germ cell—even if we do not admit the whole Weismannian conception of chromosome, id, determinant and biophor—and that no amount of care or education, no change in environment, no choice of function can, so far as we know, alter by one jot or one tittle the constitution of the germ plasma that each of us has received from parents and may transmit to offspring. It is encouraging because more and more it becomes clear that whatever of abnormal is contained within the inheritance it is not disease so much as pre-disposition to disease, and that each item of an inheritance requires suitable environment in which to appear, and suitable functioning for the encouragement of its growth.

The deliberate improvement of the health of the race by restriction of the mating of those whose inheritance is physically or morally bad, except in extreme and obvious cases, is an idealistic dream for a future that may never arrive; the world gets more, not less, sentimental as it grows older. Though the courts of Science may give a verdict in favour of voluntary selective mating, the judgement would be always liable to be reversed in the appeal court of Love. Even the problem of what characteristics to select for breeding purposes would be no easy one. The wheat and the tares in the germ plasmas of mankind are so inextricably intermingled, so mutually related, that the time is far from ripe for attempting to anticipate the Judgement Day. Oliver Wendell Holmes used to speak of "pathological piety" and "the tuberculous virtues." How pathetic and how true those expressions are; how desirable it would be, and yet how impossible it probably is, to perpetuate the mental and moral excellence apart from the weakly soil in which it flourishes!

At any rate for the present, efforts towards raising the general health of the race should be directed towards improving the environment and providing for proper functioning. Heredity, function, environment, they have been aptly likened to the Norns or Fates who, according to the old religions, directed and guided human life from the cradle to the grave.

CLINICAL ILLUSTRATIONS OF THE USE OF THE CYSTOSCOPE, THE URINE SEPARATOR, AND THE URETERAL CATHETER.

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THE following cases are intended to illustrate the use of the cystoscope, the urinary separator, and the ureteral catheter.

It is hardly necessary to say that the cystoscope and its adjuncts do not render obsolete or supersede the older methods of clinical investigation. A careful analysis of the history and symptoms and a painstaking clinical examination are as necessary as ever. In some cases the results of this investigation afford evidence so plain and positive that the indications for operative or other treatment appear to need no reinforcement; but even in such cases it is seldom that the cystoscope will not furnish further evidence of importance, particularly with regard to the condition of the kidney on the side opposite to that indicated by symptoms. Again, although it is seldom that a complete clinical survey fails to find any indication of renal disease when this is present, yet cases are not uncommon in which the symptoms point so predominantly to the lower urinary tract that without cystoscopic evidence the disease may be erroneously referred to this region when the real seat of the mischief is renal. Or, conversely, disease in the bladder may be erroneously referred to the kidney, on account of the symptoms to which it may give rise. A stone, for example, impacted in the lower end of the ureter generally gives rise to vesical symptoms, such as painful and frequent micturition, and, if pus is also present, a purely clinical investigation often leads to an erroneous diagnosis of cystitis. The same error may also be made in cases of tubercle of the kidney when the disease affects the lower part of the ureter and the trigone. On the other hand, tumours of the trigonal area sometimes cause occlusion of one ureter, and the symptoms may then, in the absence of cystoscope examination, be referred erroneously to the corresponding kidney.

For the diagnosis of the source of blood found in the urine the cystoscope is absolutely indispensable. The following are two typical cases.

CASE I.—Villous Tumour of Bladder.

A man aged 44 had noticed blood-stained urine at intervals of two or three weeks for eighteen months, accompanied by pain on micturition and suprapubic pain independent of micturition. No lumbar pain. Small blood clots had sometimes been observed in the urine. The clinical examination was negative, except for the presence of blood in the urine and the absence of pus or casts. The cystoscope showed a small villous tumour near the right ureteral orifice, which was successfully removed by a suprapubic operation.

CASE II.—Villous Tumour of Bladder, simulating Prostatic Haemorrhage.

A man aged 74 suddenly began to pass copious blood, partly clotted, and causing pain in the penis. He had had several less severe attacks of haematuria during the previous twelve months; he had also nocturnal frequency of micturition for a year or two. He was admitted to hospital after six days of unremitting haemorrhage, blanched from loss of blood, and with the bladder distended. The age and symptoms rather suggested haemorrhage from an enlarged prostate; but after washing out a large quantity of clot from the bladder there was seen by the cystoscope a small villous tumour surrounding the orifice of the right ureter. Fragments of growth were also found in the bladder washings and identified microscopically. The growth was removed suprapubically, together with the intravesical part of the ureter, and no further haemorrhage occurred. Death occurred from exhaustion, and the kidneys were found normal, except for some dilatation of the ureters. The prostate was small.

