

"Some Points in Modern
Genito-urinary Surgery :"
(Urethritis, Cystitis & Stricture, Urinary
antiseptics and Partial Retention.)

being

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in the

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REMARKS ON THE TREATMENT OF "DIFFICULT" "STRICTURE"

"Remarks on the treatment of "Difficult"" Stricture"

There are today but two methods used in the treatment of stricture,-excision & dilatation. Of these, the former -excision-may be put aside, not because it is a negligible quantity, but because it is an ~~operation~~^{operation} to be reserved for some of those few strictures that are traumatic in origin, and exceedingly limited in extent. The great majority of strictures are, of course, gonorrhoeal in origin, plural in number, and involve a considerable area of the mucous membrane of the urethra.

Their treatment is dilatation, a process that may or may not be preceded by internal urethrotomy. The essential element, however, in the treatment is the subsequent dilatation, for no stricture was (yet/ever) cured-save in a most temporary sense-by an internal incision alone.

So many, so varied, and so ingenious are the modern methods by which we may succeed in obtaining complete dilatation of a stricture, i.e. its true cure, no matter how narrow its calibre or how dense its structure, that I venture to give the details followed in a difficult case I have had under my care, details that will illustrate general principles in the treatment of this very important -because so common and so dangerous & ailment.

The patient Thomas B. aetat 53, Interpreter, Paris. was admitted into hospital with all the constitutional symptoms that a chronic stricture produces from the long

continued intoxication due to the partial retention of urine. The usual local symptoms were ,of course present ,pain and difficulty in micturition ,great frequency (rising never less than five times during the night) and ,in addition ,such constitutional disturbances as loss of appetite ,coated tongue ,dyspepsia ,diarrhoea ,haemorrhoids ,great mental depression ,impotence & etc. -

Previous History

Patient's first gonorrhoea dated back to 35 years before. He had since had several other attacks ,the last about 15 years ago. None had been adequately treated and had dragged on the protracted course that ,even now ,this unfortunate malady is too frequently allowed to run.

In March 1891 ,more than 25 years after his first urethritis ,his symptoms of stricture seem to have appeared ,a divided ,twisted stream ,difficulty and slowness in micturition ,with occasional attacks of complete retention and incontinence.

In 1894 ,he was under treatment for 4 months in the Royal Infirmary ,Liverpool ,when several metallic instruments were passed ,causing some pyrexia and delirium that continued for several days. He did ,however ,improve during 3 or 4 weeks after leaving hospital ,but his symptoms speedily returned. He was again under treatment* in Manchester and Salford hospitals ,in the latter of which ,small bougies could only be passed while the patient was in a hot bath. Neither there nor in Nottingham ,whither he had now wandered ,was the stricture completely dilated.

Upon admission on November 26.1897,treatment was at once begun,but for the first fortnight,nothing but a series of failures could be chronicled.

Examination of the urethra with the exploratory "bougies à boule"⁽¹⁾,shewed a series of strictures/beginning in the penile urethra,through the first of which a No,10 could be passed,but through a second,scrotal,stricture,the smallest filiform bougie could not be induced.

In spite of hot baths,sedatives such as Dovers powder,during the next three days it was impossible to get the smallest gum-elastic bougie introduced.This difficulty,it may be parenthetically remarked,is of absolutely no importance, for one has only to go on trying patiently,and carefully, upon alternate days and the resistance of any stricture will be overcome.It may be doubted if there is such a thing as an impassable stricture.*

November 29th. Filiform bougie⁽²⁾ passed and tied in for

* See author's paper on "On Examination of normal and strictured Urethra,and Treatment of "Dilatable" Stricture " in the Glasgow Medical Journal,Sept.1897-

fig (1) Exploratory "bougies - à - boule"

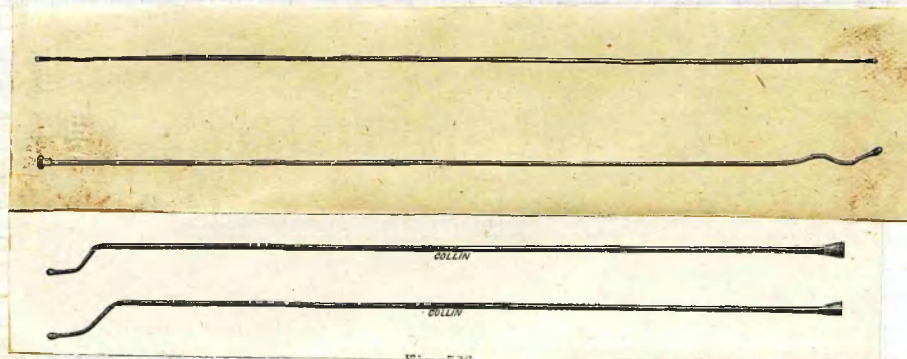


fig.(2) filiform bougies

12 hours.

The effect of tying a small bougie in a stricture is now well known, and should always be practised in a difficult stricture. If left in for 48 hours, the effect is remarkable and bougies half a dozen sizes larger may at once be easily passed. It is, however, very transitory.

Tying the bougie in is always a difficulty, and it cannot be said that any method is free from objection.

- (1) Attachment to the pubic hair-simple, but obviously inconvenient
- (2) Attachment to a body-bandage which has been passed round the patient's neck and then round each hip.
- (3) Attachment to a small circular vulcanite collar. The collar is passed down to the base of the penis and attached by tapes round patient's hips and round his waist. The rim of a pill-box may thus be simply and usefully applied.
- (4) Simplest and best -if the patient's prepuce be ~~enlarged~~ of average length -is to attach some silk to the bougie pushed well into the urethra and tie the free ends of the silk to a pledget of cotton-wool over which the prepuce is drawn. This is both safe and effective, may be frequently changed, and therefore, is cleanly

December 2nd. Filiform bougie tied in for 12 hours, with little effect.

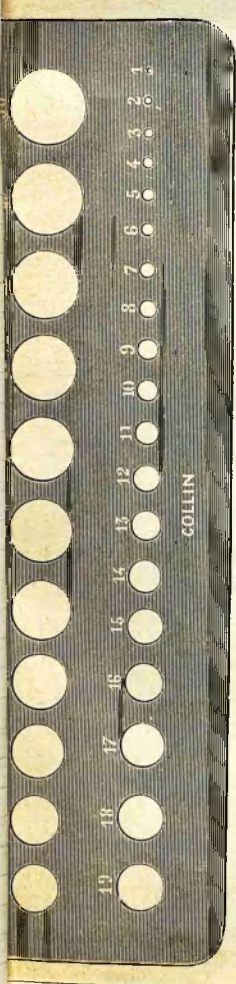
December 3rd. Filiform bougie tied in for 48 hours.

December 5th. Bougie removed and No. 7 passed. *

December 7th. Impossible to pass any bougie. This shews the transitory nature of the effect of tying a bougie in for 48 hours.

December 8th. Filiform bougie passed, left in half an hour

* No, 7 in French scale ⁽³⁾ in third's of a millimetre.-



and followed by No. 7

December 10th. Absolute failure to pass any bougie.

I now determined to make further dilatation possible, by means of the operation of internal urethrotomy with Maisonneuve's instrument, with however, the many improvements suggested by that great master's greater pupil, Professor Guyon.

December 11th. Internal urethrotomy performed.

After washing the glans, prepuce and meatus, and syringing out the anterior urethra by means of a syringe fitted with Janet's glass olive, I cocainised the anterior urethra with Guyons instillator and syringe, and a 2% solution of cocaine, passing the "boule" of the instrument up to the first stricture.

The instruments for the operation itself ^{are} simple and, in the order required, as follows:

- (1) A filiform bougie fitted with a metal thread at base, to act as conductor for the other instruments that have to be passed.
- (2) A straight metallic stem which is screwed on to the bougie and thus shews on partial introduction into canal, whether the bougie be safely within the urethra and bladder, and which also, after the operation, serves as guide for the catheter it is intended to tie in, and protect the incised urethral wall
- (3) The curved grooved metallic conductor which is screwed on the bougie and at once passed down the urethra into the bladder.
- (4) The triangular-bladed knives or urethrotomes, in 3 sizes.
- (5) The square-cut two-eyed catheter, which is to be left in for 48 hours subsequent to the operation, and the plug of wood to close it.

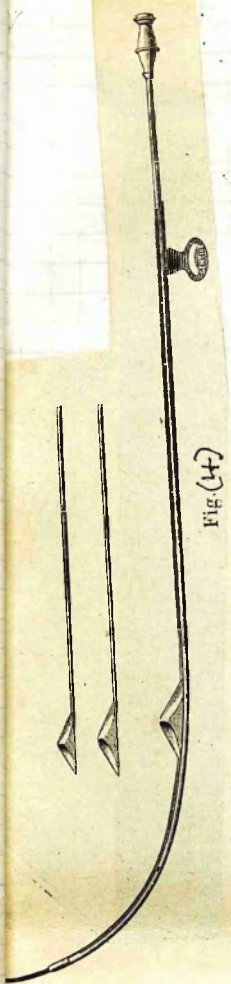


Fig. (4)

Maisonneuve's urethrotome

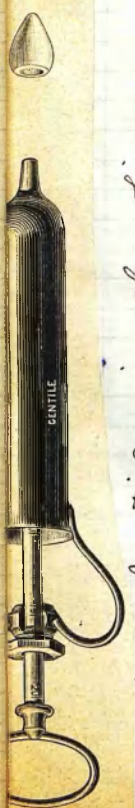


Fig. 5. Janet's syringe & glass olive



Fig. (6) Guyon's instillator



Fig. (7). Square-cut catheter

The Operation. The operation is not a very painful one, and may be safely done with cocaine, not more than $\frac{1}{2}$ grains of which should be injected, in all. In such moderation there is safety. Chloroform anaesthesia in nervous patients is best, but very little is required.

