deavour first to learn whether the patient has ever observed that the act of micturition sometimes commences by passing urine natural in appearance, but becoming stained or mixed with florid blood towards the close. If so, the source is vesical, possibly prostatic, at all events not renal, but is more probably the result of tumour. When blood comes from the kidney, it is almost invariably mixed with the urine, and unless it is very recent indeed, it is brownish, not florid in tint. Occasionally, although very rarely, florid blood may appear first and clear urine afterwards, but the reverse is the almost invariable rule.

Secondly, a microscopic examination of *débris* passed in the urine must be diligently made, and before long the characteristic appearance of papillomatous structure will, if present, generally be discovered. The bladder may be washed out with plain water, especially after an examination by sounding, in order to obtain the evidence in question. For the nature of the structure sought, see Fig. 1, which

Fig. 1.

shows a typical specimen, such as may be often found, and a glance at which enables you to affirm without hesitation, the presence of a papillomatous growth in the passages, and its site may be safely assumed to be the bladder, where the symptoms described are present.¹

But, you may say: Why not sound the bladder, as we do for a stone, and determine the question thus? For this reason, that the question is not thus determinable. The soft, filmy tissues, even when springing from a thick base, cannot be felt floating in a fluid medium, and yield no evidence to the sound. Nor does rectal examination afford a sign unless the bladder is distended by the growth, when the organ feels rounded, but very soft, as if filled with fluid. On the other hand, when there is a cancerous growth involving the bladder to a notable extent, a well-defined mass of irregular outline and of hard, unyielding consistence, almost invariably presents itself to the finger in the bowel. Whenever this is met with, a condition so different from the rounded and yielding mass presented by senile enlargement of the prostate, there need be little doubt as to the very grave fact indicated, namely, the presence of scirrhus occupying the walls of the bladder itself, and therefore irremovable by art. If on this point you are in any doubt, you may with the short beaked sound obtain further evidence by examining the rectum with the finger at the same time when carcinoma in any form may usually be thus detected. Having verified its presence, we make no attempt at removal; nothing can be gained by dealing thus with any portion of such a tumour.

How we are to treat the non-malignant growths will be discussed next.

(To be concluded.)

¹ The portion from which the figure was drawn was, among others, shown under the microscope at the lecture; the epithelium is columnar, and very abundant.

TESTIMONIAL TO DR. BODINGTON.—Dr. Fowler Bodington, formerly President of the Birmingham Medical Institute, of the Midland Medical Society, and of the Birmingham and Midland Counties Branch of the British Medical Association, who is on the eve of leaving for British Columbia, where he intends to begin practice, has been presented with an address, largely signed by the members of the medical profession in Birmingham, expressive of the high regard and esteem in which he has been held for many years by all those who have had professional and social relations with him, of the credit and distinction with which he has filled the various offices, and heartily wishing him full success and prosperity in his new sphere of duty. Among the signatories we observe the names of Sir Walter Foster, M.P., Dr. Wade, Mr. Furseux Jordan, Mr. Lawson Tait, and Dr. Alfred Carter.

LETTSONIAN LECTURES ON SOME POINTS IN THE SURGERY OF THE URINARY ORGANS.

Delivered before the Medical Society of London, January, 1888.

By REGINALD HARRISON, F.R.C.S.,
Surgeon to the Liverpool Royal Infirmary; and Lecturer on Clinical Surgery in the Victoria University.

LECTURE I.

URINE FEVER AND TOXIC URINE.—THE FORMATION OF STRICTURE
TISSUE IN REFERENCE SPECIALLY TO THE TREATMENT
OF URETHRAL STRICTURE.

MR. PRESIDENT AND FELLOWS,—Let me, in the first place, thank you for permitting me to address your ancient and learned Society in the capacity of Lettsoman Lecturer for the present session. At the same time, and with a full consciousness of my inability to approach you as I would desire, let me also ask your indulgence whilst I attempt to follow in the direction selected by many who, in preceding me in this chair, have so largely contributed to the practical advancement of medicine and surgery.

As I have already indicated, I propose making some observations relative to certain points arising out of the surgery of the urinary organs. It is now some years since my attention was directed to the circumstances under which fever was occasionally seen in connection with various lesions involving the urinary tract. It appeared to me that the subject had scarcely received the attention it deserved, and that a further knowledge of the etiology of what I would speak of as urine fever, as opposed to ordinary wound fever, might be of service to us as practical surgeons.

Let me, for the sake of clearness and comparison, briefly illustrate in a familiar way what I mean, and then I can the more easily deduce the points upon which I desire to lay stress this evening.