The first of these cases was clinically a typical case of bladder tumour, and in precystoscopic times no surgeon would have hesitated to open the bladder on the strength of the history and symptoms. Nevertheless, in many cases presenting similar symptoms the bladder has been opened and nothing abnormal found, because the source of the haemorrhage was in reality renal. In other cases the source of the blood has proved to be a bladder tumour which was quite inoperable. Errors of this kind the use of the cystoscope would have avoided, and at the present day I suppose no competent surgeon would think of opening the bladder without previous cystoscopy, except in a clear case of calculus or enlarged prostate. Even in these two diseases preliminary cystoscopy often affords valuable information which it would be foolish not to obtain, since it may be made under the anaesthetic in a few minutes immediately before the operation.

The next example is a case of symptomless renal haematuria—that is, a case in which blood in the urine occurs without any other symptom to give a clue to the source, and even operation fails to disclose any abnormality of the kidney.

CASE III.—Symptomless Haemorrhage from Granular Kidney.

A married woman, aged 29, passed without pain a considerable quantity of blood in her water one month before admission to hospital. The haematuria continued thereafter, with the exception of a single day. There were no other symptoms, and the general health, except for some anaemia resulting from the haemorrhage, was good. There was nothing to indicate the source of the haemorrhage. With the cystoscope the trigone and ureteral orifices appeared normal, but jets of dark blood were seen issuing from the right ureter only. With Luy's separator rapid rhythmic drops issued from both catheters, but those from the right looked like pure blood, those from the left were pale green. Methylene blue was administered previous to the examination. The right ureter was catheterized, and grouped drops of blood-stained urine flowed freely from it.

The right kidney was explored. It was of normal size, markedly lobulated, and had a few cysts on the surface the size of a split pea. The pelvis was incised, and the interior of the kidney palpated with the finger and bimanually. In many places the substance was found to be thinner than natural, otherwise no abnormality was felt. The kidney was partly decapsulated. One rubber catheter was passed a few inches down the ureter, so as to block it towards the bladder, and a second sutured with catgut, with its tip just inside the pelvis of the kidney. These were left in for two days, during which the urine was clear, and that drained from the one catheter was blood-stained. After removal of catheters the bladder urine became smoky for a few days, but then became and remained clear. The patient was discharged well, and had no recurrence when last heard of.

In the following cases the clinical history and symptoms pointed more or less clearly to calculus in one kidney, and cystoscopic examination, separation of the urines, or catheterization of the ureters, was carried out in some or all of them for the purpose of further localizing the

disease, or ascertaining the function of the opposite kidney.

CASE IV.—Stone in the Kidney: Nephrotomy.

A man, aged 41, had had pains in the right side and "in the privates" for six months before admission to hospital. During this time the urine had been bloody and contained a thick deposit. Neither kidney could be felt. By Luys's separator equal amounts were obtained in each tube, but in the right alone were red blood cells found on microscopic examination of the deposit. At the operation a small crystalline stone the size of a broad bean was found in the pelvis and removed by an incision directly over it.

CASE V.—Stone in Kidney: Obstruction of One Ureter: Nephrotomy.

A police officer, aged 52, was thrown across a chair while struggling with a man. Soon after and during the following four years he suffered much from pain in the left loin and groin, especially after walking. During these attacks he had blood in his urine. By Luys's separator normal urine was collected in the right tube with a regular rhythmic flow. From the left side the flow was nil. At the operation the left kidney was found greatly distended and thinned, with a cicatrix at its upper pole. A large calculus weighing 294 grains lay in the pelvis of the ureter, with a projecting process, which on slight descent of the calculus would completely block the ureter. At the previous cystoscopic examination the orifice of the left ureter was noted to be dilated.

CASE VI.—Obstruction of Kidney Pelvis by Stone: Nephrectomy.

A man, aged 27, had suffered as long as he could remember from pain in the right renal region. Blood was noticed in the urine on two occasions after an attack of pain many years ago. Cystoscopy showed that the orifice of the right ureter was large and patulous, and no urine was seen ejected from it. The left ureteral orifice was normal and ejected normal jets. By Luys's separator 1 c.cm. of normal urine was collected in the left tube, containing no blood or other cells. In the right tube were only two small drops of colourless fluid containing numerous red and white blood cells and a few epithelium cells. At the operation a large chronic hydronephrotic kidney was found full of small calculi, with one large one blocking the pelvis of the ureter. The kidney was removed and the patient made a good recovery.