The steps of the operation involve merely a repetition of the instruments already enumerated in the order in which they are required. Of course it is not an aseptic operation, the urine flowing over the wound making that impossible, and sometimes there will be discharge of pus from the urethra, but it is slight and soon passes. It is well to protect the urethral wall by leaving in a fair sized gum-elastic catheter No. 18, 20 or 22., for the first 48 hours. If the bladder be infected it may be washed out with boracic acid or weak silver nitrate solution, (1 in 1000) by means of this catheter.

December 13th. Catheter removed.

On each evening, patient's temperature had risen to 100.2 but now subsided. The discharge of blood and pus, due no doubt to the large surface of urethra cut by the urethrotome and the irritating nature of the urine, did not entirely cease until about the 20th. December, and though making water easily, patient still complained of considerable pain during micturition. No instruments were therefore passed until

December 27th. when bougie No. 6 was passed.

aid of a conducting filiform bougie, but found it impossible without exerting force and causing pain that was unnecessary, as the bougie conductrice seemed to feel its way and guide a large Beniqué with an ease and success that could not otherwise be attained.

January 22nd. Filiform bougie tied in for 36 hours.

January 23rd. Beniqué's No. 38 & 42 on conductor

January 26th. Beniqué's Nos 42 & 44 do.

January 28th. Beniqué's Nos 44 passed without conductor but with difficulty and pain

January 30th. Beniqué's No. 46 passed on conductor with ease and little pain.

Patient went out a week later, able to pass upon himself a full sized gum-elastic bougie.

His expression was "he felt ten years younger".-

The manoeuvres which I consider of importance in all such difficult cases of stricture are

- (1) The tying in of a small bougie for 48 hours
- (2) The use of small metallic bougies with gum-elastic conductors
- (3) The operation of internal urethrotomy.

Without recourse to each of these three simple yet important procedures, I am quite sure it would have been impossible effectually to have dilated this stricture.

With regard to internal urethrotomy, an operation regarded with considerable suspicion in England, I think Sir Henry Thompson's opinion still worth quoting.

On page 165 of the 4th. Edition of his works upon

Stricture (1885), he says;

"The sum of my experience is the expression of a strong
"conviction that internal urethrotomy, fully and completely
"performed, should be resorted to as the best and safest
"treatment of stricture, as soon as the easy use of the
"bougie fails, to maintain the urethra patent, or to allay
"signs of irritation in the bladder arising from the
"obstructed urethra. It is the best means not only for
"relieving urethral obstruction and its painful symptoms,
"but for insuring the future sound condition of the more
"deeply seated organs."

II. "Urinary Antisepsis".

Urinary Antisepsis

- (1) Preparation of the Patient
- (2) Catheterisation by Patient himself
- (3) Sterilisation of Instruments

⑥

Urinary Antisepsis

The variety of instruments required and the conditions of ~~the~~ catheterisation itself as an operation, necessitate antiseptic precautions altogether peculiar to urinary as distinguished from general surgery. Thus, use is made of metallic, gum-elastic and soft rubber instruments and a method which suitably sterilises the one may infallibly destroy the other. Again, no general surgeon would neglect to cleanse his patient's skin for the bistoury, yet it is scarcely less necessary to prepare the way for the catheter or the bougie. Antiseptic principles, happily, lead to greater simplicity rather than complexity in surgical procedure and, though a few practitioners may still be found bold enough or careless enough to take an instrument from a dusty table and pass it at once through the urethra into the bladder, they are, happily, in the minority, and the sterilisation of urinary instruments is today so simple as to be within the reach of all and should be practised by every conscientious physician.

(1) One word as to his Preparation of the Patient.

The first step is to cleanse the field of operation and the penis, glans, prepuce and meatus should be washed with soap and water and swabbed with cotton wool dipped in sublimate solution, 1 in 1000 or other effective antiseptic.

The next step is to cleanse the urethra by means of the syringe and as the anterior urethra only (in the uninfected subject) has been found to contain microbes, the solution should not be forced through the membranous portion into the posterior urethra

or bladder.

The lips of the meatus should be separated by the thumb and index finger of the left hand and a strong jet sent in from some little distance, gradually approaching the syringe until the urethral orifice is closed by means of Janet's glass olive at its tip. Gently pushing the piston, the anterior urethra is filled with some tension, shewn by the forcible escape when the syringe is withdrawn. This little manoeuvre should be repeated several times with either boiled water or boracic solution.

1/2 Olive

These precautions are indispensable, for the preputial region in men and the vulva in women have been shewn to be hot beds of the bacillus coli communis. Bacteriological evidence has also shewn that no number of injections will free the urethra from microbes. (*) Clinical experience happily, however, shews that even the most receptive patients may, after reasonable and practical precautions, be sounded without danger.

(2) Catheterisation by Patient Himself.

So many patients, especially those suffering from an enlarged prostate, are obliged to use the catheter themselves and, of that number, so many sooner or later succeed in infecting their bladders, that it behoves every surgeon to suggest some simple plan

.....
(*) Guyon loc. cit. Vol. 2 p.29

of campaign by which an event, so dire in its immediate and ultimate consequences as urinary infection, may be best avoided. Practically the only antiseptic measures within the reach of every patient are those obtainable with soap and boiling water and, happily, these suffice. He should, however, have in stock several catheters ready for use, and he should always employ a catheter of large calibre. Thin-walled gum-elastic catheters with double eye-holes are, therefore, preferable to the single-eyed soft-rubber instruments which, as a rule, have smaller calibre and are less effective in washing out and emptying the bladder. The steps of the simplest and the safest procedure are the following .:

- (1) Wash the catheter with soap and warm water.
 - (2) Boil it for 5 or 10 minutes in an ordinary enamel pan.
 - (3) Replace the boiling water by boracic solution.
 - (4) Open the vessel containing the lubricant required.
 - (5) Wash hands, meatus, prepuce and glans penis
- and all is ready for a safe catheterisation.

When finished, wash the instrument again with soap and warm water and put it away to dry in lint.

The pomade Guyon uses is composed of equal parts of glycerine, water, and powdered soap, with one per cent of phenol or Beta-naphthol added. Prepared aseptically it keeps pure for weeks, is easily soluble in water, and is actually cleanly unlike vaseline, glycerine, and various oils in present use.

(3) Sterilisation of Instruments.

Many and various have been the methods and substances used for

this object. None - especially in the sterilisation of gum-elastic instruments - has hitherto been found free from objection. The methods to be referred to are three, viz.

(1) by boiling, (2) by antiseptic solutions, and (3) by formol or rather trioxymethylene vapour. The instruments to be sterilised may also be divided into three classes, viz.

(1) metallic, (2) soft rubber, and (3) gum-elastic, and this double group of three may not unfittedly be considered together.

(1). Boiling

Metallic bougies may thus be sterilised as other surgical instruments, namely by washing with soap and water, and then boiling for not less than 10 minutes in water made alkaline by the addition of carbonate of soda. Before use or during use, they should be kept in boracic solution or boiled water. This method is so simple that it may be carried out whenever such instruments are needed.

Metallic catheters are, it is to be hoped, gradually dropping out of use. If a patient have retention, partial or complete, whether it be due to congestion, spasm, stricture or an enlarged prostate, the best instrument to use is either the soft-rubber (the worm-catheter) or the gum-elastic instrument. If the stricture be a tight one, a small metallic catheter is the most dangerous instrument that could be chosen and the retention will be far more easily and far more safely relieved by a gum-elastic filiform bougie.

Soft-rubber instruments, if of good quality, and well vulcanised,

bear ebullition well (provided no carbonate of soda be present) but they should always be first thoroughly washed and syringed through with soap and warm water. This latter is an effective antiseptis and reduces the time necessary for ebullition from half an hour to ten minutes. These catheters should be thin-walled and beyond the eye there must be no cul-de-sac, that end of the catheter being solid.

soft rubber catheter:

Gum-elastic instruments may also be thus sterilised, but only a limited number of times, as they gradually become rough and therefore unserviceable.

(2) Antiseptic solutions.

To be effective, such solutions must be strong, and a gum-elastic or rubber instrument cannot remain long in such a solution without becoming unfit for use. Of all antiseptics the most injurious is that in most frequent use - carbolic acid -.

Boiling water is so effective and simple a sterilising agent for metallic instruments that antiseptic solutions are, in this case, also, of little value. Boracic acid may be used temporarily to keep metallic and other instruments already sterilised, but any solution undoubtedly in time alters rubber sounds, and rapidly destroys gum-elastic ones, so that it may be laid down as a general rule, that all urinary instruments should be preserved dry.

(3) Formol and Trioxymethylene vapour.