In surgical practice we have long been accustomed to recognise, after injuries and operations, a form of excitement which is generally known as wound or traumatic fever. It varies in degree according to circumstances, is generally attended with some elevation of temperature, and it usually declines without proving either serious or fatal. Since the due recognition of these principles upon which Listerism is based, the development of this kind of fever has been considerably restricted, if not entirely abolished.

In striking contrast with this we have a distinctive form of fever, not unlike ague in many important respects, which is alone seen in lesions involving the urinary tract. Let us take, for example, the simple operation of internal urethrotomy. Here an incision, limited to a few lines in length, is made in the urethra, which the patient for some two or three hours is probably unconscious of. Then he is seized with a rigor, which terminates in fever and an elevation of temperature. As a rule, these symptoms decline in the course of a few hours, possibly to be repeated. More rarely the rigor and fever are followed by suppression of urine, convulsions, and speedy death; *post-mortem* examination failing to discover any reasonable or recognised explanation for these phenomena. The symptoms, though, as a rule, in only slight degree, more frequently follow internal urethrotomy, accidental wounds of the urethra, and the introduction of a catheter or a bougie. Even the last mentioned operation, simple as it usually is, has proved fatal in the course of a few hours, with little or nothing to show in explanation. Here then, as I have said before, we have a train of symptoms resembling ague, which are only called into existence in connection with lesions involving the urinary tract. In order that I may be perfectly understood as to the phenomena referred to, let me briefly illustrate the kind of case alluded to by narratives from my own practice.

Some years ago, in a case of extremely tight stricture, I performed an internal urethrotomy on a young and otherwise healthy male; three hours afterwards he had a rigor, followed by high temperature, convulsions, and suppression of urine, and in forty-six hours he was dead. *Post-mortem* examination failed to prove anything except that the operation had been properly performed.

In the course of last year I saw a boy, aged 11 years, who, having ruptured his urethra by a fall, had retention of urine for thirty hours

before I visited him in consultation. A catheter was then passed with some difficulty along the lacerated canal and retained, the retention being in this way relieved. On the following morning he was visited, and found to have passed a restless night, with a temperature of 102° F. About four o'clock the same day his usual medical attendant, Dr. Davies, was summoned, and found the patient in severe convulsions, and absolutely unconscious. The temperature was then 105° F. He could not swallow; the fits recurred with much violence, attended with opisthotonos, and he became comatose, and died at midnight, that is to say, about twenty-four hours after I first saw him and the catheter was passed.

I could not help observing that so long as this patient had retention he was comparatively safe; when, however, an opportunity was afforded to the urine of coming and continuing in contact with the laceration in the urethra by means of the retained catheter, then a process of acute poisoning seemed to commence, which speedily terminated in death.

In 1874, a healthy middle-aged man was under my care for a tight urethral stricture, for which, in the course of treatment preliminary to dilatation, a metal instrument carefully passed was followed by some very slight bleeding. Four hours after this he had a rigor, and his temperature went up to 103° F.; this was followed by a succession of rigors, at intervals of from eight to twelve hours, with occasional vomitings. For over fifty hours the amount of urine excreted was only four ounces. During this period the pulse was quick and thready, the tongue dry and brown; there was a tendency to drowsiness, with occasional delirium, and death appeared to be imminent. After remaining in this serious condition for ten days, he ultimately completely recovered, though he complained of muscular pains and much prostration for some time afterwards.

Illustrations such as these, and others that I could quote, seemed to indicate that the presence of urine in a wound, under certain circumstances, was capable of generating an aguish form of pyrexia, which I shall speak of henceforth as urine fever. I am aware that some authorities are accustomed to speak of all the phenomena I have just illustrated under the one name of urethral fever. Such a term, I think, is misleading, inasmuch as it seems to connect the symptoms produced with the precise part, rather than with the process, for wherever throughout the urinary tract urine can be placed under certain conditions, there can all the phenomena usually associated with the term urethral fever be produced. With the view of endeavouring to throw some light on the causation of this, I determined some years ago to investigate (1) the relationship between urine and a wound which leads to the development of urine fever; and (2) the probable nature of the influence or material producing it. To the elucidation of these two important practical points I would now desire to direct your attention.

In the first place, it appeared to me that the development of urine fever might be traceable to the kind of contact that existed between a wound and the urine. I thought I would test it in the following way. Taking a number of cases of subpubic urethral stricture, which were unfitted for treatment by dilatation, I adopted the following procedure:—

Internal urethrotomy having been performed, and all obstruction being removed, so that a full sized grooved staff could be passed into the bladder, the patient was placed in the lithotomy position, and a median cystotomy was performed, quite independent of the previous internal operation, so as to admit a full-sized drainage tube, such as I usually employ for this purpose, to be passed into the bladder. By this combination of internal and external urethrotomy I treated a considerable number of urethral strictures of the worst type with results which time has already shown have been eminently satisfactory, both so far as the immediate comfort of the patient was concerned and the permanency of the relief that was afforded.