Cases IV, V, and VI were all characteristic cases of renal pain and tenderness, confined to one side, accompanied in all with blood in the urine. In several the pain had the typical characters of renal colic. On the clinical evidence alone calculus was in each case the most probable diagnosis. In each case some confirmatory evidence was found by cystoscopic examination or by separation of the urines, and in most of them valuable indication of the secretory activity of each kidney. The ejection of normal urine in regular rhythmically grouped drops from Luys's separator may be taken as strong presumptive evidence that the kidney, if not sound, has at any rate a substantial proportion of sound tissue. When this result is obtained on the unaffected side—that is, in a case in which the symptoms are unilateral—little fear of renal insufficiency need be felt. When there is also from the affected side a free and regular flow of urine, it may be safely assumed that the kidney substance on that side is not extensively destroyed, nor the lumen of the ureter obstructed, even though the urine contains signs of disease in the form of blood or pus.

The following cases of hydronephrosis or pyonephrosis afford illustrations of the use of the cystoscope or the separator:

CASE VII.—Hydronephrosis: Nephrectomy.

A man, aged 23, had suffered for three years from intermittent pain in the left loin. An indistinct resistance was felt in this region, and tenderness on pressure. The urine contained no pus, blood, or albumen. There was some frequency of micturition, both day and night. With Luys's separator normal urine, with normal rhythmic flow, was collected from the right side; nothing at all from the left. The left kidney was found a mere sac distended with clear fluid, and was removed. The patient made a good recovery and remains in good health.

CASE VIII.—Hydronephrosis: Nephrectomy.

A youth, aged 19, had been subject for three years to attacks of pain in the left loin, shooting into the left testicle, and made worse by exertion. The urine contained pus. By the cystoscope the left ureteral orifice was seen to be dilated. Using Luys's separator for ten minutes, 3 c.cm. of urine were collected from the right side, 1.8 c.cm. from the left. The right urine, which was straw coloured, contained a microscopic trace of pus and 1.8 per cent. urea; the left was pale and turbid, and contained much pus, and only 0.4 per cent. urea. The left kidney was found to be merely a thin-walled cyst, and was removed. The patient was in good health a year later.

CASE IX.—Pyonephrosis: Drainage of Ureter.

A man, aged 46, while at work was seized with stabbing pain in the right loin and groin. The pain lasted several hours and then subsided. Several similar attacks followed. The pain was often started by passing water, but there was no urethral pain. For three days before admission to hospital he vomited everything taken. On examination there was tenderness in the right loin, but the kidney could not be defined. On rectal examination the prostate was found somewhat enlarged, and an elastic swelling was felt in the position of the lower end of the right ureter. Cystoscopically the mouth of the right ureter was enormously dilated, and shreds of lymph were attached to its margin. The left ureter could not be seen. The man's general condition made an exploration of the kidney too serious a procedure; accordingly it was thought better to expose the right ureter in the iliac region. It was found dilated to the size of a man's thumb, and distended with pus. It was traced upwards to the lower end of a kidney about twice its natural size and downwards into the pelvis. An opening was made into it, and several ounces of thick pus evacuated; no stone was felt with a probe. The ureter was drained by means of a catheter, secured by a stitch in its wall. A ureteral fistula remained for some weeks, but eventually the whole wound closed soundly, and the man was seen several months later, when he was at work and in fair health. He was admitted a year later with vesical symptoms, and a large phosphatic calculus was removed by suprapubic section. In the centre of the stone was found a uric acid nucleus $\frac{1}{16}$ in. in diameter, which no doubt lay in the ureter or kidney and was overlooked at the first operation.

CASE X.—Pyonephrosis: Profuse Haemorrhage: Nephrectomy.

A married woman, aged 25, had a normal confinement six weeks before her admission to hospital. She got up on the sixth day; she then had abdominal pain, distension, and vomiting, with a temperature of 102° F. After these symptoms subsided, a large mass was found projecting from below the liver. The day before her admission, while engaged in housework, she was seized with pain in the right side of the abdomen, vomited, and passed blood with her urine. Four days later dark jets of blood were seen with the cystoscope issuing from the right ureter. The urine at this time looked like pure blood. Luys's separator gave a striking difference in the two collecting tubes, the right containing deep blood-stained urine, the left a larger quantity of clear urine. The abdomen was distended and tender, with a large indistinct tumour on the right side. Permission to operate was only obtained ten days later, when the general condition was critical, and a rapid evacuation and drainage of a huge distended pyonephrotic kidney was all that could be safely performed. The kidney sac was successfully removed a month later, and the patient made a good recovery.