Having found, in boiling water, an excellent procedure for the sterilisation of metallic and rubber instruments, it may be said

at once that trioxymethylene vapour is as satisfactory for gum-elastic instruments. Since all that is required is an air-tight box or case in which to sterilise the sounds, and a small quantity of the Formol solution or the Trioxymethylene powder, we may be pardoned going ^{somewhat fully} into the experiments that have placed its extraordinary antiseptic properties beyond question.

* To Miquel, Trillat, Berlioz, Franck and Janet are due our knowledge ^{of} and its properties and of its value, the experiments made by the two latter in Berlin and Paris respectively, being similar in result and absolutely conclusive.

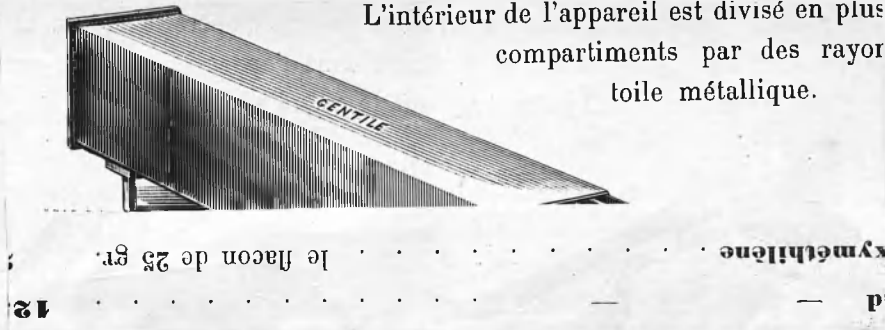
Formol is an aqueous solution containing about 40 % of formic aldehyde. If made more concentrated by evaporation, a white powder Trioxymethylene, is obtained which gives off in the form of vapour the original formol.

Formol in liquid or in gaseous form, injures in no way metallic, gum-elastic, and rubber instruments but it is in dealing with gum-elastic bougies and catheters that recourse should be had to it.

Janet made two series of experiments, in the first, suspending the catheters from the rubber stopper of glass tubes of three different sizes, at the bottom of which was a tampon of absorbant gauze soaked in formol in solutions of varying strengths, in the second, that which is more important for us, because the experiments were made with the box we recommend for use, the formol was spread upon a piece of lint in the bottom of a metallic box which closed hermetically and upon the several shelves of which were laid the catheters to be sterilised.

L'intérieur de l'appareil est divisé en plus
compartiments par des rayor
toile métallique.

(7)



* [Miquel - De la désinfection des poussières sèches des ap-
partements au moyen de substances gazeuses et vola-
tiles. Paris 1895

Trillat -Des propriétés antiseptiques de la Formaldéhyde.
Comptes rendus de l'Acad. des Sc. Aug. 1892

Berlioz- Berlioz et Trillat loc. cit. 1892

Franck - Berlin Klin. Wochensch. 1895

Janet - Ann. Gen. Ur. Jan. & Feb. 1896, who refers for an
historical résumé to Bardet, Bull. Gen. de Théra-
peutique, April, and May 1895.]

These cases are made by Gentile of Paris but they are expen-
sive and if the principles they imply be kept in mind a simpler
mechanism will probably meet the requirements of most prac-
titioners. The box should be air-tight to prevent the escape
of the trioxymethylene vapour which is our disinfecting agent
and it should be so arranged that the formol or trioxymethylene
may be sprinkled on lint in such a way that the catheters to
be sterilised do not come in contact either with each other, or
with the lint.

The sounds and catheters experimented with, were infected with
bouillon containing purulent urine, were dried in the air, and
then introduced, some washed with soap and water, others un-
washed, into the formol apparatus, from which, after a noted
period, they were plunged into sterile bouillon. Of Janet's
many and careful experiments, to which reference has already
been made, I shall only quote the results with formol

and trioxymethylene in the metallic case made by Gentile, and as regards catheters of ordinary size and of the smaller sizes which, of course, become more difficult to sterilise.

1 - Ordinary Catheters and Formol.

Experiment 1. 5 infected catheters, unwashed are left in the case with pure formol poured upon the lint, for 24 hours at a temperature of 17°C (about 62°F)

RESULT These 5 catheters fail to cultivate

Experiment 2. 3 infected catheters, washed through with soap and water are ~~re~~placed in the case containing pure formol, at 17° for 24 hours.

RESULT. These catheters do not cultivate.

That is to say an absolute sterilisation takes place in each of these eight trials whether the catheters be washed or not.

2 - Ordinary Catheters and Trioxymethylene; The latter being thinly sprinkled upon lint.

Experiment 3. 4 catheters infected, unwashed are placed in the metallic case for 24 hours at 17° .

RESULT. Three do not cultivate

One cultivates at the end of 48 hours.

Experiment 4. 3 catheters, infected, washed in similar conditions

RESULT. They do not cultivate.

That is to say, 6 out of 7 trials are successful, the one failure being an unwashed catheter.

3 - Very small Catheters, Instillators etc. and Formol and Trioxymethylene.

These were infected, by injecting through them with a syringe, infected bouillon. Afterwards, those that were washed, were syringed through with soap and water.

Experiment 5. 2 instillators, infected, one washed, the other unwashed, for 24 hours, temp. 17° , formol[^].

RESULT. Both cultivate, the unwashed one in 24 hours, the washed one in 48 hours.

Experiment 6. 8 instillators, one unwashed, and seven washed for 48 hours in case with formol, temp. 17° .

RESULT. The unwashed instillator cultivates in 48 hours, the other seven do not cultivate.

That is to say, all fine instruments that had been washed were absolutely sterilised in 48 hours.

Janet's conclusions may be thus formulated;-

- 1/ Spread the formol or the trioxymethylene over a large surface
- 2/ Keep the temperature as nearly as possible about 15° C (about 58° F.) never below 10° C (about 50° F.)
- 3/ Sterilise ordinary-sized catheters for 24 hours, small ones for 48 hours.

Of the two, the solution of formol or the powder of trioxymethylene, the latter is much the more convenient, is as efficacious, does not soften the instruments provided they be introduced perfectly dry, and, of course, does not evaporate.

From the steriliser the sounds or catheters may be laid in boracic solution during, or shortly before use on account of the slightly irritant effect of formol upon the mucous membrane of the urethra. Undoubtedly the best way to keep sounds, once

sterilised, is in flat glass dishes containing small quantities of chloride of calcium to dry them and of trioxymethylene to keep them aseptic. They are thus free from contact with each other, and have also plenty of air which prevents their becoming soft.

Or, if frequent use is not made of catheters and sounds, they may be kept indefinitely in the metallic case containing the trioxymethylene.-

††††††††††††††††

III "Instillations & their value
in the treatment of Cystitis."

Instillations and their value in the treatment of Cystitis.

"La tension d'une vessie enflammée, pour peu qu'elle se prolonge ou se répète, est une des conditions qui permettent à la vessie d'influencer la destinée du rein; nous aurons à y revenir, car d'un bon traitement de la vessie dépend souvent la guérison d'une maladie grave du rein."

Guyon: Leçons Cliniques sur les
Maladies des Voies Urinaires.

There are only two main principles in the treatment of inflammation of the bladder, no matter what the particular nature of that inflammation, and they are,

- 1) Local
- 2) General.

The popular one to this day, and, I believe, the less efficacious of the two, is the general treatment by medicinal and hygienic measures.

The object of the following remarks, is to prove that, while these general principles may not be altogether neglected, ~~they~~ should indeed, in many cases be carefully insisted upon,

(1) a local antiseptic of the bladder is of primary importance and (2) is of such simplicity and safety as to be within the reach of every practitioner.

Recent knowledge of the nature of infective diseases would seem to prove that we might rely greatly, in our attack upon the invading micro-organisms, upon the reinforcement of the general resistance. Our treatment of many of the microbic diseases, e.g. pneumonia, specific fevers, etc: is mainly a tonic one, or, in more recent years and in such diseases as diphtheria, hydrophobia, tetanus, etc:, by the specific antitoxine. It is, indeed a question that is still unanswered whether the antitoxines do not act, in part or wholly, by their tonic, strengthening effect upon the organism. Roux, one of the foremost representatives of Pasteurism, in his recent address at Buda-Pesth (1894) states, for example, that rabbits protected by injection against hydrophobia survive an injection of 4 or 5 times an ordinarily fatal quantity of serpent's venom.

In the same way we may explain the good effects of large injections of saline solutions in various infective conditions viz: it's general, tonic, stimulating effect, ~~xxxxxxxxxxxxxxxx~~ ~~xxxxxxxxxxxxxxxx~~ a method of treatment that has lately been greatly practised and has been found of at least temporary value in articulo mortis in many diseases. The injection of a considerable quantity of salt solution or merely warm water high up into the rectum, has long been practised e.g. in such conditions as profound anaemia and collapse, after haemorrhage.