After a number of trials of this kind, I soon found that as was my drainage, so was my freedom from fever; urine fever only occurred where the former was imperfect. When urine, even in very small quantities, was pent up in a recent wound, fever resembling ague invariably followed. When, on the other hand, urine was allowed to escape freely and continuously, as after a lateral lithotomy, no such symptoms were developed. But, further than this, in connection with the operative treatment of stricture, it was observed with much uniformity that, in cases where it was impossible to obtain perfect urine drainage, the urine might, so to speak, be sterilised by local or general measures. This tended considerably to prevent the urine undergoing changes and yielding products which were calculated by their absorption to produce this special kind of fever. For instance, I found that after an internal urethrotomy, certain antiseptic precautions, directed towards the wound as well as the bladder, for the

purpose of acting upon the contents of the latter, considerably reduced both the frequency of these attacks as well as their severity. This was chiefly noticeable in connection with the use of solutions of corrosive sublimate for irrigating the wound, as well as for retaining within the bladder. Further, it was impossible not to recognise the importance of certain drugs, which by their elimination in some degree through the urine, seemed to render the latter less capable of exciting a specific fever where it remained in contact with a recent wound. This was most marked in the case of quinine, which is so largely eliminated by the urinary apparatus. In some cases of internal urethrotomy that were observed, the production or not of urine fever could be largely influenced by the administration of quinine. As bearing upon the sterilisation of urine in connection with operative procedures on the urinary apparatus, I will refer to a passage from a recent writer who, in bearing testimony to the value of boracic acid as a prophylactic against urethral fever, states that in some forty urethrotomies, he had had but one case of urethral fever, and that occurred in an instance where the precaution of sterilising the urine by the administration of boracic acid had been accidentally omitted. The consequence of this was a violent chill on the third day after the operation, with a high temperature. These observations, then, taken collectively, seemed to me clearly to indicate that the kind of contact between fresh urine and a recently made wound was in itself sufficient to determine the occurrence of urine fever as a consequence.

I will now pass on to notice, in the second place, the probable nature of the influence or material by which the fever is actually produced.

During the last few years some important investigations have been made relative to the development of animal alkaloids, both in the dead and living, by Messrs. Gautier, Peter, and Bouchard, in France; and by Drs. Lauder Brunton and A. M. Brown, in this country. An address of much interest on this subject, in its relation to practical medicine, has also been recently delivered by Sir William Aitken. To all these gentlemen we are indebted for much valuable information. From these investigations I do not think there can be any doubt in coming to the conclusion that the secretions of living beings are capable of forming leucomaines, alkaloid bodies having poisonous properties, and that many phenomena connected both with health and disease may thus be accounted for. For, as Gautier remarks,¹ "Of all the extractive composite residua, the alkaloids of animal origin are worthy of the deepest interest. It is only now that they have become familiar to us. They claim our special study from the fact of their constant presence in normal secretions, and must be classed with the most active agents known." From my observations in connection with the surgery of these parts, it seems probable that the development of urine fever is really due to the absorption of some such poisonous compound as an alkaloid which is derived either from urine, or tissue, or wound decomposition, or from all combined, and I would base this conclusion not from any chemical discovery that, so far as I know, has hitherto been made, but from the following deductions which seem to be warrantable from what I have already stated:

1. That the presence of urine in relation with a recent wound is necessary for the production of what I have spoken of as urine fever.
2. That mere contact of urine with a wound is not sufficient for its production.
3. That the retention of fresh urine within the area of a recent wound is almost invariably followed by its development in a greater or lesser degree.
4. That where urine is placed under such circumstances as have been last mentioned, the liability to the development of urine fever is greatly diminished when it is sterilised by local or general means.
5. That the retention of fresh urine, blood, and the debris of damaged tissue in the confines of a recent wound for a certain time, at a temperature of somewhere about 100° F., could hardly be possible without chemical changes taking place in the constituents referred to.
6. That there is a common origin for urine fever is rendered probable by the uniformity of the symptoms attending it, which, though differing in degree, are identical, whether following a surgical operation or an accidental wound.

As some may not be prepared to accept from me, though fortified with the reasons I have urged, that urine or urethral fever is the product of a definite poison introduced into the system, let me occupy your time for a few moments, while I quote from the last essay² of

¹ Professor Armand Gautier's *Introduction to the Animal Alkaloids*, by Dr. A. M. Brown.

