tion. Some infectious diseases are most prevalent at the beginning of winter, others at the end. Scarlet fever reaches its maximum in England in October, in Germany and Scandinavia in January, in New York in April or May. And, further than this, the rise begins long before the maximum is reached; so that if it be alleged that the commencement of winter conditions causes the maximum of scarlet fever prevalence to be reached in October, it still remains to be explained why the rise begins as early as May, and continues throughout the summer.

Perhaps the most unequivocal instances of "seasonal" waves dependent upon social conditions are those which arise from the difference in risk of exposure to infection on Sundays as compared with other days of the week. Thus the rash of small-pox has been stated to appear most commonly on Sundays among domestic servants, the usual interval between infection and rash being fourteen days, and the chance of outdoor infection being often limited to Sunday. The notification records of Nottingham show a very decided minimum in the number of onsets of scarlet fever occurring on Wednesdays, corresponding, as it would seem, to a minimum risk of infection on Sundays.

ON THE ESTIMATION OF SUGAR IN URINE BY THE PICRIC ACID METHOD.

By SIR GEORGE JOHNSON, M.D. LOND., F.R.S.,
Consulting Physician to King's College Hospital; Physician Extraordinary to the Queen.

I AM anxious to explain to the profession my reasons for making a slight modification of the standard-colour solution, which for some years I have used in estimating the amount of sugar in urine. I have recently discovered that the manufacturer of my micro-saccharometer has been in the habit of graduating the tube by *external* linear measurement, and not by its *internal* capacity. The tubes employed not being of uniform calibre throughout their length, the result has been inaccurate graduation.

The standard colour was arrived at by imitating the tint given by a four-grain to the ounce solution of pure glucose, boiled with picric acid and potash, according to the method described by me in my two lectures on Albumen and Sugar Testing (Smith, Elder, and Co.), and in the chapter on Sugar Testing, in my *Medical Lectures and Essays* (J. and A. Churchill), and subsequently diluting four times in the graduated tube.

Now, as the upper divisions of the tube were more capacious than the lower, the result was a slight degree of over-dilution and a somewhat paler colour than would have been produced in an accurately graduated tube. Inasmuch as the same tube and the same method of procedure were adopted in analysing urines, the results obtained by me have been practically correct.

In order to avoid any error in future, I have corrected the standard colour solution by imitating the tint produced by diluting a solution of pure glucose in an accurately graduated tube, made for me by Mr. C. E. Müller, of 148, High Holborn, W.C., who will guarantee the accuracy of all graduated tubes supplied by him for my micro-saccharometer.

The corrected formula for the ferric acetate standard is as follows: R Liq. ferri perchlor. fort. (P.B. sp. grav. 1420) 3j; acid. acet. glacialis (P.B. sp. grav. 1058) 5iv; liq. ammoniæ (P.B. sp. grav. 959) 3ij; aquam destill. ad 3iv. The only change in this formula consists in the addition of π xx of liq. ammoniæ in the 4 fluid ounces. Since this method of analysis gives extremely accurate results, it has appeared desirable to indicate even so slight a source of error as that which I have here described.

THE late Signor Siro Valerio has bequeathed 1,130,000 lire (£45,200) as the nucleus of a fund for the foundation or transference to Milan of a university for the study of the sciences, or at least some section of them—preferably medicine and surgery.

ON THE RESTORATION OF THE FUNCTION OF MICTURITION.¹

By REGINALD HARRISON, F.R.C.S.,
Surgeon to St. Peter's Hospital.

At a meeting of the International Medical Congress at Copenhagen in 1884,² I brought under discussion a method of dealing with the enlarged prostate when, in addition to retention of urine, it had caused other serious symptoms of obstruction and inflammation which were not at all, or imperfectly so, relieved by ordinary catheterism. This method consisted in puncturing the membranous urethra on a median grooved staff so as to obtain access to the interior of the bladder, as in Cock's well-known and useful operation. This preliminary having been accomplished, the prostate was dealt with in one of three ways, according to the circumstances elicited by exploration with the finger: (1) By division of the prostatic bar or floor of the gland; (2) by the enucleation or removal of some portion of the prostatic ring or outgrowth, or (3) by the mere stretching or divulsion of the canal with the index finger or sound. Whatever method of dealing with the canal as it passed through the prostate was adopted, the introduction and retention of a suitable drainage tube invariably followed. For the first few days a gum-elastic tube of some rigidity was selected, which gave place to one specially made of india-rubber for the purpose. The process of drainage was then continued for varying periods of days, to two or three weeks. A short time ago I had occasion to inquire into the results I had obtained, and to follow out as far as it was possible the later history of these cases. I found I had operated in somewhere about thirty-five cases of advanced prostatic obstruction in persons about 60 years of age, excluding, as far as I could ascertain, malignant growths, for the general reasons already assigned. In eighteen of these cases the floor of the prostate was divided, or a portion of the gland removed, whilst in eighteen drainage alone was effected. Without going into details which have already been published, it is sufficient for my purpose to state that in ten of these instances I was able to satisfy myself that the function of micturition had been restored, in addition to the immediate relief to retention the operation universally gave.