And, to come closer to our subject, the investigations of Bouchard (Bouchard, Leçons sur les auto-intoxications, Paris 1887) upon the influence of the intestinal contents upon the toxic powers of the urine and the fact that the common pyogenic microbe of urinary infection - the Bacillus coli communis (Albarran, Le Rein des Urinaires, Thèse de Paris 1889, See also Guyon's Leçons Cliniques, Vol: II) - has it's habitat in the intestine, prove that local agents are not our only means of modifying the content of the bladder. The clinical experience, further, of each one of us, can probably furnish cases of ~~xxxxx~~ cystitis with recovery as a concomitant, if not a consequence of the use ~~xx xxxxxxxxx~~, by the mouth of such medicinal agents as salol, boracic acid, *notus imperialis*, or perhaps only milk in considerable quantity, or barley or lime-water, - all excellent diuretics.

Against these facts place our knowledge that infected urine is, except in the case of the tubercular form, the active cause of the cystitis and that it is possible, directly and locally, most effectually to modify in the bladder the toxic nature of that urine and it might be difficult, a priori, for our reason to give the preference to either of the two methods

of treatment. Happily we can appeal to a judge who can give a more decided answer, against which there is no appeal, viz: clinical experience, (A wellknown dictum of Prof: Guyon, which, once appreciated, is never forgotten)

No specific antitoxin has, as yet, been discovered to combat the effects of urinary infection; medicinal treatment, therefore relies upon no direct germicide. We may make the urine a less favorable medium, we can flush out the kidneys, but neither ~~xxx~~ stomach nor kidneys are tolerant of large quantities of santal, salol, soda etc: and the quantity must be large to act effectively upon processes in the bladder. Direct vesical antisepsis is, in this respect, very greatly superior to an ~~xx~~ antisepsis that can only act via the kidneys (Guyon, Mercredi Medical, July 30 1890) Guyon's experience bids him state his belief firmly that medicinal antisepsis plays an extremely small part in the treatment of urinary infection in it's acute or chronic forms (Leçons Cliniques Vol:II p.42 1896 3rd Ed) and general treatment may practically be limited to tonics and stimulants and dilute diuretics.

The symptoms of cystitis are too well-known to require repetition. There is one, however, which not only is the foundation of all but which also gives the key to the treatment, namely, the bladder's intolerance of tension. This intolerance explains most of the other symptoms, the frequently, urgent, painful micturition. The distension of the congested bladder causes instant and powerful contraction, with perhaps hematuria and almost constant agony.

We have here one reason why the patient should object to a treatment which increases the secretion of urine, and

therefore the desire to picurate and the painful contraction of the bladder. Large and even moderately small ~~XXXXXXXXXX~~ local injections are, for the same reason, absolutely contra-indicated. We must fall back, therefore, upon the use of ~~in~~ instillations, i.e. a method of locally applying, drop by drop an active medicinal solution to the inner surface of the bladder. They were first described by Professor Guyon (See ~~III~~ also *Léçons clin: Vol. III p. 395 3rd Ed: 1897*) in 1867 in the *Bulletins de la Société de Chirurgie de Paris*, and the thirty years that have elapsed since then, have been spent, thanks to the perfection of the technique and the recognition of the value of certain substances, in the realisation of the hopes that they then raised.

The strength of the solutions used, the small number of drops, and above all, the slowness with which, one by one, they reach their destination, are the important points to be attended to. Instillations cannot be hurriedly given, or they become injections, and lose all character of instillations.

Strength of Solution:

The solution though by no means always a caustic one, is usually strong, far stronger than could be used in the form of an injection in the ordinary sense. This fact is of as great value as it is in the use of anodynes, and constitutes indeed, the chief virtue of instillations.

Instruments and Technique:

The instruments required are simply a small graduated syringe and the instillator, which is a perforated, gum-elastic olive-tipped bougie, the well-known bougie exploratrice olivaire with a stem of somewhat greater calibre to permit of the entrance of the solution.

A hypodermic syringe will do excellently, being graduated and filled with a nose-piece, which may be adjusted to the instillator. This adjustment must, however be exact, as the length of the stem, and the smallness of it's calibre makes considerable pressure necessary. In the special syringe devised by the content is 4 Grammes or about ~~5~~ *one drachm*, Guyon, the piston advances upon a screw, (as well as by simple pressure) thus ~~necessitating~~ ^{ensuring}, in instillations, the introduction drop by drop, of the solution.

To ensure, furthermore, the entrance of the solution in single, successive drops, the olive of the instillator must be finely perforated, & the calibre of the tube must be small, and even, throughout it's length. Such instruments, made of gum-elastic are preferable to the solid ~~metallic~~ metallic instillator of Utzmann and others, except that they are not so easily or rapidly sterilisable.

The syringe is filled and accurately fitted into the instillator. The piston is then advanced by turning the screw until the interior of the stem be filled with solution so that no air may enter the bladder. It will then be seen that each half-turn of the screw expels one drop. It will be wise, in view of the difficulty of perfect sterilisation of ~~the~~ an instrument of so small a diameter, to follow Guyon's suggestion and inject the whole content of the syringe through the catheter and then proceed to the instillations. The patient, of course, should as in all instrumentation of the *urethra*, when possible, first micturate and the anterior *urethra* should be washed by a syringe and solution of boracic acid.

Instillations may be *urethral* and vesical. Of *urethral* instillations, with which we are not immediately concerned, we

will only make two remarks. For the posterior urethra the olive should be passed through, and then drawn gently back, ~~xx~~ against the membranous portion and a considerable quantity of the solution, 20, 50 or even 40 drops slowly introduced, the bulk of which of course finds it's way into the bladder. The olive is then drawn through the sphincter, a few drops being expelled in the transit, and a second instillation is made for anterior urethra, 10, 15, or 20 drops sufficing. If localisation to the posterior urethra alone be desired, the ~~ix~~ instillation is made as described, the bladder however being filled with a solution of boracic acid or the patient having been instructed to retain his urine. Inject only about 5 drops which are at once sufficiently diluted by the contents of the bladder. To instill into the bulbous urethra which so often holds the dregs of a chronic discharge, use a large olive and withdraw it a little in front of the sphincter, easily recognised by the increased resistance, maintaining the olive in place for a few minutes after the instillations, and thus necessitating it's entrance into the cul-de-sac of the bulb.

For all instillations an olive of 12 to 16 will generally suffice, 18 to 20 being reserved for localisation to the bulb.

Instillations into the bladder.

In the first place the bladder should be empty. The patient must urinate if he can, the catheter must be used if he can't. In the latter case, and provided the bladder can support a moderate amount of tension, it may be washed out through the catheter with boracic acid or weak nitrate of silver solution, 1 in 1000.

In the second place, the quantity used may be greater than that used in urethral instillations but should ~~nx~~ never exceed the contents of one syringe, i.e. about a

teaspoonful.

In the third place, as every cystitis is accompanied by posterior urethritis, the instillation will ~~be~~ best enter the bladder after traversing the posterior urethra, i.e. all behind the membranous portion. Only in cases of hypersensitivity -ness on the part of the patient, need the instillation be introduced directly into the bladder.

In the fourth place it may be remarked that the ~~xxxx~~ strength of the solution that may be used is as great as it's quantity must be small. Thus with nitrate of silver, the bladder could not be washed out with a stronger solution than 1 ~~in~~ in 500, yet as instillations, solutions from 1% to 2%, and sometimes 3%, 4%, and 5% may be used with perfect toleration, both by the urethra and by the bladder in the majority of cases.

Injections of solutions of perchloride of mercury may be used in the proportion of 1 to 20,000 and 1 to 10,000, but as instillations the strength of 1 in 5,000 and 3,000 is of ~~the~~ daily use, and some patients even support 1 in 1,000.

Above 5 % nitrate of silver becomes a caustic, and indeed should not be used in greater strength than 7 % to 8 %, a solution that has as caustic an effect as the solid stick. In ~~the~~ such strength the quantity used should never exceed 3 to 6 drops and should be introduced with extreme deliberation. Dilute ~~the~~ solutions will be found of more use in daily practice.

We may divide the substances that will be found of most use, into

- 1) Anaesthetics
- 2) Antiseptics.

1) Local anaesthetics. These are of great value, both as treatment in themselves and as a preliminary to the instilla-

-tions of solutions more or less painful. It is unnecessary perhaps, to add that whatever anaesthetic be used, it's absolute sterilisation, in spite of the presumably infected state of the bladder, is essential.

Antipyrine

In mild cystitis in which there is no excessive tenderness to tension, and which it is intended to treat with nitrate of silver, antipyrine, dissolved in ten times it's weight of water, undoubtedly renders the mucous surface of the of the bladder less sensitive to the search of the nitrate.

Guiacol

In very acute cystitis both antipyrine and cocaine ^{yield} in efficacy as a preliminary injection to the medicinal agent it is intended to use, to guiacol in the formula that Professor Picot of Bordeaux uses for hypodermic injection,

Iodoform	1 part
Guiacol	5 parts
Sterilised OliveOil	100 parts

of which solution 3i may be injected thrice daily without any inconvenience.

Cocaine has now, thanks to Dr Reclus of L. Pitié (Reclus, La Cocaine en Chirurgie 1895 and Anaesthésie Locale par la Cocaine. Bull: Acad: Méd: May 1896) been so studied that we now know what is safe and what is dangerous.

The entire quantity used in solution should not exceed $1\frac{1}{2}$ grains of the hydrochlorate of cocaine. The solution should be 1 % of recent preparation and administered with the patient in the dorsal decubitus. This rule may, to a certain extent, be modified, and solutions may be required as strong as 2 % or may suffice as weak as 1 in 200 or 1 in 400. A good rule,

however is never to exceed the injection of ^{one and} a half to two grains of cocaine.