² *Medicine of the Future*: Address written for the Annual Meeting of the British Medical Association, 1886.

one of the most original thinkers the medical world ever produced, I refer to the late Dr. Austin Flint, of New York.

"Analytical chemistry," he observes, "carries investigation beyond the limits of microscopical observation. The latter, at the present moment, both in pathology and physiology, seems to promise most; but is it not a rational anticipation to look for future results from chemical analysis of the components of the body, in health and disease, which in brilliancy and practical utility may surpass those of the labours in this field of investigation during the past half century? The medical semi-centenarian can recall the enthusiasm aroused by the labours of Liebig. Histology is now in the ascendant, but is it safe to predict that before the lapse of another half century there will be another era in organic chemistry, and that light will penetrate dark recesses which histology cannot reach?.....The supreme objects of study in pathology at the present time are the discovery of micro-organisms and their natural history. But these agents it is probable are pathogenetic, not directly, but indirectly, by means of the toxic products of their activity. What are these products, and how do they give rise to the phenomena of disease? We may ask the same question of certain of the poisons introduced from without the body. How is it that fractional quantities of morphine, hyoscyamin, strychnine, aconitine, atropine, and other alkaloids, produce their lethal effects? It conveys no adequate information to say that they act upon the nervous system. This is merely the statement of a fact, not an explanation. For the latter we must look to the organic chemistry of the future."

But objection may be raised against the views I am advocating relative to the way in which urine or urethral fever is developed, by the fact that it sometimes arises under circumstances where it may be difficult to prove that any actual breach of surface in the urinary tract has been inflicted. For instance, as I have already said in illustration, some degree of urine fever frequently follows the passing of instruments along the urethra, as in the treatment of urethral stricture. It would not be difficult to illustrate every degree of this complication, from the most transient rigor with slight febrile excitement, to the severest form of septic intoxication, rapidly terminating in death. And this leads me to speak of the influence of the epithelial lining of the urethra making the canal water-tight, or, more correctly speaking, urine-tight. And out of this will necessarily arise some remarks on the pathology of urethral stricture and abscess with extravasation of urine. Let me take an illustration of what I mean by the protecting power of the epithelial lining. A patient with a stricture, I will say, has a catheter or bougie passed; this may be followed in the course of a short time with a rigor and some fever, and no further inconvenience is experienced. What has actually taken place is that the epithelial lining has been scraped off at one or more points, and this has permitted urine leakage and absorption to take place at the points injured. If further proof of this be required, take instances where prolonged attempts to pass catheters in cases of urethral stricture have been made, and proved futile. Then, in consequence of the degree of retention, and as an alternative, an aspirator needle is introduced above the pubes, and the urine is drawn off in this way without coming in contact, or remaining so, with any portion of the urethra which may have been wounded by the attempts made to give relief by catheterism. I have never known rigors or fever follow the relief of retention by suprapubic aspiration, though the amount to which the urethra has been lacerated by attempts at catheterism has been considerable as well as sanguinary. There can be no other explanation for the absence of characteristic rigors and fever under these circumstances than the fact that urine has not been allowed to come and remain in contact with a freshly-made wound. And in connection with this point I cannot help remarking that in the protecting power which the epithelial lining of the urinary apparatus exercises we probably have an explanation of certain phenomena which have been observed but not accounted for. Some have concluded that the bladder is capable of absorbing some of its contents, whilst others, on the contrary, not only have denied the possibility of such an inference being drawn, but have pointed out how serious might be the consequences if there was any liability to such a contingency. It seems that both of these conclusions may be true, and the explanation I would offer is that, by injury to, or disease of, its epithelial coat, the bladder may be rendered capable of absorbing what it contains, to the detriment of the individual, as we see in those cases now often referred to by the name of catheter fever. In recognising the power of the epithelium to prevent or permit absorption, I am in agreement with other observers, amongst whom I may mention Dr. London, of Carlsbad, who has made some investigations upon this point.² Further, it is important to notice that when a urine

stoma is transformed into a permanent urine channel, as after Cock's operation, we find the passage becomes lined like the urethra with epithelium, and thus it acquires the power of transmitting urine without leakage. We could not have more positive evidence than this in support of the view that the epithelial coat is a necessary part of any canal which has to perform the function of transmitting urine.

Applying, however, these remarks to the pathology of urethral stricture, let us see how this is brought about, and how the protecting influence of the urethral epithelium may thus be demonstrated.

A stricture of the urethra is generally considered to be due to more or less prolonged inflammation of the lining membrane of the canal, which ultimately leads to the deposition of organised lymph in the peri-urethral tissues. This ultimately is converted into a dense connective tissue, which subsequently shows a remarkable tendency to become contractile. Thus the escape of urine from the bladder is interfered with by the degree to which these contractile masses prevent the expansion of the canal to anything like its normal extent. Now all this may be very true on the whole, but it does not enter into details with which we should be acquainted for the prevention and treatment of the disorder.

