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On Structure of the Urethra

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Contents.

Introduction - Page 1

Division of Strictures

Phlegmone

Organic

Page 3.

Causes

Phlegmone

Organic

Page 5.

Forms of Strictures - Page 15.

Inunction of Deo - Page 17.

Consistency of Deo

Page 19.

Symptoms of Phlegmone Stricture - Page 23.

Treatment

Extradural Strictures - Page 27.

Of Obstinate Strictures - Page 35.

Ulceration - Page 39.

Enlargement of Prostate - Page 65.

Lesion of Kidney - Page 66.

Fistula in Peneumia, Fistula of Prostate (Page 71).

Retention of Urine - Page 71.

Extravasation of Urine - Page 81.

Illustrative Cases.

1. Case of Phlegmone Congestion Complicating Organic Stricture (Page 10)

2. Case of Retention of Urine with Haemorrhage - Page 30.


4. Artificial Benzol, from Registration both of Obstructing Page 59.

5. Case of Analysys of Bladder - Page 70.
Our inquiries have hitherto engaged the attention of surgeons more than the pathology, treatment, and consequences of structure of the urethra. The unsuccessful results arising from the insufficiency of any known means of remedy in certain forms of the disease, the frequent and long-continued suffering involving the patient for the ordinary duties of life, and the dangerous consequences attendant upon the disease itself, have long been considered the greatest problem of surgery, and its successful treatment one of the greatest desiderata in surgical practice.

The progress of surgical knowledge during the last few years has however done much to remove the embarrassment which have so long lain in the way of the practitioner in the treatment of these diseases, although there is still a wide field left for attention to observation and research, and indeed at no former period in its history has it awakened greater interest in this country at least, than at present, more particularly as regards the comparative merits of the different methods employed for its removal.
Sketches of the urethra admit of being divided into two distinct classes, and by most authors such is the division which has been generally followed; 1st. Those depending upon a temporary narrowing of the canal, in consequence of muscular spasmatic action, or as some believe, simple vascular congestion of the mucous membrane itself, or the surrounding erectile tissue.

2. Those depending upon a permanent contraction of the canal, the result of structural changes in the lining coat. In many instances these two kinds combined, this latter form is especially observed in highly arterialized and nervous persons who have a great dread of surgical interference of any kind.

And some become extremely agitated whenever an attempt is made to place a bougie, or even when they evacuate the bladder unaided, more particularly when that act is rendered painful, from the unusual activity of the urine.

The existing causes of spasm of the urethra, or those in which there is no real organic contraction of the canal, are: stricture, hemorrhoid, orifices, and failure of the vesical, enlargement of the prostate, paralytic states of the bladder, disorders of the digestive organs.
organs, sexual excesses, an arible state of the brain, with the decompositions of a functional and organic kind, liable to occasion, more or less, injudicious or the flow of crime, and excite the suspicion of

The question regarding the present state of Spasmodic Aetiology was at one time the subject of much discussion: the chief point at issue was the nature of the structure of the brain. All agreed that the brain was subject to temporary contractions, the result of an action called an. Great diversity of opinion however existed whether that was owing to a power inherent in the tissues of the brain itself, or to the action of the surrounding membranes. John Wrisley was among the first who treated of Spasmodic Aetiology. In his treatise on the mental diseases, he wrote as follows: "The Substance of the brain is muscular and it is therefore capable of contracting its parts, similar in the intestines. I can think of no entirely. This makes it subject to disease, as of the muscular itself, an of general, which is indeed the only proof we have of its being muscular." Again he writes, "In a sound state of health, these muscles, are never excited to violent action, acting simply
"as sphincter muscles, but when resisted, they are capable of acting violently, as is best seen in some cases upon the first use of injecting, the urethra often refusing the injection entirely. This seems rather to be a voluntary motion to hinder things from getting into the bladder, but there is often a phasmodic contraction of these muscular fibres in different parts of the canal, shutting off the passage and obstructing the outlet of the urine, often not allowing a drop to pass. That this also is rising to spasm upon the muscular fibres is evident, because a large long-ciga will sometimes cause when it is cut the worst. The E. N. I. M. was also a strong supporter of these views. "It may" says he "be difficult and perhaps impossible, to ignore this membrane to be muscular rather than its appearance, or from examination of its texture, since the peculiar structure upon which the contraction of a muscle depends, has not as yet been ascertained. It may be sufficient to observe that other structures apparently membraneous, and equally unlike the fasciculated fibrous texture commonly met with in ourselves, are endowed with a power of contracting and relaxing in a much greater degree than is ever found elsewhere.