Antiseptic instillations.

It must not be thought that the substances referred to are the only ones with which experiments have been made. They are rather those which have won and which hold, after many years trial, a position of trust. For one reason and another, but only after long trial, Guyon has given up the use of such substances as chloral, salicylic acid, ~~xxx~~ salicylate of soda, sulphate of copper, hydrochloric acid, and even carbolic acid, iodoform and formal, from which so much might reasonably have been expected.

Boracic Acid, which Pasteur recommended to Guyon in 1876, and which has been in regular use since that date, is of comparatively little value in the minute quantity of an instillation. The same may be said though for other reasons, of permanganate of potash. Both should only be used in quantity to wash out the bladder. A five per cent solution, i.e. a supersaturated solution of boracic acid may be prepared with warm water, and the addition of borate of soda in the strength of 1 in 200, the proportions thus being,

Boracic acid	5 parts
Borate of Soda	1/2 "
Warm water	100 "

This may be used as an instillation alone or combined with perchloride of Mercury in equal quantity, ~~ixixi2000~~ 1 in 10,000 Perchloride of Mercury in solutions of 1 in 5,000 or 1 in 3,000 will be found of immense service.

In the constant and often prolonged agony of tubercular cystitis, instillations of a 1 in 5,000 solution of sublimate

IV. "Partial Retention of Urine:
Its Consequences & Treatment."

Partial Retention of Urine

Its consequences and treatment

Partial Retention of Urine. Its consequences and treatment

" Nombre de malades vous parlent de pesanteurs stomacales, de constipations opiniâtres, de vomituritions, voire même de diarrhées rebelles, de vertiges, de migraines, mais ne vous disent pas un mot "de la manière dont ils pissent", soit qu'ils n'aient rien remarqué d'anormal de ce côté, soit, ce qui est plus fréquent encore, qu'ils n'attachent aucune importance à des modifications légères de la miction, modifications qu'ils ne jugent pas avoir de rapport avec les symptômes dyspeptiques dont ils souffrent.

L'expérience du clinicien doit suppléer à l'ignorance aux idées préconçues ou à la légèreté du malade; il doit, en présence de troubles digestifs mal caractérisés et que rien ne justifie s'informer de la miction, et ceci surtout chez les vieillards. N'oubliez jamais, en effet, que rien n'est plus fréquent à cet âge, que la rétention partielle d'urine par le fait de l'hypertrophie prostatique; rappelez vous aussi combien ces symptômes sont vagues et, pour ainsi dire, latents. Le sujet urine un peu plus souvent que de coutume; il se lève plusieurs fois par nuit, mais il ne souffre pas et prend assez volontiers son parti de cette incommodité. Aussi, nous vous le répétons, il est fréquent que le malade néglige de vous parler de ce "petit inconvénient" et concentre votre attention sur des troubles digestifs et sur eux seuls. "

(Guyon , leçon clin. vol 2 p. 221 , 1896)

(2)

The recognition of the condition of a bladder incompletely emptied by the urinary act ~~is~~ is all important and by no means easy, whereas, the principles of treatment are of the simplest.

And yet the clinical features of a typical case of "stagnation of Urine" as it was called by CIVIALE and later English writers, once they have been recognised in their individuality, present an ensemble of symptoms that has only one significance. As more than 75 % of all cases of retention are due to prostatic enlargement, the close study of their variety and degree, is at least advisable. Complete retention in patients with enlargement of the prostate is of course, a late phase in their condition. Even incomplete retention is very gradually established and only recognised after years of development for the prostate enlarges slowly and for years the bladder succeeds completely in ~~slowly~~ emptying itself. Sooner or later, however, come the further stages of inability to empty the bladder even in part, that is to say, a temporary distention, or later still, chronic partial retention of urine with distention of the bladder.

The early stages are shewn by a frequency and a difficulty of micturition experienced by day and by night. That the kidneys share in the congestion of the prostate is proved by the increase in the secretion of urine, especially by during the night. The frequency and the difficulty, however, often pass unnoticed or unheeded, especially in old men who

are prepared to suffer such inconvenience and who, as long as **they** are free from actual acute retention, shrink from consulting a surgeon, and from the unknown dread of ~~the~~ catheter. The early symptoms therefore, of retention or of residual urine in the bladder are all-important. They are nocturnal polyuria and persistant digestive troubles. The ~~first~~ first symptom alone, namely an obstinate frequency and difficulty of micturition during the night points almost certainly to a badly emptied bladder. In such cases, as in all prostatics, everything that favours local ~~con~~gestion such as prolonged lying in bed, too sedative a life, too rich a diet, surface chill, disregard **of** Nature's call to urinate, sexual indulgence, tends to bring on an attack of retention. ~~A~~ As an accompaniment, the symptom of digestive disorders is almost pathognomonic and the diagnosis is clinched by bimanual examination of the bladder, even without appeal to the catheter, which, however, must be made in ~~t~~treatment. The bladder should be evacuated slowly and if there be any pain during the process it will be well **not** to draw the urine completely off, but to inject small quantities of warm boracic solution until it comes out as clear as when injected. The urine may thus be entirely withdrawn without the bladder being emptied. If necessary, that is to say, if it be difficult or inconvenient to pass a catheter with sufficient frequency, every 2.4.6.8. or 12 hours, a catheter must be tied in, for artificial evacuation may be required for days. The golden rule is, to empty the bladder often, for long and

aseptically. If the early period of prostatic enlargement be tided over successfully, one may hope to be spared the greater anxiety of later complications.

In "partial retention" of course, the essential feature is the patient's ability to pass urine plus his inability to empty the bladder, due, in nine cases out of ten, to the mechanical obstacle presented by the enlarged prostate. In such cases, cystitis may bulk largely in the clinical picture and it is, of course, due to infection. A foul catheter suffices or, if there has already been infection in the past, fatigue, ~~chill~~ chill, an indiscretion in diet, may be enough to throw into activity germs which for years had remained innocuously enough, in the urethra or in the bladder. In the more acute of such cases general sedative treatment by baths, heat in the form of poultices, laudanum enemata etc. are indicated.

As the stagnation becomes more chronic, the complications and alteration in the general health, rather than the local condition, make themselves felt. The bladder may consequently escape examination for months, although in all obstinate gastric derangement it is well to suspect and search for some "intoxicating" agent. A patient who has no difficulty in micturition, whose urine is clear, and who suffers merely from some loss of appetite and some frequency of micturition, can hardly be expected to direct his medical attendant's attention to his bladder, which, after all, may only contain some few ounces of residual urine. In time, however, such a patient will emaciate and lose colour with a rapidity that is only less striking than his rapid recovery under judicious and frequent catheterisation and general hygienic measures.

When the stagnation of urine becomes so prolonged and extreme as to be accompanied by positive distention of the bladder, it forms the most serious, the most intractable, and yet the most overlooked of all forms of partial retention of urine. The central fact of the condition is the distended state of the bladder which makes itself felt throughout the whole urinary tract from the ~~ureters~~ to the parenchyma of the kidneys themselves. The disorders thus set up, at first functional, soon become organic and as there *(yet no infection & therefore no cystitis, there is)* is nothing beyond some frequency of micturition to direct attention ^A to the urinary apparatus. The patient's tongue is red and dry and coated to such a degree that swallowing and even mastication become intolerably distasteful. Vomiting and diarrhoea may set in or the dyspepsia may express itself simply in loss of appetite, and headache and a sense of gastric weight. On the other hand, constipation of a most obstinate form may be the predominant feature of the digestive disturbances. Whatever form it assume, the pain, the loss of flesh and of appetite, ~~the~~ cachectic appearance and the age of the patient combine to make the diagnosis of cancer of the stomach not unlikely and one, indeed, that is frequently in the mind of the physician. It will be found, however, perhaps only upon direct enquiry, that these patients pass large quantities of urine, generally about 100 ounces in the 24 hours and that they make water frequently, especially at night. The urine, as a rule, is pale, and clear, without deposit. It cannot be too dogmatically stated that when the three symptoms of Pelyuria - Frequency of micturition - Grave digestive troubles -

are present, the fons et origo mali is almost certain to be a bladder that the patient cannot completely empty. Of all conditions that predispose to infection none are more emphatic than this stasis or stagnation of urine in bladder, ~~ureters~~ and kidneys along with the lowered general nutrition. A catheter that is not aseptic is all but certain to be an infecting agent, and therefore, an instrument the use of which, in these cases, is to be undertaken with a hyperscrupulous care.

Along with local treatment of the bladder, the régime advised should be a generous one, much milk, meat-juice, beef-tea, custards, eggs, soups, wine, bitter vegetable tonics and saline laxatives. Healthy, out-of-door exercise in moderation is also to be recommended.

The evacuation of the bladder should be begun slowly and very cautiously, and may be increased, if all is favourable, to 3 or 4 times in the 24 hours. If infection be present the bladder should be washed gently out with boracic solution, or silver nitrate 1/1000, using the syringe and a medium-sized catheter-~~condé~~.