It will be convenient to take an illustration for the purpose of tracing more gradually the process of stricture-making, as a consequence of a specific urethritis or gonorrhoea, which is generally admitted to be the common cause of the former affection. The acute form of the disorder, unless care be taken, is very apt to become merged into the condition commonly known as chronic granular urethritis. By the latter term we are to understand that at one or more spots within the urethra the epithelium has become so damaged, as a consequence of the prolonged inflammation, that it ceases to render the canal urine-tight, and a slow process of escape of some of the constituents of the urine into the tissues comprising the urethra and surrounding it, takes place. As a consequence of this, and to prevent urine further soaking into the tissues, inflammatory exudation is excited, and barriers of lymph, which ultimately become organised, are thrown out opposite the places where the leakages take place. Thus splints of plastic tissue are formed, corresponding with the spot or spots where the epithelium has been so damaged by persisting inflammation as to cease to discharge its normal function. In this strengthening of the urethra we recognise, in the first instance, a conservative action; eventually, however, as in other compensating processes, certain inconveniences follow which constitute, as it were, an independent disease. In addition to the careful observations which have been made relative to the pathology of gleet, and the changes that are induced by chronic inflammation in the epithelial lining of the urethra by Dr. Oberlander,⁴ of Dresden, there are other considerations which seem to indicate that an excessive form of plastic exudation in the tissues around the urethra is probably excited by the interstitial leakage or exosmosis of some of the constituents of the urine through the walls of the canal.

Amongst those I would mention are: (1) That though the mucous membrane is the tissue chiefly involved in the primary inflammation, it is, as a rule, only secondarily implicated in the stricture-forming process. In many instances it will be found after death that the dimensions of the mucous membrane are not permanently altered, and that it is possible to split a stricture without necessarily damaging the lining membrane of the canal. (2) That the plastic exudation which makes up a stricture differs from other exudations provoked in other parts of the body by inflammation in the degree of its density and tendency to contract. There is no tissue I am acquainted with in the human body, except, perhaps, that found after scalds and burns, where the original tissues are entirely destroyed, which is so tenacious and resisting as that constituting the usual form of urethral stricture, nor do I know of any other canal or duct which, either as a consequence of injury or disease, is liable to be involved in such changes as a strictured urethra represents. (3) The character of the cicatrix which is formed in connection with ruptures and lacerations of the urethra unmistakably shows the effect produced in the healing process of a recent wound, which is constantly submitted to the action of more or less pent-up urine. Here we have a cicatrix formed which of all strictures is the most resisting and contractile. At the present time, when we are so much occupied in devising means for the radical cure of hernia, one cannot help sometimes thinking and wishing that it were possible to transplant the process of tissue thickening and contraction, as observed in connection with the formation of traumatic urethral strictures, to the parts constituting the weak points we are desirous of consolidating in the abdominal parietes. Here it would be serviceable instead of being detrimental.

Further, the form in which stricture tissue is deposited, and ultimately

² Berlin. Klin. Wochens., No. 11, 1881.

⁴ Vierteljahr. für Dermatologie und Syphilis. Wien, 1887.

exercises contractile pressure on the urethral passage, is strongly suggestive that in the first instance it served the purpose of strengthening the wall of the canal, and thus preventing further leakage of some of the constituents of the urine taking place at points where the epithelial coat had been more or less permanently damaged. Most strictures are the result of organised lymph which has been deposited in the sub-mucous tissue in an irregular form. An annular stricture is comparatively rare, except when due to traumatic causes, such, for instance, as an injury to the whole calibre of the urethra.