(Apo 18 - Vol 1)"
"Dr. Wilson accounted for these facts by referring them to the operation of muscular fibres lying along the diaphragm; but few anatomists have examined these fibres, and even granting their existence, the longitudinal direction ascribed to them does not agree well with their alleged effect." — (Spec.)

(See page 11)
A Case Come Under My Observation in the Dorset Hospital Several Years Ago which so far tends to illustrate the important point, which such a temporary Narrowing of the Canal, May Occasionally Allow when forming a complication to other affections.

I mean, that of a young lad who had suffered for several years from stone in the bladder as well as stricture, but whose general health on admission was so improved, and whose constitution had also serious organic disease of the kidneys, in consequence of which he died a few weeks afterwards, that it was considered improper to perform the operation of Lithotomy. Great difficulty was experienced in passing water, in fact it usually came away in drops. North Ammon Blood, unless when under the influence of opium, administered in the form of eminente, even the smallest liquid sound was heard faintly in the Monstruous Division of the Bladder, and required a good deal of force to be used before it could be made to enter the bladder. The Post-Mortem examination demonstrated that the Narrowing of the Canal must have been owing very much to a spermatic Vascular Concretion, since the organic lesion was not, by any means, so great with account for the difficulty encountered during life, indeed the introduction of a Douch Bag on Longie, became compulsorily easy after death.
"Take place in the membrane of the urethra."

Sir Charles Bell supposed the temporary contraction to be due to the action of the perineal muscles and to their influence on the membranous portion of the urethra; the limited source, however, of such an action would be insufficient to account for these contractions occurring as they do at different parts of the urethra. (See page 8.)

The most probable view as that which regards it as due to the influence of the smooth membrane itself, or perhaps still more probably to the erectile tissue investing it. (See page 10.)

The second contraction of structure or the organic form by far the most frequently met with in practice, and on every occasion the most important, may, like the former, be due to origin a variety of causes. There are so many examples of structure having been preceded by gonorrhoea, that there can be no doubt of a large majority of such cases being attributable to this cause.

Sir Astley Cooper went so far as to say that he considered gonorrhoea in 99 cases out of 100 to be the cause of structure. On the other hand, John Hunter was led to a different conclusion by reflecting on the fact that other urethral
Canals were likewise subject to structure, viz. the Oesophagus, Rectum, Urethra, and biliary duct.

The untoward employment of stimulant injecting, the administration of powerful remedies during the acute stage, and improper conduct on the part of the patient seem to favor these unfortunate sequences in Gonorrhœa. With regard to the first of these, considerable difference of opinion will be found to exist. In Benjamin Bilde's belief, that more blame has been attached to the use of injections than they merit, and adds that it is the abuse of them, and not their use, that is to be deprecated. The inflammatory action preceding structure may be brought on also, by burn, and the unskillful employment of instruments.

The Berenice cause of organic structure consists in the effusion and organization of lymph in the substance of, and around the necrosis caused, or the urthra. This effusion may either be owing to acute inflammatory action, or long-continued irritation, producing a state of vascular excitement, never reaching true inflammation; a state not infrequently met with in those suffering from stone in the bladder, or who are addicted to frequent venereal indulgences, or from moist.
The construction varies much in the form it assumes, as well as in its connected and situation. In most instances, a considerable surface is complicated, as from a few lines to two inches and upwards. Some are strictly uniformly contracted others very irregularly. A few are limited to one side of the canal coming at a deviation from the natural course, and giving rise to unusual difficulty in introducing a bungie. It is met with also, though not commonly, as a mere ring projecting into the canal, just as if a thread had been tied around it. A very rare variety is that called the bridle structure in which a band of organized lymph stretches across the urethra, and causes or less impedes the flow of urine. In structures of old standing the affected lymph becomes very dense and unyielding. Occasionally when passing a bungie on such cases a sensation is imparted as if at once passing through a cartilaginous structure. It was long known that certain parts of the urethra were more liable to be affected with structure than others, before any satisfactory reason could be given why such was the case. Sir E. Home was the first who accounted for it.
He made a series of casts of the urethra by distending it with fluid wax, in measuring them carefully, he found that the parts where structure was known to occur most frequently corresponded exactly with the nearest portion of the canal. They are met with accordingly, most frequently immediately in front of the bulb, viz. about six or seven inches from the orifice. When more than one is present as often happens, one will invariably be found there. The situation next in order of frequency, are, from three to four inches from the orifice, at the neck of the glans, and at the orifice itself, the last of these is generally owing to the cicatrization of a chancroid. In bad cases there is always dilatation of the urethra behind the structure, and a thickening of its caliber in front, the latter never being fully distended.