In these cases the cystoscope and separator obtained diagnostic evidence of the utmost value, and enabled nephrectomy to be performed without misgivings as to the capacity of the remaining kidney.

The next case is an example of the use of cystoscopy and separation of urines in tuberculosis of the kidney.

CASE XI.—Tuberculous Kidney: Nephrectomy.

A girl aged 20 had pain in the left side for four years, at times severe. Much pus and a little blood had been observed in the urine. A large, tender kidney was felt in the left loin, nothing in the right loin. She was stated to have once passed a stone per urethram. Cystoscopy showed a small, retracted ureter on the left side, and near it a small round ulcer with ragged edge. The mouth of the right ureter appeared rather large and patulous, but frequent and free jets of clear urine were seen issuing from it. With Luys's separator there was normal ejection from the right catheter of urine well stained with methylene blue. From the left side were collected only a few drops of blood-stained fluid, containing also pus cells. The left kidney was found a typical example of an advanced stage of tuberculous disease with cavities. It was removed, and the patient made a good recovery. The urines were not separated in this case, as the patient's condition made it inexpedient to sit her up.

The following is an example of absence of one kidney:

CASE XII.—Absence of One Kidney: Observations by Cystoscopy and Separator.

The left kidney, somewhat enlarged, but otherwise healthy looking, of a woman aged 23 was fixed by the ordinary lumbar operation on account of pain and extreme mobility. The kidney continued to be painful and tender, as well as obviously enlarged. It was exposed a second time without finding any cause for the pain or any sign of disease. Twelve months after the first operation an exploratory incision into the kidney itself was contemplated, and the patient was anaesthetized for this purpose. On cystoscopic examination the trigone and two ureteral orifices were found normal. Nevertheless, the large size of the left kidney, without any sign of disease in it, made me suspect the possible congenital absence or atrophy of the right kidney. The catheter cystoscope was not at the time available, and Luys's separator cannot be used satisfactorily under an anaesthetic. The patient being already anaesthetized, instead of again exploring the left kidney, I made the usual lumbar incision on the right side, and searched thoroughly without finding a trace of a kidney. Nevertheless, it is probable that a rudimentary kidney existed, for by subsequent use of

Luys's separator a fraction of 1 c.cm. of colourless fluid containing a trace of urea was collected from the right side. In the same time 10.5 c.cm. of normal urine were collected from the left kidney.

The above cases illustrate most of the common and some of the rarer practical problems of renal surgery, and the assistance afforded in their solution by the use of the cystoscope, the ureteral catheter, and the urinary separator. A few concluding observations may be made on the relative value of these three methods.

Leaving on one side the use of the cystoscope in discriminating between affections of the kidneys and affections of the bladder, a use which is too obvious to need further argument, we have in the visual inspection of the trigone and ureteral offices a simple means of obtaining direct evidence of the greatest value of the patency or occlusion of the ducts of the kidney, and of the secretory activity of each organ. The appearances of the mouths of the ureters and of the neighbouring mucous membrane often enable us to diagnose tuberculosis of the kidney, or impaction of a stone in the ureter. The previous ingestion of methylene blue or other pigment enables us to watch the force and frequency of the jets expelled from each ureter, and the degree of pigmentation of the jets and the rapidity with which the pigment is excreted from the blood gives us some idea of the functional capacity of each kidney. The use of the ureteral catheter carries the investigation a stage further, for it not only enables us to test the patency of either ureter with precision, but to collect and analyse the urine of each kidney separately. The latter object is attained, though perhaps less perfectly, by means of the urine separator of Luys. Of other separators I have no experience, but as to the relative advantages of ureteral catheterization compared with Luys's separator, the following remarks may be made.

In the first place, as regards ease of application, there is little to choose between the two methods, but on the whole catheterization is the easier, as it is certainly the more precise. The separator requires a preliminary cystoscopy in order to exclude conditions of the bladder which may introduce fallacies in the use of the separator; and since cystoscopy and catheterization can be carried out with the introduction of a single instrument, that is a distinct advantage over the separator. Catheterization of the ureters, again, is possible under general anaesthesia while the use of the Luys's separator is not, so that the former operation can be performed immediately preceding an operation on the kidney, and with the same anaesthetic. This is not, however, generally a procedure to be recommended, for two reasons. In the first place, general anaesthetics nearly always diminish or inhibit the secretory activity of the kidney; and, in the second place, it is not advisable to catheterize both ureters immediately before an operation on either kidney for fear of adding to the inhibitory effect of an operation on both. Whatever method of separation be employed, it is better to carry out this procedure on a separate occasion and employ only a local anaesthetic, which is quite efficacious for the purpose. By means of Luys's separator properly used I have satisfied myself that reliable observations can be made as to the patency of the ureters and the relative functional activity of the two kidneys, with little pain, in five to ten minutes.