It may, however, be urged that the view I am advocating is open to objection on the grounds that urine leakage is invariably followed by acute forms of inflammation, such as we see when extravasation has taken place. In reply to this, I would say that so far as I have been able to observe the process of urine transition through the mucous membrane of the urethra, which has been deprived of the protecting influence of its epithelial lining, is extremely gradual, so far as the process is concerned, and does not necessarily imply that all the constituents of the urine are distributed amongst parts which are not adapted to receive them. Where a pathological process is slow, time is permitted for that adaptation which the human tissues are proved to be so capable of. But the exudation which a damaged epithelium may permit of does not necessarily imply that all the constituents of the urine are thus brought into contact with the tissues under circumstances where the most active and destructive forms of inflammatory mischief must inevitably be aroused. Some years ago, I recorded the following case, which at the time seemed to me of much importance in reference to the subject now under consideration. It was as follows: The case was one of stricture, with extravasation of urine, occurring in a person suffering from Bright's disease of the kidneys. Though the extravasation had come on suddenly, and had existed for twenty-four hours unrelieved, there were no signs of acute inflammatory action and commencing gangrene, such as are usually expected. However, the tension being considerable, I incised the parts involved in the extravasation. As the fluid escaped from the incisions, I noticed that it had not that strong ammoniacal odour which is so perceptible in such cases. Subsequently I treated the stricture, which was exceedingly tight, and kept in abeyance the more threatening urinary symptoms. I was somewhat puzzled for an explanation, as I felt sure that the case was one of extravasation, and not acute scrotal oedema. How was it, then, that extravasation and confined urine failed to excite gangrene? I collected some of the urine as it trickled through the wounds, and compared it with some subsequently drawn off by the catheter. I found them identical, and in both there was an almost complete absence of urea. This, then, to my mind solved the mystery, and explained that as there was no urea to decompose, there was no source for the production of the ammonia by which the destruction of tissues in connection with extravasated urine is mainly effected. By the absence of urea the urine was rendered chemically harmless to the tissues with which it came in contact. In the same way, and by a process of leakage, I apprehend may be explained some of those rare cases which have been described as scrotal or perineal urinary cysts, where a urinous fluid, with little or no direct connection with the urethra is retained within a fairly well-developed envelope.

In illustration of the formation of stricture by urine leakage, due to epithelial desquamation or abrasion, I would point especially to those cases of multiple stricture caused by spots of induration in various parts of the canal. In a patient who was recently under my care, almost the whole length of the urethra was strictured by a series of nodular deposits, chiefly in relation with the floor of the canal. These could only be explained on the supposition that the urethra had almost entirely lost its normal power of conducting urine in the course of a long gleet, and that these numerous centres of induration and contraction marked the spots where leakage of some of the constituents of the urine had been permitted to take place. It will not be necessary for me to extend these views for the purpose of explaining certain facts observed in connection with peri-urethral abscess and extravasation of urine, which in practice we are all familiar with. What applies to the plastic form of exudation applies equally to the suppurative. In this way, however, is explained the fact that in these cases, when suppuration occurs, and the matter is evacuated by incision from the perineum, the urethra is found passing through the abscess cavity, completely isolated, and without showing any direct connection with the suppurating focus. It is under these circumstances that the unsupported canal occasionally gives way under the expulsive powers of micturition, and the urine is first forced into the abscess cavity prepared to receive it, and subsequently amongst those tissues, where it may be the more easily extravasated.

There are one or two practical points relative to the treatment of

stricture and injuries of the urethra arising out of what I have thus ventured to bring under your notice, to which I should like to refer before concluding. In the first place, the knowledge that certain relations between a wound and the urine may cause and keep up urine fever will prove of service to us in practice, as I will illustrate in the following way. Not long ago I treated a case of urethral stricture by Holt's method of rapid division. Contrary to my usual experience of the operation, the patient had a severe rigor three hours afterwards, and a temperature of 105° F. On the following day this was repeated with, in addition, almost complete suppression of urine. As it appeared to me that the patient would die if he absorbed any more toxic material from the wound, I had him placed in the lithotomy position, and passing a grooved staff, I performed a free median cystotomy, and put a drainage tube into the bladder. I should add that there was nothing to indicate that suppuration had occurred; the time was too short for its development, the symptoms being clearly due to urine poisoning. After this was done there was neither rigor nor fever, and urine was again rapidly excreted. By thus suddenly altering the relations of the wound with the urine, the whole complexion of the case was immediately changed for the better, and the patient made a good recovery.

In the next place, a due recognition of the function of the epithelial lining of the urethra shows that there is a right and a wrong way in making use of dilatation in the treatment of strictures. I am sure that more good follows the daily introduction of a bougie which passes quite easily, than where a larger size is less frequently used, but where, in fact, the principle of the mechanical wedge is aimed at by the process. In this way rigors and other inconveniences associated with the treatment of stricture by bougies is avoided. I have made a large number of observations bearing upon this subject.