Sir B. Birdie mentioning the case of a gentleman who for many years had suffered from structure situated about three inches from the external meatus. The urethra behind the structure was so dilated that whenever he made water, a bursa the size of an orange, and affording distinct fluctuation was to be felt in the phrenicurn. Calculi are often found in these
dilatating and sometimes obtaining a large size. The tumours mentioned at and behind the structure, as well as that of the bladder, vesicles and pelvis of the kidneys become irritatible and subject to subacute inflammation. Pus or purulent matter is discharged more or less abundantly from these surfaces.

Structure is generally so indolent in its occurrence that the patient's attention is seldom attracted to it until it has made considerable progress. Among the first symptoms is distension on the size of the stream, thus far (may escape) notice for long, from not being compared with that of health. In time the call to micturate becomes more frequent, which is particularly observed during night time, since the patient was in call (probability) previously accustomed to be undisturbed in this way until getting up in the morning. Difficulty and some degree of pain is at length experienced, the pain being always felt at the same place, whether the seat of structure is, or at, and a little behind the gleam. The stream is not only of less indolenttness...
but is usually either scattered, episodic, flat, or dull. Pain in the loin and thighs, genitourinary symptoms from the loin downwards, painful erections, postural conditions, from acting sexual intercourse, and irritation about the chest are cited or less generally complained of. When the straining is severe, edema, haemorrhoids, or furuncles may occur. Command over the sphincter and is sometimes lost, and then the bowels are apt to evacuate involuntarily during contraction. The testicles, whether from the close sympathy, interstition between them and the urethra, are often jaundiced and enlarged, and the urinary meatus extended with fluid.

In the treatment of Stricture, various methods, have at different periods had their successive advocates. The application of spirit of Silver, Caustic Pastes, and other escharotics, have each and all had their supporters in the varied and almost extravagant practices of their day. Amongst whom the names of Hunter, Erb, and others conspicuous, this practice, as well as that of internal incision by means of lacerted catheters, is now however, almost wholly abandoned, having been found after extensive inquiries...
experience to be not only insufficient, but also attended with considerable danger in the hands, even of the most experienced. Without dwelling upon these therefore, we proceed considering 1st The management of those cases in which there is no permanent structural change.

2nd. That class of true organic structure which admits of permanent relief being afforded by means of dilatation, and 3rd. Those which either from extreme debility, or resiliency, resist dilatation, and are best treated by ligature and others by external incision.

Splanchnic structures often require prompt employment of remedies, since they frequently give rise to complete retention of urine. All that is necessary in many cases of this kind is to place the patient in a warm, perfumed, and administered opiate, and antiperistalsis, either by the mouth or what often answers better, by enema. Should these fail, and there is considerable pain with acceleration of the pulse, portrait of atony, or from the urethra, may be given, and blood drawn either from the subcutaneous or from the arm. When it is thought necessary to employ a catheter, which may be at once, it should be allowed to
Of all the methods that have been employed for the removal of organic structure, that by dilatation has been found most universally applicable. It was formerly the custom amongst surgeons, before proceeding to dilate a stenosed incisor tooth, to ascertain its particular form and direction by introducing wax bougies softened by immersion in warm water, so as to represent or withdraw each of the contracted canal. Charles Bell gives a number of accidents illustrative of this practice.

Such a procedure has, however, long been considered fallacious: the softened material being found liable to bend, and assume false shapes, frequently without entering the desired portion of the teeth at all; it is now universally abandoned.

Instead of the lead, wax, plaster, catgut, or elastic gum bougies, at one time in common use, metallic forms are now formed best suited for the purpose. Hollow Berlin silver ones are generally preferred by any others, since they take a fine polish, are not liable to rust, and are very light.