The catheterisation should be of such frequency that the patient is conscious of no strong desire to micturate and, upon each occasion, a small quantity of solution should be left in. These distended bladders, if completely emptied, not only cause pain but, as a rule, bleed and may bleed freely.

In some cases, it will be necessary to tie the catheter in, the plug of which may be removed every two or every three hours.

In conclusion, it may be confidently asserted that were such principles of treatment conscientiously and intelligently followed, there would

followed, there would be less heard of excision of the prostate and castration, operations which would then be reserved for intractable cases of prostatic **H**ypertrophy with retention.

V. Gonorrhoea: Its nature Diagnosis

GONORRHEA1 Its Nature and Diagnosis

Few will deny that the treatment of acute and chronic gonorrhoeal urethritis is in a most unsatisfactory position. Nor can any single reason be alleged as the cause of this fact. That surgeons in large practice have not time to give it the attention it deserves, that general practitioners are satisfied with the older, easier, and in their opinion safer methods of treatment by internal medication, that many of the victims of gonorrhoea look upon their illness with the contempt of familiarity, and rather as a trifling piece of ill luck than as the foundation of lesions that may in time threaten their very life, but chiefly that the local cleanly treatment by antiseptic douching of the suppurating urethral surface, so abundantly and successfully practised in France, Germany, and America, has yet made practically no impress upon British practice, have, I think, all contributed to the present state of affairs, unsatisfactory alike to the patient and to his medical man.

Local treatment suggested itself naturally as in any other acute suppurative process. (1) Even the most ardent therapist would hardly rely upon Copaiba or Cubebs or Santal in the treatment of gonorrhoeal ophthalmia and the ~~sb~~ conditions are analagous. But local treatment in the case of the urethra becomes internal and comparative in many ways to a surgical operation. At first, antiseptic precautions, save of the crudest, were neglected and the

(1) See the works of Debeney, Ricord, Diday, Mauriac etc.

nature of the solutions then used ,such as strong nitrate of silver,sulphate of Zinc,or other salts,led to such disastrous results,so painful to the patient,so absolutely futile against his ailment,and so disappointing to the surgeon,that there is today no more determined opponent of the so-called abortive treatment of gonorrhoea by injections than those who witnessed ~~it~~ its results 20 and 30 years ago. There can be no doubt that, in spite of the resurrection,or rather the perfection of former local principles of treatment,the field is still held,in England at any rate,by the internal medication men,and gonorrhoea is practically left to get well by itself.With less definite treatment has come less exact diagnosis and a urethral discharge is merely glanced at to be named. It is forgotten that all urethrit~~is~~^{es} are not gonococcic,that a glance cannot tell you whether the membranous and prostatic^{urethra} are also affected,that the period or age of the discharge is all important,points each one of which should modify your treatment. But we all have seen,in London, and the provinces,the routine presentation of such a patient, shamefacedly or frankly shewing the drop of pus at his meatus, and as rapidly buttoning up again.Surely never was "pathognomonic" sign so repected!

Now the progress of our knowledge of the anatomy and of the physiology of the urethra and the genito-urinary organs have brought to light facts which vitally affect the solution of the problem before us.Upon that knowledge may be based principles of treatment which were impossible in the days of empiricism and

theory, and which may safely be tested by the touchstone of all medical investigation, namely clinical experience. Touching the treatment and nature of Gonorrhoea our knowledge has made recently strides of importance along the two broad paths of physiology and pathology, in each of which I intend to point out what must be recognised as facts, and once so recognised, their importance appreciated, and the necessary conclusions admitted. (1) The result will be a more careful appreciation of the cases of gonorrhoea that come up for treatment, a more exact, if more tedious and difficult diagnosis, of its extent, its localisation, its bacteriological nature etc. and consequently a success and satisfaction in treatment that will more than make up for the trouble taken and time spent. (2)

I. In 1881, Guyon established the all important physiological division of the urethra into anterior and posterior parts, in front of and behind the urethral sphincter in its membranous portion. In no affection of the urethra can this fact be neglected, and its importance in Gonorrhoea cannot be exaggerated. (Leçons cliniques

(1) See also for investigations on these lines;

Jamin, - Etude sur l'Urétrite chronique blennorrhagique, Thèse de Paris
1884

Guiard, - Technique des injections urétrales.
(Ann. Gen. Ur. 1894, p. 432)

Guiard, - Substitution de la seringue aux appareils à pression, pour les grands lavages uréthro-vésicaux.
(Ann. Gen. Ur. 1896, p. 815.)

Vandenabeele, - Du lavage de la vessie sans sonde à l'aide du siphon etc.

(Thèse de Paris, 1882)

(2) I am bound by my experience to refer freely in this respect to Prof. Guyon and the distinguished workers he has gathered round him in Necker Hospital and throughout France!

vol. 2 page 352 3rd. Edit. 1896)

Except during micturition it closes the urethra and fluids injected against its anterior surface, will reappear at the meatus, if injected from an instrument passed through the sphincter it will flow on through the prostatic urethra into the bladder, none escaping into the anterior urethra. Fluid may be forced through it, but only by exerting and maintaining considerable pressure. In their conduct in health and disease, that is to say, in their physiology and in their pathology, these two portions of the urethra are absolutely distinct. Thus, if the anterior urethra be wounded, the blood finds its way at once to the meatus, and not to the bladder; if the posterior be wounded, the blood is only expelled from the bladder by the act of micturition. This is the difference between urethrorrhagia and hematuria. This distinction makes possible the application of a local therapeutic agent to one or other of these portions of the urethra.

As is well known, gonorrhoeal stricture, by far the commonest of all strictures, is never situated in the posterior urethra, but always in the anterior or spongy portion, being tightest and most resistant to dilatation in the deep perineal and bulbous portion. There, therefore, may we expect the acute inflammation and ulceration of an attack of gonorrhoea to leave its impress, and to that spot may we direct our therapeutic efforts to ward off the miserable future that faces every man with a stricture.

2, Similarly, bacteriology today proves the distinctness of these portions of the urethra. The anterior urethra, it has been shown, normally contains many microbes, some of them pathogenic, even in

(1)

the most healthy subjects. Normally, there are none either in the posterior urethra or in the bladder. The sphincter therefore protects the bladder from infection, and forms, according to Max Melchior, "an insurmountable barrier to bacteria,"⁽²⁾

In this respect, the urethral mucous membrane is similar to that of the mouth of the vagina or the conjunctiva and though teeming with microbes, heals with remarkable readiness as is seen in false passages, or in operations for cleft-palate or vaginal fistulae, in each of which asepsis is impossible and antisepsis only partially practicable. Healthy mucous membrane is, happily for us all, a strong defence.

The Gonococcus however seems to be the evil genius of the urethral mucous membrane, and to hold over it an influence altogether peculiar.⁽³⁾ It cultivates extremely readily in the urethra but with difficulty in the bladder or any other part of the genito-urinary tract, most of the complications of gonorrhoea being due to secondary infection by other microbes, notably the bacillus coli communis. This latter bacillus is found on the prepuce and the

(1) See Petit and Wasserman, Sur l'antisepsie de l'urètre. (Ann. Gen. Ur. 1891 p. 500)

(2) Max Melchior- Cystite et Infection urinaire ed. fr. page 284 1889

See also Guyon, -Cystites et pyélites diathésiques (Ann. Gen. Ur. P. 522 1890)

(3) For many interesting facts, see Janet - Réceptivité de l'urètre et de l'utérus (Ann. Genito-Ur. Aout. 1893)

vulva of even healthy subjects, has not yet been found in the normal urethra, yet it is the infecting agent par excellence of cystitis. The moral - Scrupulous care in the cleansing of the ~~ex~~ternal parts prior to all instrumentation etc - is obvious. Now, in our examination of a case of gonorrhoea, it is important to know whether the posterior urethra be involved or not in the inflammatory process. This is not altogether easy but, of all the many methods that have been proposed, the most reliable is Sir Henry Thomson's test of making the patient pass water into two glasses, a test that holds good only if patient has not micturated for some time. If the first glass only be muddy and purulent, the infection is evidently confined to the anterior urethra. If the second also be turbid it is evident that the products of the inflammation of the prostatic urethra have regurgitated into the bladder and made its contents turbid. All other methods, endoscopy, swabbing out urethra etc. risk infecting a possibly clean posterior urethra and must therefore be rejected. No instrument should be passed into a urethra in a state of acute inflammation, nor into a urethra in a state of chronic inflammation if its posterior portion be immune. Nothing should enter urethras in such conditions except a weak antiseptic solution.

The Gonococcus - the mounting of which direct from the pus at the meatus by a platinum wire on to a coverglass or slide, its coloration by any of the aniline dyes, (e.g, gentian violet or methylene blue for 2 minutes), and examination by a high power (1000 d) with an oil - immersion lens, takes but a very few minutes - is easily

recognisable. When typical, as it is in all acute cases, it is found in groups of diplococci, within the leucocytes and aggregated round the nuclei.

Later, as a result of faulty or neglectful treatment the infection becomes a mixed one and other bacteria make their appearance.

As the urethritis becomes chronic, thick epithelial cells become apparent under the microscope, shewing that the inflammatory process is extending in depth. The sub-mucous tissue becomes

infiltrated with embryonic cells, which ultimately form a sclerotic ring completely or partially encircling the urethra,

(1)

i.e. the starting point of a stricture.