About the same time that I was engaged upon these observations I described³ a method of puncturing the bladder from the perineum, which has since been referred to as "tunnelling the prostate." This proceeding was also followed by more or less bladder drainage by means of the cannula that was used instead of a drainage tube. In illustration of this kind of practice I published the particulars of a case, where, in a man 84 years of age, shrinkage of the hypertrophied prostate and complete and permanent restoration of the lost function of micturition followed, the patient living and being in good health to the age of 90.

Further, as bearing upon the point under consideration, I would make reference to what has, not very infrequently, been observed in connection with the operation of lithotomy, where long continued atony or paralysis of the bladder had previously existed. In the instance of a patient (H. G.), 69 years of age, who is now alive with complete power over micturition, I opened his bladder from the perineum, and divided the floor of a greatly enlarged prostate, at the same time removing some phosphatic stones which were probably connected with the long continuing inflammation. After the prostate had thus been divided, a drainage tube was used as I have described. Previous to this operation, which was performed in 1887, the patient had been entirely dependent on the catheter for four years, during two years of which time he had worn the instrument continuously both by day and night. Had I in this instance contented myself by removing these phosphatic concretions, as I could easily have done with the lithotrite, the patient, I have not the least doubt, would never have recovered his bladder power, and in all probability have spent the remainder of his existence in the twofold employment of making stones and having them removed.

¹ Read in the Section of Surgery at the Annual Meeting of the British Medical Association held at Nottingham, July, 1892.

² *Trans. International Congress.*

³ *Surgical Disorders of the Urinary Organs.* 3rd Edition.

Turning to another view of the subject, it will no doubt be remembered that in 1884 the late Mr. McGill, of Leeds, published a method of proceeding whereby more or less of the hypertrophied and obstructing prostate was removed through a suprapubic incision into the bladder. For a supplementary record of this work, I have to express my thanks to Mr. Moynihan, the resident surgical officer of the Leeds Infirmary. Mr. McGill's communication to the Clinical Society of London attracted considerable attention. Amongst other advantages claimed for it was that it gave persons who had been dependent on the catheter by reason of an enlarged prostate, either partly or entirely, a reasonably good chance of being able to dispense with the use of this instrument. As the possibility of such a result has been called in question, Guyon, for instance, maintaining, "that prostatic enlargement is but a local manifestation of a general senile sclerosis which pervades the entire urinary tract," I have taken pains to ascertain from some surgeons who I knew had been engaged in the performance of this class of operations what their observations in reference to this particular point had been. The result of these inquiries is that I have received, and am receiving, a large amount of information from at home and abroad affording undoubted evidence that the function of micturition is not infrequently restored both after prostatotomy and prostatectomy. But as the subject opens up under the light thrown upon it by the accumulated experience of many observers, there are points which arise on which it would be desirable to obtain further information. These points have reference to many aspects of the questions that are involved in these records. For instance: (1) whether the loss of power was gradual or sudden, if partial or complete; (2) the selection of cases appropriate for such treatment; (3) the choice of operation, whether perineal or suprapubic; (4) the mode of dealing with the obstructing prostate, whether by incision or extirpation: and, lastly, the degree of catheter independence that is subsequently obtained, whether temporary or permanent.

As illustrating the desirability of keeping the subject open for a time before attempting to narrow it down to conclusions, I would quote from some of my correspondents. Dr. Belfield, of Chicago, one of the earliest advocates of these operations, and the author of a most interesting paper on the subject,³ writes me under date of July 6th, after giving the particulars of a case where the restoration of the voluntary power of micturition was known to have continued for two years and a-half after the removal of a portion of the prostate:

I could, probably, by correspondence with other patients, adduce at least six cases where such operation has been followed by complete restoration of the vesical function for over a year. I happen to have received, only two weeks ago, an unsolicited letter from a patient operated on last January by combined suprapubic and perineal incision, who had been absolutely dependent on the catheter for nearly two years, and who states that he can now pass a strong and full stream, and has given up his catheter. Almost a duplicate case is one that I operated upon last April. These two cases, however, are too recent for your purpose.