The ultimate effect of the bougie in dilating structure is almost entirely a vital process. In the first instance it can doubtless mechanically by simply stretching the parts, but under proper
Management the pressure leads to the removal of the redundant effusion by exciting the action of the absorbents. It was formerly the practice when an impermeable structure was met with, to force a bagge down to its seat, and retain it there until the pressure and undue alteration. This manner was necessarily attended with inflammation, increase of effusion, and on the healing of the ulcer, with aggravation of the disease, in consequence of gathering of the Cystea.

It is now universally admitted that the success of treatment by dilatation, mainly depends upon avoiding such high re-circulation, and on simply exciting a degree of dilatation sufficient to cause absorption of the thickened tissue. In grasping the bagge the operator will find it most convenient to stand upon the left side of the patient, who may be placed either in the erect or the recumbent posture. When much difficulty is experienced, the latter position will be the most suitable, the knees being separated and slightly elevated.

A bidge of medium size should be selected, and being covered with some bland oil, as to be cautiously introduced, with the concavity towards the left groin, the penis being held in the left hand.
I saw an instance of this about six years ago. The gentleman had suffered from stricture for many years, and had been frequently under treatment. On this occasion he had just come off a very long journey, during which he had been traveling rather freely and been much exposed to wind and cold. On reaching home he suffered from almost complete retention of urine, and attempted as he had frequently been in the habit of doing, to introduce a cathartic himself; experiencing more than usual difficulty he employed considerable force, without effecting an introduction. On withdrawing the instrument blood flowed forth in a considerable stream, in so much so, that although a robust man, alarming symptoms ensued; the blood continued to ooze at intervals, more or less abundantly, and especially during attempts at retention, for 36 hours, in spite of the injection of astringents, cold siphon baths, colchicines applied to the perineum, perfect rest, low diet, & continued, until a medium sized gum benio was introduced and retained some hours. The narrowing of the passage, however, was lessened immediately, by the bleeding.
The point of the instrument ought to be kept gliding along the upper part of the canal, by gradually elevating and bringing the handle towards the mesial side. It must be held very lightly in the hand, so that it may find, as it were, its own way, in the direction where there is least resistance, without using any force for fear of forming a false passage. A false passage may be apprehended, if when using a small instrument with sudden force, it is suddenly felt to pass as if something had given way, and this is accompanied by pain and hemorrhage. When this does happen, perfect rest must be enjoined, and nothing further done, until Dr. Rice is affected for closing the wound. On re-infirming the treatment, great care will be necessary in omitting it re-entering it.

It is important to bear in mind that "false passages, " occur most frequently about four inches from the orifice, owing to the handle of the catheter being too soon depressed; at the bulb from its not being depressed sufficiently, whereas the point is pushed through the membranous part of the urethra and the ectomy, and just before entering the neck of the bladder from the point not being sufficiently elevated."
As soon as difficulty is experienced in pushing the instruments forward, the left hand which has been stretching the peris along the catheter is placed over the back of the instrument, and unity on directing it. If the obstruction is behind the bulb, considerable and may be obtained from introducing the forefinger into the section. If there is still decided resistance, before substituting a smaller instrument, the one already introduced should be withdrawn a short distance repeatedly, varied in its direction, and pressed steadily against the stricture for a few seconds. In the removal of the presence of no progress has been made, the instrument will start backwards somewhat, but on the other hand, still be grasped, if it has fairly entered; in which case it will be proper to continue the pressure a little longer in the hope of getting completely through. In the event of not succeeding or series of smaller instruments should be tried. After the lapse of a few days, in order that all local excitement may have subsided, introduce the bougie which had been previously used; after withdrawing it a large one will in favorable cases be admitted. Proceeding in this manner, dilatation is gradually effected, until
the method begins its natural width. Although
this is commonly accomplished in from three
to six weeks, still it is proper occasionally, for
monthly afterwards to pass a full sized bongie.
Since a lapse is almost certain, unless this
precaution is taken. Many believe that a
permanent cure by dilatation can in no case
be depended upon, unless during the patient's
whole life, an instrument is passed at longer
or shorter intervals. Should much dilatation
be induced, as not infrequently happens from
the great haste to effect a cure, it will be
necessary to desist altogether from the use
of bongies, until by washing, fomentations and
rest, the parts have again been restored to a
condition favorable for dilatation. Cases are
eventually occurring, unattended with urgent
symptoms, which are impermeable at first,
but in the end do well, in consequence of the
presence fromMind the time causing absorption
of the offended lymph.