Thirdly, when a stricture has become or is so contractile and dense as to render dilatation out of the question, if not impossible, then, I believe, the open method of treatment is the safest and affords the best permanent results. In fact, excepting the earlier forms of stricture, which are satisfactorily treated by dilatation, the open method has furnished the largest proportion of permanent cures that have come under my observation in the collecting and noting of many hundred cases of stricture taken indiscriminately. And in reference to this point, I must take exception to a statement which is frequently made, to the purport, "once stricture, always stricture." I could furnish many examples following the open treatment which are quite at variance with such a conclusion. In order that I may not be misunderstood in using the word "cure," I mean that a contractile stricture necessitating the constant use of the bougie has been so influenced by what has been done as to render any further use of this instrument unnecessary, and that, after a lapse of time of some years duration, the urethra can be proved both to be structurally and functionally normal. The majority of these cases have occurred where the perineum has been opened for stricture complicated with abscess and extravasation of urine. Here it by no means unfrequently happens, if the artificial drainage made by the surgeon is free and direct, that a healthy scar, such as we see after lithotomy, takes the place of the dense contractile stricture which has sloughed by the acuteness of the inflammation that has been aroused. I should meet with no difficulty in fully illustrating this point. By the open treatment of stricture, of course I mean the perineal section of Syme, or a modification of it, to meet some special circumstances, such as the double operation of external and internal urethrotomy combined, as I have already described. It must, however, be borne in mind that a perineal section is seldom resorted to until the urethra is largely impregnated, so to speak, with old cicatricial tissue of a contractile nature. Hence, although you may put into the urethra by your operation a longitudinal splice of good sound tissue, such as fills up the wound made in lithotomy, and so bring up the canal to its normal dimensions, you do not succeed in removing the tissue, which you have merely divided; this still remains behind, to contract and to mar to some extent results which, under other conditions, would be obtained. Still, in spite of the impossibility of removing the cicatricial tissue by a mere section of it, the results of perineal section, so far as I have observed them in cases where dilatation was insufficient, have proved both safe and satisfactory. The conditions, however, which the operation must necessarily fulfil are complete division of the stricture and thorough urine drainage. The difference between the wound of a lateral lithotomy and a perineal section is only this, that in one case you operate upon sound textures, whilst in the other they have been rendered permanently and almost hopelessly contractile. Still, on the other hand, when the conditions I have mentioned are fulfilled, the cicatricial splice of sound tissue which perineal sec-

tion introduces into a bad stricture often proves of the greatest and most permanent advantage in cases suited for this proceeding.

Fourthly, that in wounds of the urethra—made either accidentally or in the course of surgical operations, which, by the nature of circumstances, have to be treated without due regard for urine drainage—means should be more systematically taken to prevent the development of urine fever, as well as the formation of a dense contractile cicatrix. I found, after repeated trials, in the case of internal urethrotomies, that much might be done by irrigation, locally and through the agency of drugs, which were largely eliminated by the urine in promoting these objects.

Lastly, we must remember that the prevention of stricture is within our scope. If, as I have urged, the dense cicatricial material which constitutes a stricture is the result of urine leakage occurring in the process of a chronic inflammatory affection in the interior of the canal in one instance, whilst in another it is brought about by the constant contact of the excretion with an internal wound, as in accidental rupture of the urethra, then the importance in one case of irrigation as a part of the treatment, and free urine drainage in the other, is at once evident.

It is, however, in connection with ruptures of the urethra, such as are caused by blows and falls on the perineum, where the canal is more or less lacerated, that we see exemplified the most disastrous effects of permitting a wound to heal subject to the irritation that constant contact with pent-up urine is capable of exercising. Fortunately, as a rule in these cases, retention of urine for a time averts the liability to acute septic intoxication, such as I have already illustrated in an earlier part of this lecture. Though the future of these cases relative to the kind and degree of stricture that follows is in some measure determined by the character of the injury inflicted upon the urethra—whether, for instance, the canal is entirely torn across, or partially, either obliquely, longitudinally, or transversely—I have not the least doubt, from a careful observation of a considerable number of these cases, that those do best which are treated by perineal section and drainage without reference to the question of extravasation. When a catheter can be passed under these circumstances, and there is no evidence of urinary extravasation, it is often, I admit, very tempting to be content with this procedure, and to wait until there are further indications as to the necessity for incision. Such a course is almost invariably followed by the formation of a stricture of the most dense and contractile nature. Where incision is practised, as in those instances where there is evidence of extravasation and the laceration proves to be only of a partial nature, the wound heals with a scar which shows but little tendency to subsequent contraction. In these cases we have remarkable illustrations of the damage that the presence of urine under certain circumstances is capable of exerting whilst the process of repair in a wound is going on. And what applies to the healing of wounds inflicted accidentally upon the urethra internally applies equally to others similarly inflicted on the canal for surgical purposes. I have elsewhere stated that for many years past I have taken some pains in collecting and noting cases of urethral strictures, with the view of estimating the permanency or otherwise of the treatment to which the patient may have been previously submitted by various surgeons. The testimony that I have thus gathered from the examination of many hundred cases is certainly not favourable either to the permanency or the character of the relief that internal urethrotomy usually affords. Amongst the worst cases of stricture that I have thus met with have been those which have been treated by an internal section. If there is any force in the observations I have brought before the Society this evening, I do not think there should be any difficulty in explaining how this happens, and of recognising the importance of applying to the treatment of wounds of all kinds involving the urethra those principles which are the basis of Listerism, namely, drainage and cleanliness. There is no part of the human body to which disregard of these conditions is more likely to be attended with disastrous consequences, whether we have regard to the present or to the future. In conclusion, gentlemen. Most speakers commence their discourse with a text, I prefer concluding with one. Urine can spoil tissue as well as blood.