Again, Dr. Keyes, of New York, in a very interesting letter on this subject, writes dated July 7th, 1892:

CASE III.—Solely dependent on the catheter, which he uses every two hours, night and day. Operation four months ago. Horse-collar enlargement and general hypertrophy. Two ounces and a-half of prostate removed. This gentleman is now at his house in the country. His doctor writes me that he urinates voluntarily, and has given up the catheter. Whether he empties his bladder or not I cannot say, as I have had no personal opportunity to test him. His case is remarkable, in that his atony was complete. He had a very thin, flabby bladder, and had been using his catheter exclusively for about six years.

Other evidence of this kind is adduced.

It is for reasons such as I have suggested as arising out of these records that I would ask you to regard this in the light of a preliminary communication. In the meantime I shall be glad to receive the particulars of cases, or of observations which seem to throw light on the many points, some of which I have mentioned, that surround the pathology and surgery of this affection. Apart, however, from the direct evidence that is thus afforded as to the possibility of restoring the function of micturition by the operative measures referred to, an analysis of the causes of death in cases of progressive prostatic obstruction, treated either by casual or regular catheterism, indicates what is only a matter of time in many cases of this kind. By the back pressure of the urine, under the in-

fluence of more or less continuous spasm which the prostate as it encroaches on the interior of the bladder provokes, the whole urinary apparatus above becomes converted into little else than suppurating sacs, or tubes, as may also be seen in connection with the ordinary forms of advanced urethral stricture. As the secreting portion of the kidney is gradually absorbed under this constant hydrostatic pressure, the solid material, in the process of time, disappears from the urine, the specific gravity falls, and under these circumstances, as Sir James Paget long ago pointed out, the patient is endangered by the slightest interference, accidental or otherwise, with his urinary apparatus.

It must not, however, be assumed that the restoration of the function of micturition can only be brought about by strictly operative measures, for this I am sure is not the case. When the bladder either gradually or suddenly strikes work, as we so often see in connection with prostatic obstruction, no one I think would feel disposed to recommend the adoption of such measures merely because it necessitated the use of a catheter as the alternative for normal micturition. It is only when ordinary catheterism is rendered impossible, or nearly so, either by the degree of obstruction or the inadequateness of the relief, that operative measures are to be considered. A word may here be said in reference to the purely medical treatment of the weak bladder. Much more might often be done in the early stage of regular catheterism in promoting power and restoring lost function. To abandon all hope, and hand over the case to the instrument maker, especially in the acute form of prostatic obstruction, is often to throw away almost the only chance that remains short of operative interference. Muscle, whether in the form of a bladder or a biceps, will soon cease to work effectually when the necessity for its doing so is brought to an end.

I have found the long continued use of ergot of much benefit in these cases. There is a combination of ergot, cantharides, and nuxvomica, which often seems to assist the return of power. The late Professor Gross remarks⁴: "Ergot is a favourite remedy with Dr. Atlee in the treatment of this affection. Several patients, whose ages ranged between 60 and 90, were enabled under this treatment to lay aside the catheter after having been the victims of its daily use. A gentleman aged 89, by the methodical evacuation of the bladder, and whose death appeared imminent, has for the last three years maintained his general health and his urinary organs in excellent condition by the evening dose of the remedy."

In my own work I have now the case before me of a member of our profession, who, after many weeks of complete catheter life, has entirely recovered his lost power—a result which he attributes to the long continued use of ergot in conjunction with the judicious employment of the catheter.

SUPRAPUBIC PROSTATECTOMY.¹

By G. BUCKSTON BROWNE, M.R.C.S.

PROSTATECTOMY means the actual removal, by knife, scissors, or forceps, of part of the prostate. At the outset of an inquiry into the merits of this operation it is desirable to have a clear idea of the anatomy and function of the prostate. For surgical purposes it is well to recollect that the prostate is only arbitrarily divided into lobes, it is really one single organ. As Ellis says: "Three lobes are described in the prostate, namely, a middle and two lateral, though there is no fissure in the firm mass." With regard to its function, I believe it is a sexual organ, and nothing more. To my mind it is quite sufficient to remember that in the female the act of micturition is perfectly well performed without a prostate, in order to reject all theories that it performs any urinary function. In adult and advanced life, in a certain number of cases, that is to say, exceptionally, the organ enlarges or hypertrophies, and by so doing frequently, but not always, interferes with the act of micturition. This affection is met with in all sorts and conditions of men, and this has led to great difference of opinion regarding its causation, but it certainly does seem very frequently to follow sexual activity in middle and advanced

⁴ *Annales des Mal. des Org. Gén.-Urin.*, March, 1885.

⁵ Operations on the Enlarged Prostate, with Summary of Cases, *Amer. Journ. Med. Sciences*, November, 1890.

⁶ *Diseases of the Urinary Organs*, Philadelphia.

¹ Read before the Medical Society of London, March 6th, 1893.