It is in the third and last class of situations
in the systematical division of the treatment of
their diseases to which we have referred viz-to those
obstinate forms, which either resist attempts to
effect dilatation or return so quickly after its completion as to prevent any permanent advantage from being derived by the patient, that the attention of Surgeons have been mainly directed during the last few years.

Although the Metallic bougie is the means to be preferred and tried in all structures, there is still a large proportion of cases in which mere dilatation, and indeed all other means of remedy have been found inadequate to afford permanent relief, and these may be said to present two conditions. In the one, the extreme irritability of the contracted canal offers so great an impediment to the introduction of an instrument, as to expose the patient to various dangers from local and Constitutional disturbances thus excited, and instead of alleviating the symptoms tends greatly to aggravate them. This, happening as it does even in the most dexterous hands, and under the most cautious and gentle use of the instrument, places the Practitioner in the painful position either of non-interference or of the employment of means which present but little hope of success.
In the other, the peculiarity consists in the extreme tendency of the hardened and resistant structure to contract even after the most prolonged use of bougies or retention of catheters, a tendency almost in proportion to the amount of dilatability which it has undergone, and the rapidity with which it has been effected. It is this obstructive class of structures—which fortunately been but a moderate proportion in frequency to those amenable to the simple treatment by dilatation, and the prolonged use of bougies—that the operation proposed some years ago by Dr. Syme of external section on a globed director is found peculiarly applicable and has proved so effectual a remedy, for this condition of structure, even on its most obstructed and inveterate forms.

In estimating the value of this addition to the armory of Surgery, it may be considered necessary to remark that some confusion has arisen with regard to the essential distinctions between the operation as proposed by Dr. Syme, and the old method of external incision hitherto employed, and so justly repudiated, of cutting into the perineum or bunch of the obstructed canal upon the point of a catheter introduced down
to the seat of stricture. The principles upon which
the two operations are founded here, however,
little or no relation: in the former the essential
ground of procedure is the passage of an
instrument through the obstructed canal; in
the latter, the such permeability can be
effected. In the one the are the limits of the
rupt suregiving division are distinctly defined
and the extent of the induration felt by the
finger when the urethra is exposed by the
incision; the obstructive stricture requiring a
through division of the firm tissue which
underlies the contracted part of the canal. To
ensure a complete and permanent remedy, as
the completely effected, the urethra is cut than the
contracted part, and the urethra is divided
exactly in the incised line. In the other, while the
incision is necessarily made only extensively, their
as in such certainty as is the parts divided,
and consequently an instance of permanent
success, while in addition to the danger of establishing
an imperfect canal, is thrown in its direction,
and continually liable to contract, the liability
of form false passages, and the difficulty of discovering
the passage altogether, there is the sure permanent
Wound of failure in introducing a catheter into the bladder, and thereby exposing the patient to all the danger attendant upon extravasation of urine, should the passage be completely obstructed.

As regards the performance of the operation, in the hands of the experienced practitioners no unusual difficulty is to be apprehended; considerable tact and dexterity of manipulation is of course at all times required in the more delicate processes of passing a rigid instrument through a contracted canal, cutting into the narrow grooves of a conductor, and conveying a catheter into the bladder through an imperfect urethra.

If the patient desires relief from the small amount of pain necessarily inflicted, he should be placed under the influence of chloroform, and that so completely as to prevent all danger from the restlessness or struggling, which might otherwise be incurred in operating upon so delicate a part, and which would tend seriously to increase the difficulty attendant upon the operation. The object should be not so much to give relief to the patient as to the operator. The patient is placed upon the table or at
She edge of the bed, with his knees bent, and supported so as to expose the perinaeum, the criterion is held up, and an incision about an inch and a half in length is made in the integuments, exactly in the line of the ischial. The point of the knife is then inserted into the groove of the director, immediately behind the indentation and pushed forwards, so as to divide the whole of the thickened texture of the contracted part of the canal. The director being withdrawn a number 7 or 8 silver catheters is introduced into the bladder, and secured by proper tapes, a nipple being inserted into the catheter to prevent ammonia from the discharges of urine or what may be considered like compound, a suitable arrangement of stop-cock or bent tube.