Nevertheless, both care and experience are required to avoid certain fallacies, and I think it is probable that those who are familiar with the use of the cystoscope will prefer to employ the ureteral catheter in most cases.

A DISCUSSION on the ventilation and warming of public buildings will be opened at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Wednesday next, at 8 p.m., by the Rev. J. B. Lock, Bursar of Caius College, Cambridge, who will read a paper on the ventilation of the large Examination Hall, Cambridge.

WE are glad to note that the trustees of the Carnegie Hero Fund, at a meeting on January 27th, decided to grant an allowance of £35 per annum (with a supplement of £15 for the first year in consideration of special circumstances) to the widow and family of Dr. John Herbert Wells, formerly of the therapeutic inoculation department of St. Mary's Hospital. An obituary notice recording the circumstances of his death will be found at page 1322 of the JOURNAL for October 30th, 1909.

RESULTS OF THE TREATMENT OF FRACTURED LIMBS IN WORKMEN.

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A PAPER read by Mr. Mansell Moullin before the City Branch of the British Medical Association, drawing attention to modern methods of treating fractures by early mobilization and massage, or wiring these cases in which good position could not otherwise be attained, and a remark he made that few statistics are available to show how long men are kept from work after fractures, led me to examine a series of cases which have come under my notice during the last three or four years, or have been treated in the City Police Hospital in the last few years (I am indebted to Mr. Gordon Brown, City Police Surgeon, for these). My own cases have been in connexion with workmen's compensation and have been treated at various hospitals; they show that the aforesaid modern methods, which have been advocated at any rate for ten years, have not yet become very completely established.

The patients are all men working in arduous and hazardous employment, they have to be really "fit" before going back to work, and their lot on half wages is often hard when inability to work is prolonged, entailing much poverty and semi-starvation for themselves and families.

There are several causes which, "under the Act," at times contribute to the inordinate length of time away from work. These are:

1. Unwillingness to return and the hope of getting a lump sum by hanging on. Men belonging to clubs are sometimes better off "resting."

2. Malingering, not common in connexion with fractures.

3. The average working man shirks the pain necessary to get an injured joint or stiff tendons in working order; the pain to him is an all-sufficient reason for not using them and he clings to his crutches or stick.

4. Light work, which would often be good for them, is hardly obtainable nowadays. Employers have shifted their responsibilities on to insurance companies and say that if a man is not able to do his full work he is no good to them.

5. If insurance companies adopt the "strong hand" policy and stop payment, the workman has no difficulty in getting a sympathetic solicitor to run his case, one or two sympathetic doctors to swear to his incapacity or permanent impairment, and a sympathetic judge who usually fears to interfere with the award, and who in his anxiety not to wrong the working man often wrongs the employer; it must be remembered he has only a layman's knowledge of surgery. Employers or insurance companies therefore often submit open-eyed to imposition, and settle cases with lump sums rather than risk expensive and very unpromising lawsuits.

6. Workmen are often afraid to start working because they fear that they will find themselves unable to continue, and they wrongly imagine that compensation which ceases if they start work cannot be obtained again if they are obliged to give up.

7. There are doctors who, ignorant of the provisions of the Workmen's Compensation Act, frequently urge their patients to insist on their imaginary "rights" and get full wages, lump sums and so forth, and will not allow them to go back to work when they should do. One of my cases, recorded below, was recently offered work by his employers which he could have done in absolute safety, but he was unwilling, and said he would consult his doctor; his doctor refused to allow him to begin. This man is partly neurasthenic, but certainly physically able to do the work, and it would be best for him. In my opinion, the actions of these medical men are not in the best interests of their patients.

Apart from these contributory causes, however, there are many cases in which disability is genuine; some cases are inevitably crippled for life, but there are others in which it is possible that better methods might give better results; fractures of the thigh are notably unsuccessful, and fractures involving the ankle-joint give very poor results, tendon and joint stiffness usually being responsible. It is not my object to point the way. Others well qualified by experience and position have done and