The extension

therefore, of the gonorrhoeal inflammation in depth, is of even greater interest than its surface extension to the posterior urethra, so far as the result is concerned. For a gonorrhoeal cystitis, the possible result of the latter, is on the whole, more amenable to treatment than a stricture, the probable result of the former.

As the discharge becomes more chronic, the gonococcus is less abundant and therefore more difficult to find. Its absence or presence may be proved by the result of the following little manoeuvre. Inject into the anterior urethra a few drops of a 1 % solution of nitrate of silver. The result is a free

(1) Consult the important monograph by Wasserman and Hallé

Contrib. à l'anat. path. des retrecissements. (Ann. Gen. Ur. 1891 & 1894)

suppurative reaction within 24 hours in which the gonococci, if present at all, become characteristic and abundant. This little manoeuvre, which is painless, enables you to decide the two important points of the bacteriological nature of the discharge and of its infective powers or its innocency.

Summary of Points

- 1 Only examine the patient if he has not passed urine for some hours, and best, in the early morning with the night's urine in his bladder and the night's secretion in the urethra
- 2 Test the urine by the two glasses trial and examine the discharge microscopically, if necessary after the nitrate of silver reaction in 24 hours.
- 3 If the posterior urethra be healthy beware of extending the infection of the anterior urethra.
- 4 Pass no instrument in an acutely inflamed urethra.

2 - Treatment of Gonorrhoea

It follows from what has been said that the diagnosis must be more detailed and thorough than can be conveyed by the words "acute" and "chronic", a distinction which is vague and which, not being based upon study of the infecting agent, the gonococcus, the fons et origo mali, affords no useful therapeutic indications. No matter what the nature or stage of the infection the treatment upon which an expectation of cure will be based is local, so it may be well to clear the way for its consideration by a few words upon the general principles of hygiene and diet etc. which it will be wise at the same time to inculcate.

Santal, Copaiba, Cubebs, Salol, boracic acid, bicarbonate of soda may be considered of secondary, if of any, importance. Janet, indeed, considers that the latter, by rendering the urine alkaline, may even pave the way for urinary infection. He also forbids all mineral waters owing to the consequent precipitation of salts in the urine irritating the urethra. At the same time, mild drinks which increase the quantity of urine by dilution rather than by any specific diuretic action, such as weak hot tea, milk, water etc. are strongly recommended. Wine, unless freely diluted with water, beer, coffee, heavy, rich meals, should be avoided. Full - length warm baths will also be found to do good.

In proceeding now to deal with the various forms of local treatment, I would like to say that they, as now formulated, are the result of work and experiment extending over five years and carried on in the wards and out - door consultation departments ~~in Paris hospitals, where~~

in Paris hospitals, where the amount of clinical material is almost overwhelming. At the Hôpital Ricord, formerly the Hôpital du Midi, one will often see, in a single morning, between one and two hundred acute venereal complaints, and in Prof. Guyon's service in Necker hospital the opportunities for research are as rich. Since Janet brought out the treatment of Gonorrhoea by permanganate of potass in various strengths of solution in 1891, the results of other practitioners have, in the main, largely confirmed his statements. I say "in the main", because the treatment undoubtedly still has its opponents, chiefly men of the older school.

We may divide, for practical purposes and from the point of view of the varieties of treatment rather than with the idea of describing all the possible forms of gonorrhoea, our subject into three main heads;

- (1) Acute (b) subacute, and (c) Chronic gonorrhoea with gonococci in the discharge.
- (2) Chronic urethral discharge continuing after gonococcus has disappeared and in which no other microbes can be found, an aseptic discharge.
- (3) Later infections due to microbes other than the gonococcus, generally the bacillus coli communis.

In each therefore it will be seen that the progress of the patient must be followed step by step, by microscopic examination of the discharge.

- (1) (a) Acute gonococcic urethritis

Abortive treatment ;-

The first symptoms of gonorrhoea seldom shew themselves under five days from the date of infection, and the rapidity with which the discharge develops in the first few hours of existence differs considerably in different patients. No matter at what date the patient presents himself, it is right to attempt to cut the course of the ailment short, provided the inflammation has not been so violent in degree and long in duration as to have swollen the urethral mucous membrane from the bulb to the meatus and provided the discharge is not extremely copious.

The classical abortive treatment by solutions of nitrate of silver varying in strength from 1 in 30 to 1 in 100 has had so long a trial that its position may be fixed with confidence. It is often efficacious, but it is uncertain. It acts by at once causing an abundant purulent reaction which speedily ceases if cure has taken place, if not, the injection is to be repeated till the urethra becomes intolerant of the solution. Published statistics of this method by Pousson of Bordeaux, give one success in four cases.

In Janet's opinion, the explanation of these failures is that the gonococci become lodged in the folds of the mucous membrane, may not be entirely removed even when the silver nitrate cauterises off the superficial epithelial cells and find, on the contrary, an excellent milieu in the pus that has been produced. For similar reasons, such solutions as nitrate of silver 1 in 1000, perchloride of Mercury 1 in 5000, were used to wash the urethra freely out but failed, gonococci being found in abundance shortly after each "lavage."

The sup^uration set up proved ,in the end,favourable to their development.

If the gonococcus has a special affinity for the urethra it seems,happily,no less incontestable,thanks to the experiments of Paquet,Janet,and others.that permanganate of potass has a specially destructive power over that microbe. Its action seems to be ,if its effect on the urethral mucous membrane be closely watched,somewhat as follows.

Though of less antiseptic potency than the substances mentioned above,its contact with the urethra determines an abundant serous discharge containing very few epithelial elements. If it has no other effect,then,it will tend to wash the gonococci out from the folds and clefts in the urethral mucous membrane.It will further be found that this serous reaction provoked by the permanganate is inimical to the growth of the gonococcus,for so long as it continues,two hours,for instance,microscopic (1) examination fails to detect the microbe.If the injections be discontinued,the discharge gradually becomes more mucous, opaque and finally frankly purulent containing abundant gonococci.The difficulty,therefore,is to find such an interval and such a strength of solution that a repetition of the

(1) The word "lavage" if its use were popular in English,would in this sense be much the more appropriate word

injection will prevent the recrudescence of the microbes, will prevent serous discharge becoming purulent, and will not too greatly irritate the mucous membrane of the urethra. The solution must be neither too strong nor too weak, the intervals neither too long nor too short. It is the finally successful proportions that crown many disappointments and failures made by Mons. Janet, in Necker hospital that I now wish to state. It is not every patient who consults at once when a urethral discharge is suspected or who is willing to continue a somewhat troublesome treatment, and I can give, from my own experience but one case in which the energetic abortive measures at once applied, met with rapid and enduring success, the discharge completely ceasing on the eighth day from that upon which it had first been noticed.

23

R.D. never had gonorrhoea or any other urinary trouble. On April 9th. noticed a slight, watery yet yellowish discharge and came at once to consultation. Had exposed himself to contagion on three successive nights, April 3rd. 4th. and 5th. Admits that on the 7th. and 8th. he experienced a certain amount of burning, in the urethra when passing water, especially on the morning of the 8th., but not such as could be called pain. The microscope shewed typical gonococci swarming in the discharge.

The patient then passed water, thus partially washing the urethra out from behind, and I gave him his first "lavage" (about midday) using about 2 pints of a 1 in 1000 solution of permanganate of potass. The injection was made extremely gently, much being spent

on the cleansing of the glans, prepuce, meatus, and by pressure with the finger on the perineum, the injection was only allowed to reach the scrotal portion of the anterior urethra.

Nine p.m.. Patient again passed water and had a second injection there being no gonococci discoverable in the ~~now~~-serous discharge. About one pint of 1 in 4000 solution is used and the whole of the anterior urethra is washed. The injection caused some pain and 5 grains of Dover's powder were ordered.

April 10th. 10 A.M. No gonococci.

Micturition painful.

4th. lavage of anterior urethra, 1 in 2000,

9 P.M. 5th. Lavage of anterior urethra 1 in 2000 .

April, 11th. 12th. 13th. and 14th. The same treatment was continued, namely, a lavage of anterior urethra with 1 in 2000 solution every 12 hours. On the evening of April 11th. a few gonococci were found but only on one part of the field of one of three coverglasses prepared. Pain in micturition by this time had ceased, and by the 15th. inst., the 12th day from infection, the 7th. day from the diagnosis and institution of treatment, no further injections were required, the discharge gradually ceasing, and at no time, since the third day of illness containing gonococci.

This one personal case could be paralleled by many others by
(1)
French observers but it is unnecessary.

(1) See report of first meeting of Congrès d'Urologistes

The treatment is painful to some extent, it is troublesome, but it is clean and it is safe. It is, therefore, surely preferable to the old methods in which Gonorrhoeas drifted on into weeks and months during which the patients were an annoyance to themselves, a danger to the community, and constantly threatened by cystitis, orchitis, epididymitis etc. in the immediate future, and stricture and its complications in the distance.

Let us now take up in detail the actual performance of these steps in the treatment.

(1) The thorough cleansing of the glans, the prepuce and the meatus must never be neglected.