In some cases of more than ordinary severity, and involving a considerable part of the canal, a greater extent of incision may be required, but these extreme cases do not occur frequently, and in temperate climates very rarely. In reference to this point Mr. Sydenham observes: "Any commentators who speak of long incisions in the perinaeum, and laying open the urethra up to the extent of several inches, have no warrant in anything I have"
"And or written on this subject: I never open the
breath beyond the extent of an inch, and seldom
beyond that of half or two-thirds of an inch."
The catheter after being withdrawn allowing
it to remain for 48 hours is withdrawn, and the
urine after passing through the wound for some
time, quietly returns to its proper course, sometimes
this is the case even from the first.
In the after treatment of the case it is
considered essential to success that a moderate
sized or instrument be passed occasionally, commencing
about 8 or 10 days after the operation and repeated
once a week, or if thought fit for two months. In
some patients this will be required for a longer
period in others for a shorter period, and if the
circumstances of the patient be such as to favour
the reproduction of structure, it may be passed
four or five times in the course of the year.
It has been observed that when the wound of
the breath heals by granulation, instead
of the usual intention, there is a greater
probability of immunity from future trouble,
the new matter thrown out during the process
of granulation, helping to maintain the normal
calibre of the canal, and ensure its patency.
This improvement in modern surgery is certainly one of the most important, and at the same time beneficial, on its result, that has been made during late years. The opposition to the introduction of new observations and additional resources, in the field of medicine, and indeed of all science, is a sufficiently striking fact, but in one department are such innovations looked on with more peculiar jealousy than in the name operating of surgical practice; and the modern operation of external incision has certainly not been found deficient in the number of its opponents. The advantages claimed for it, on the grounds of affording speedy recovery—of competitive immunity from danger—and an assurance of complete and permanent relief, however, however, stand the test for a sufficient number of years, and the test the test for a sufficient number of years, and entitle it to confidence, and warrant its continued success; and on these points we need only make a few cursory observations.

With regard to its perfect practicability on all occasions, within the limits assigned to it by its introducer—a point involving the whole vexed of the permeability of all structures to the passage of substances—the term seems
A space mainly a relational significance to the fact and practical management of the operator. In the hands of many excellent surgeons of ordinary experience, certainly many strictures will be found totally impermeable, which is a few may be sufficiently patent. In the literal sense of the expression, in strictures be said to be impermeable while admitting of the passage of urine, but the urethral canal may nevertheless become so narrowed, without becoming organically united, as to be tantamount to a total occlusion, and even in the case of the most experienced operator, as in the hands of Mr. Liston, the possibility of a failure may be contemplated, and indeed the continued experience of practicioners of even more than average tact and dexterity proves the truth of this observation. With regard to the safety of the operation, a question which, on its importance, have often involved in considerable doubt, conducted with an ordinary amount of caution and tact, it certainly cannot be said to bear with it any undue amount of danger, and the unequaled success which has hitherto attended on in the hands of Mr. Syme and others is sufficient
evidence of its claims in this respect.

If pressure be made directly on the internal line of vessels by Dr. Lyman on vessels of the slightest consequence can be endangered, and the amount of haemorrhage is necessarily very small, rarely exceeding, in the experience of most operators, two tablespoonfuls; while if the deep fascia of the subcutaneous be not divided, extinction cannot be done, unless in a slight degree forwards with the scissors, a consequence involving no great danger under ordinary precaution.

We are now after the experience of so many years, in a question to test the value of the operation, proving as beyond the still more important of its adequacy to afford complete and permanent relief, even in the most severe and obstinate forms of the disease. After witnessing the successful results of innumerable of its cases—some which date the number has greatly increased, and his confidence all the more strengthened—Dr. Lyman observes,

