decide, when he knows exactly what to expect, to continue treatment. No harm can come of a delay of a month or more, and in septic cases much good will result, for the patient will improve and be in a better condition to bear the operation. Afterwards, if the catheter fails or is found too irksome, recourse can be had to operation.

When the patient is comparatively young, in good health, and has many years of life before him, operation is very rightly advocated as soon as it is proved that catheter treatment will not cure. The same may be said of those who, owing to their position in life, calling, or lack of funds, are unable to carry out the few simple details necessary in sterile catheterization. Prostatectomy undoubtedly is the best treatment when the prostate, by its mere size, has largely encroached upon the bladder space, and there is no residuum. The urine is clear and free from all signs of sepsis, yet the patient has constant and urgent calls to pass water both by day and night. Finally, the operation may be necessary in certain cases where the prostate is constantly bleeding and filling the bladder with clot which interferes with instrumentation and endangers the patient's life.

REFERENCE.

¹ *The Development and Anatomy of the Prostate Gland*

HOME CONDITIONS AND EYESIGHT.

By KARL PEARSON, F.R.S.,

FROM THE GALTON EUGENICS LABORATORY, UNIVERSITY OF LONDON.

It may not be without interest, in view of recent criticisms of a memoir by Miss Barrington and myself,* to publish some further determinations of the relation of home conditions to sight.

Before doing so it will be well to point out one or two important considerations which I think have considerable bearing on the manner in which statistics ought to be collected, having regard to the medical inspection of school children, which is now becoming universal.

The first point I would insist upon is that careful distinction must be made between (a) home environment and (b) school environment.

Our paper dealt chiefly with the influence of home environment on both refraction and acuity of vision. Now, as far as I am aware, the only material hitherto available for testing the influence of the actual home conditions on the presence of eye disease, on the goodness or badness of vision, or on shortsightedness, is that provided by the report of the Edinburgh Charity Organization Committee, where we have for the first time the sociological report on the home conditions placed alongside the ophthalmological report on the child's eyes, and accompanied in each case by the age of the child. I do not see how it is possible without such information to draw conclusions as to whether the home conditions do or do not affect sight. I am quite prepared to be shown that the conditions in Edinburgh are exceptional, but the proof can only be given when the children who are reported on elsewhere are followed up into their homes, and the state of these is recorded, as in the Edinburgh investigation.

Further, the Edinburgh material was of special value, because there is not the same extraordinary mixture of racial types in that city which is to be found in Glasgow or London. We are told, for example, that Russian Jews

* *Eugenics Laboratory Memoirs. V, A First Study of Vision and of the Relative Influence of Heredity and Environment on Sight.* Dulau and Co. 1909.