(2) The injection, or rather lavage (the distinction being mainly one of the quantity of fluid used) should be made, not with a syringe, but by a simple syphon arrangement from a reservoir raised a few feet above the level of the patient. Much ingenuity has been spent upon expensive and more or less elaborate apparatus for this purpose, but as elevation, a rubber tube and a glass nozzle are the essentials it is difficult to see why this should be so. A bottle that can contain about 2 pints of solution, a rubber tube about 2 yards long with a

(1) Vide Guyon Loc. Cit. vol 3, page 390 and Janet's various papers.

vulcanite tube U-shaped to guide it out of the bottle without kinking and Janet's special glass nozzle. The reservoir may be raised to required height, about 4 feet or slightly over it, by means of the pulley, or a support fixed on the wall

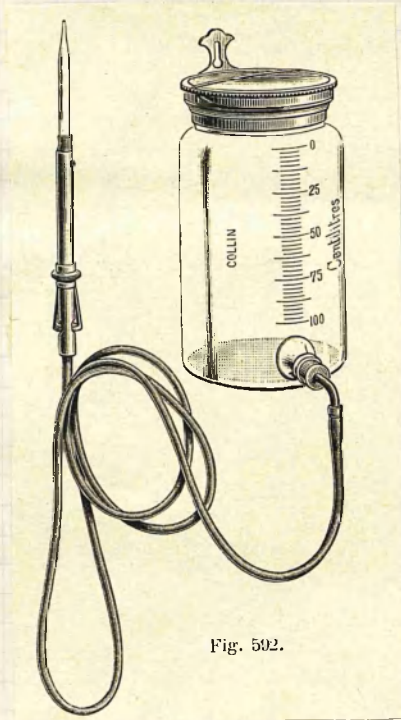


Fig. 502.

Janet's nozzle with conical ends and of sufficient diameter to close meatus without penetrating too deeply into the urethra is of immense convenience and service. It does not prevent, however, the scattering of the solution of permanganate over the patient's shirt and trousers, and sometimes also upon the surgeon, to the annoyance of both. I have devised a protecting shield either of glass or of vulcanite to counteract these disadvantages, ~~the~~ perforated in the centre & permitting the passage of the tube through; this is then passed over Janet's nozzle on the concave side of the shield. This mechanism is described illustrated in the Lancet of October.

It may be stated here that while numerous cases have been put on record in which the injection has been driven back to the posterior urethra and bladder, setting up a serious gonorrhoeal cystitis by urethral injections made with a syringe, none (1) have yet been recorded as due to lavage or free washing -out of the urethra by douches affecting their entrance only by gravity. There seems no other explanation of this fact than simply the greater quantity of fluid used.

It must not be supposed that, though the fluid gains entrance by the weight of its column, the sphincter or the urethral wall are subjected to any violence. On the contrary the resistance of the membranous portion is not overcome by force, but by the voluntary consent of the patient who, as the solution trickles into his urethra, endeavours to relax any tendency to spasm as if passing water naturally.

The solutions should be warmed to about the temperature of the body and the patient is best in the recumbent posture, though the lavage may be equally well given either in the sitting or standing posture.

(1) See Leprevost on Gonorrhoeal Cystites, Thèse de Paris 1884

Some little skill is required in the performance of this manoeuvre but it is rapidly acquired by practice as is the appreciation of the passage of the sphincter when it is required to wash out the posterior urethra and bladder. This really takes us into the treatment demanded by chronic Gonorrhoea, but as we are considering the mechanism of urethral lavages it is not wholly out of place to deal with it here.

The ~~base~~ of the glans is firmly held by the thumb and forefinger of the left hand while the nozzle of the injector plugs the meatus and the stream allowed to enter slowly till the anterior urethra be filled. If it does not flow on at once the fingers of the right hand should close the soft rubber tubing till the patient relaxes the muscular resistance of the sphincter when the injection is gently continued. When the patient feels that his bladder is filling and expresses his desire to pass water, he is allowed to do so, and the injection is continued till a pint or two pints are exhausted. In the case of permanganate of potash none should be left in the bladder.

The abortive treatment of Gonorrhoea therefore, subject to any modifications that hyperaesthesia of the urethra or the reverse may suggest may be tabulated as follows:

First day. Two injections of permanganate of potash 1 in 1000 and 1 in 4000 at intervals of 12 hours.

Second day. Two injections 1 in 2000 at intervals of 12 hours.

Third day. do. do do do

Fourth day. do. do. do. do.

Fifth day do. do. do. do.

Sixth day do. do. do. do.

Seventh day and following if necessary - 1 injection in 2000

(1)
 in 24 hours. At close of each injection the meatus may be covered with a small flat dressing of cotton wool kept in place by drawing the prepuce over it.

1 (b). Acute and subacute gonococcic Urethritis:-

The treatment is still by permanganate, the difference being in the strength of solution and the method of injection. The more acute the inflammatory phenomena in the urethra be, the more dilute must be the solution, arranging say, from 1 in 4000 at first, to 1 in 2000 a few days later. The object, of course, is to keep the discharge serous, rather than purulent and gonococcic, avoiding excessive irritation of the urethra by cessation for a time, if necessary of all local treatment relying upon the general measures referred to on page 9.

(c) Chronic gonococcic Urethritis

(1)
 Of course, these directions are general and must vary with the exigencies of each case. Janet himself has repeatedly changed his formulae, perhaps the most important alteration in his last note on the subject (Ann. de Derm. et de Syph. 1894) being his insistence upon the use of an injection of a 1 in 400 Cocaine solution, when both anterior and posterior urethras are washed out from the third day onwards.

The urethra now, as a rule, will bear 1 in 2000 and 1 in 1000 solutions, but if the posterior portion be affected it will be wise not to inject anything stronger than 1 in 2000 into the bladder, nor oftener than once in the 24 hours. The difficulty is to know the moment at which the lavages should cease, for the gonococci as a rule, disappear after the first lavage.

Experience, however, shews that they will return unless the permanganate be again applied. Janet's solution of the difficulty is to give 6 consecutive daily lavages, whether the case be acute, subacute, or chronic, and then carefully examine the goutte, if any, during the next few days and let further treatment depend upon the result, finally having recourse to the nitrate of silver test referred to on page 7.

In successful cases of gonorrhoea in these three stages, 4 injections sometimes suffice but as a rule 6 or 7 are required, and indeed, are advisable almost as a routine. Rarely will it be found necessary to make 2 or 3 series of 6 lavages to insure the cure.

When both the anterior and posterior urethra are affected, the latter generally heals first and injections into the anterior urethra may suffice to complete the cure, provided the examination with the two glasses be frequently made.

2 Chronic urethral Discharge free from Gonococci, often extremely resistant to treatment if it follows more than one attack of ~~Gener-~~

rhea, but easily curable after a recent, first attack.

Permanganate of potash here, of course would serve no useful purpose and recourse should be had to nitrate of silver.

After a recent gonorrhoea, washing the urethra out daily with a solution of silver nitrate varying from ~~on~~ 1 in 1000 to 1 in 500 will reduce the discharge to a few purulent filaments when injections should be changed for the introduction into the urethra of not more than 6 drops (3 to 6 suffice) of a 1 to 2 % solution of the same antiseptic every 48 hours.

This is the method of "instillation" introduced by Guyon in a communication to the Société de Chirurgie de Paris in 1867 and is of immense service. (1) It will be referred to again in the

treatment of gonorrhoeal, tubercular, calculous, cystitis etc.,.

After, however, a chronic gonorrhoea of several months duration in course of which numerous injections will probably have been used more or less indiscriminately, the result is much more doubtful, and energetic local treatment seems frequently to aggravate the discharge, which, however, continues aseptic.

In such a case rest and general treatment should be tried, and all local treatment suspended. In this stage - the real stumbling block of treatment - the patient should avoid the least excess

~~of all kinds~~

(1) For the method of application see p. (29)

of ~~the~~ ^{any} kinds.

Finally, a treatment that should be tried in such cases of long continued aseptic discharge is the use of solid metallic bougies, Beniqué's or Lister's, of the largest size that the urethra will admit. This is really a massage of the urethra whether performed with bougies or special instruments such as the dilator of Oberlander or Otis, the object of which is to dilate each part of the urethra to the extent of which it is approximately capable. A solid bougie, of course, that can enter a normal meatus, will not dilate the scrotal part of the urethra to its full extent. When the inflammatory processes have extended deeply through the urethral mucous membrane, when there is a possibility of the existence of an incipient stricture, a fact that must be decided by the use of the bougie (1) à boucle, and when the discharge gathers in the clefts of the mucous membrane or in the cul de sac of the bulb, this treatment by dilatation gives remarkably good results.

3 Later Infections, arising during or subsequent to the gonococcal period, and generally due to the bacillus coli communis.

These infections may best be combatted, if gonococci be not

(1) See author's paper on the routine examination of the normal and the strictured urethra, in the Glasgow Medical Journal Sept. Q10U 1897.

present, by the use of perchloride of mercury.

Wash out the anterior urethra freely with a 1 in 20,000 solution of sublimate on two consecutive days and, as a rule, this suffices to render the urethra aseptic. To keep it so, however, and thus avoid reinfection, the meatus glans, prepuce, etc. should be daily at least washed with soap and water and a solution of perchloride of mercury 1 in 2000 or 3000, precautions that should be continued for several months.