"I am now able to state that in cases of the very worst kind, the relief may prove permanent, the patient requiring no further assistance, or merely the introduction of a full-sized bougie at distant intervals; and the experience of other
and distinguished operator confirm the statement. It would certainly be unfair to argue, as has too frequently been the case, against the value of the operation from the unsuccessful results of single cases, or of relapse in certain instances, quite independently of all other circumstances; calculated to influence the result, it is plain that any imperfectness in the operation itself may prevent the result from being successful; and accordingly in some of the earlier cases occurring in the practice both of Mr. Syme and other surgeons, although complete relief had been obtained in the first instance, such relapses did occasionally occur. Attention observation of the circumstances attending the success or failure in such cases, have however rendered it sufficiently obvious that the principle of the operation itself admits of being rendered uniformly favorable: Free and complete division of the contracted scar—due care in passing stitches or毕 while the incision is healing, and careful avoidance of causes liable to produce or occasion the disease, being sufficient to secure a lasting cure. With regard to the forms of these regimens, the modified apparatus lately proposed by Dr. Syme appears...
an additional degree of security in accomplishing this essential part of the process. The second metallic fragment, as surely a solid steel director, with the shaft intended to enter the Contracted Canal, smaller in diameter than the remainder, and about 3 inches in length; this slender shaft enters the contracted urethra, while the thicker portion indicates once distinctly the commencement of the structure. The operator, after making the requisite incision, and ascertaining at once where the structure is situated, inserts his knife in the groove at least an inch below the first shaft, runs it forward to the termination, and then, taking the director in his left hand, withdraws it together with the knife, still held at the extremity of the groove, or as he divides the structured graft completely, which is shown by the third portion of the instrument freely passing the seat of its previous obstruction, when urged towards the bladder.

The length of time necessary to effect a cure is another and certainly not the least important advantage to be derived from this new addition to the resources of surgery, and in consideration of its safety and applicability in the treatment
Since commencing practice I have only met with five cases of undetachable stricture, in which spasm in could be obtained to attempt affording relief by the method of external excision. In the first, the glans, and considerable part of the adjoining portion of the body of the penis were wanting, having been destroyed by phagedenic vesicular ulceration, leaving however the prepuce entire. The constitution was debilitated near the dorsal extremity of the penis, but was so tight, contractile, and difficult to enter in consequence of the destruction, and abnormal adhesion of parts, that another medical man — under whose care he was, and by whom I was consulted — and I failed even after repeated trials to effect the introduction of the smallest sized sound, or probe, no progress, but which Dr. Smyth, proceeded as he was of such extraordinary, if not unparalleled dexterity in these difficult cases, and only succeeded in overcoming, but operated upon, and relieved, immediately, and permanently.

The other case was that of a gentleman who applied to me in December 1858. He had suffred from stricture for several months, and had, a few weeks before that, been obliged to give up business, in consequence of declining health, the result of the constitutional disturbance, arising from the stricture which had become very painful and irritable. An
A attempt had been made in Edin. to relieve him by introducing
longer, by a surgeon who has all along been a strenous
opponent of the method under consideration, without
affected any benefit whatever. On examination I found
a light and extremely visible structure, about half an inch
in length, situated from two to three inches from the orifice,
which admitted with considerable difficulty, a very small
sized sponge. I at once concluded that this was a proper
case for external incision, as much as it was not at
all likely to yield readily to dilatation, and besides, the
patient was very anxious that relief should be afforded
with as little delay as possible, having little time to
spare. I had found great difficulty in persuading him
that the operation was easy of performance, wholly free
from danger, and almost certain to afford him speedy and
permanent relief, having been informed by the surgeon
whom he consulted in Edinb. that it was the very reverse
of all these. Accordingly he consented upon dilatation being
tried again for a few weeks. After a few introductions
of a metallic sponge, which invariably caused much suffering
even with the utmost caution, without producing in the
slightest degree the contraction, he consented to the operation
proposed. He was placed under the influence of Chloroform
and operated upon in the way recommended. No difficulty
whatever was experienced, merely a tablespoonful of
Blood was lost, and the recovery was so complete in three weeks, that he was able to undertake a long journey by railway, and enter upon business in the enjoyment of better health, and in every way more robust than he had been for many months.

The respective merits of the old methods for the relief of phthisis, as compared with the treatment adopted during the last few years, may in some measure be estimated by the following brief statistical statement from the general registration book of the Dundurn Infirmary. On referring to this I found that during the years from 1816 to 1854, the number of cases admitted for the relief of phthisis were 42.

The registration book showed also, a number of cases dismissed. Dismissals were a 21 days, 4 weeks and 3 days, Dismissed relieved 15 days, 3 weeks and 3 days.

The registration book showed also, a number of cases dismissed, which can or by another, but those I have not considered sufficiently explicit, to afford any useful statistical result.

In the treatment of phthisis by simple dilatation, the average time allowed for effecting a cure, according to the syphn and rhinitis, is from three to six weeks; from the statement given above however, much longer time was required, while at the same time, in one third of the cases, there relief
only. Could be obtained, after a period of upwards of four weeks. Again in the treatment of stricture by the modern operation of external incision, under ordinary favorable circumstances, the average time necessary to effect a cure is only 3 weeks, while at the same time complete, and permanent relief is at once achieved.
of structure in its pure obstinate form, its expediency must be acknowledged in many cases where by a prolonged use of the sound or catheter, a cure might certainly be effected, but whose circumstances may not allow time and opportunity for such a protracted proceeding.