SEAMEN'S HOSPITAL SOCIETY.—Lord Charles Beresford has consented to take the chair at the annual court of governors of this corporation on a day to be fixed in February next. Owing to the increasing area over which the shipping of the port of London now extends, this charity has established dispensaries for seamen at the Docks and at Gravesend. The maintenance of the 253 beds at Greenwich, as well as the dispensaries, necessitate an expenditure of £12,000 per annum.

HARVEIAN LECTURES ON LUPUS.

Delivered before the Harveian Society, December, 1887.

By JONATHAN HUTCHINSON, F.R.C.S., F.R.S., LL.D.,
Emeritus Professor of Surgery at the London Hospital.

LECTURE I.—COMMON LUPUS—THE HEAD OF A FAMILY, AND NOT A SOLITARY DISEASE.

Characteristics of the Lupus Process.—Its Power of Infection by Continuity, by Contiguity, and through Vascular Channels to distant parts.—Importance of the Subject in reference to General Pathology.—Satellites and their Meaning.—Different forms of Lupus on different parts of the Body.—Differences in relation to Age and State of Health.—Relations of Lupus to Tuberculosis, to Scrofula, to Chilblains, and to Cancer.—Justification of the term Scrofula as distinct from Tuberculosis.—Morbid Anatomy of Lupus.—The Bacillus.—Description of the different Varieties of Common Lupus, and Definitions of the Terms proposed to be Used.

EVERYONE knows lupus. In student-life, we all early learnt to recognise lupus; for its frequency, its conspicuousness, and its very definite features, rendered its diagnosis both easy and attractive. Nor, for many of us, have the questions as to its nature and affinities failed in interest as we have advanced in life. Lupus has been well and ably studied by many competent observers, and no atlas of portraits has been published which has failed to portray it in at least two or three of its principal forms. Our clinical knowledge respecting it is now well advanced, and I purpose in the present lecture to endeavour to place before you a summary of it, not without the hope of being able to gain therefrom some little further insight as regards the disease itself, and the valuable illustrations which it affords of the general laws of pathogenesis.

We shall find, I believe, as we proceed with the examination of the facts as to common lupus, that not only does it present some important varieties, but that there are a number of other maladies, some of them already named and others as yet undescribed, which stand in close relationship with it, and partake, indeed, of its nature. Before proceeding in this direction, it is needful, however, that we should recapitulate the chief clinical facts as to the type form of the malady. This type form we find in "common lupus."

All observers are agreed that lupus is a disease which usually begins in early life, and which, although it may affect mucous membranes, almost always has its first development in the skin. It prefers exposed parts, and attacks the face out of all proportion to other regions. It is insidious in commencement and very slow in progress. Its characteristic feature is the formation in the corium of a peculiar effusion, or cell growth, which is visible to the naked eye through the transparent cuticle. This growth is of a brownish-yellow tint, and semi-transparent, being aptly compared to apple-jelly. It is present in greater or less abundance in all cases of common lupus, but may easily be obscured by the products of inflammation. The recognition of this apple-jelly growth, in however small a quantity, denotes the disease conclusively as lupus, for nothing exactly like it is ever seen in any other disease. It often happens that we succeed in finding it at only one part of a large lupus patch, or in only one patch, where there are several which do not show it; but I may repeat that, whenever it is thus sparingly present, it is yet sufficient to justify the diagnosis as regards the whole of the diseased processes which it attends. Whether this growth is present in the very earliest stage of the disease, or whether that be not rather simply one of inflammation, is not yet known, but it is certainly the condition which first justifies the application of the name "lupus," and it is often recognised while the disease is as yet on an exceedingly small scale. Many facts as to the causes of lupus—such, for instance, as its frequently beginning after slight injuries to the part—would suggest the belief that a stage of congestion and cell effusion, undistinguished from common inflammation, usually precedes for a short period the characteristic growth. There are, further, no facts whatever which would support a belief that lupus ever takes its origin from contagion. Whether or not it begins by inflammation, there is no doubt that it is very apt in all its stages to be complicated by it. Although a few cases are seen in which the growth, through a long course of years, pursues its quiet course of gradual extension, without