Of the consequences of structure, the most important in a surgical point of view, are supravesical, retention of urine and extravasation of urine. Before proceeding to these however, there are a few other complications which from the distressing nature of the symptoms attendant on them, and the dangerous consequences frequently involved, are of sufficient importance to call for some remarks here. Of these the first named are ulceration, diminished size of bladder, chronic enlargement of the prostate, leucorrhœa of the kidney etc. When ulceration occurs, it commonly happening between the structure and the bladder, from the constant irritation occasioned by the pressure of the sound on that part, should it go on until this area is perforated the urine will escape into the cellular tissue, and give rise to suppuration which will in all likelihood terminate in supravesical fistula.
Extensive infiltration of the cellular tissues in such cases is generally prevented by condensation of the tissues from previous effusion of lymph. Numerous examples of sloughing from this cause have been recorded, in which sudden rupture has taken place, in consequence either of complete retention or violent straining, when the such barrier had been formed to restrict infiltration.

The effects of stricture upon the bladder are numerous and of considerable importance. From being irritable, frequently emptied, and never properly distended, the cavity becomes permanently diminished. In some instances, irregular dilatation a pouch is formed by the ephyma of the lining membrane through the interstices of the muscular fasciculi. These manner are formed when the coats are weak, and owing to the muscular fibres being arranged somewhat in bundles. They have been stout with equaling or not exceeding the bladder in dimensions. Calculi are frequently lodged in them. When the difficulty of passing urine has been of long continuance the muscular coat becomes hypertrophied from the strong muscular efforts necessary to overcome the obstruction.
John Hunter had seen the muscular coat nearly half an inch in thickness, and the fascia in lying as a firm ligament on the inside. But for thiswise provision, complete retention of urine would necessarily happen more frequently, since a bladder of ordinary force would not be able to expel the urine at all in many cases in which this is affected though slowly, by this increase in the vis a tergo. This property which is peculiar to all bladders, when excited once than natural seems greatest in the voluntary class; and it is well that such is the case, since voluntary bladders have generally to perform acts which are necessary to life, and when impediments are offered, unless a compensation were made by a corresponding increase of power, serious consequences would be more common. The internal membrane of the bladder does not seem to be often ulcerated in cases of stricture. Sir E. Home relates four cases of it, one of them was attended with haemorrhage and ended fatally from the blood coagulating in the bladder, which prevented the urine being drawn off either by the use of a catheter, or by puncturing the bladder.
In another case the air permitted the urine to escape into the cavity of the abdomen, and of course terminated fatally likewise. The dangerous consequences of urinary extravasation were avoided in the remaining two, by a communication being established between the rectum and bladder.

Chronic enlargement of the prostate gland is one of those diseases to which old age is liable independently of any other complication, but is so much more common in those suffering from stricture even in early life, than in those who are not, that it may confidently be considered as one of the consequences. It is one of considerable importance too, since it is not found to yield so readily as many of the others, on removal of the stricture. When the bladder is emptied with great difficulty, the urine is naturally forced backwards, and enlarges the ureters, pelvis, and even the infundibula of the kidneys. Sir A. Cooper states in his lectures that the glandular structure is sometimes entirely absorbed, and the kidney so distorted with urine as almost to assume the purpose of a bladder. In addition to the
above condition, the kidneys are apt to become affected with other severe organic lesions from the irritation extending upwards.

Those suffering from strictures are subject to attacks of fever of a peculiar kind. They are generally brought on by exposure, fatigue, excess in eating or drinking, or the passing of a bolus. In their symptoms they closely resemble a malarial or intermittent fever, being ushered in by a severe rigor, followed by heat of skin, and passing off with profuse perspiration. Attacks of this kind occur more frequently in warm climates than in this country.

For constancy are quite miserable than that of the suffering from pelvic fistula. In spite of the utmost attention to cleanliness there is constantly a bovine and odor surrounding the patient, and the skin in the neighborhood of the fistula is in a state of continued irritation, giving to the incessant dribbling of urine, common in such cases. In others, which are much less distressing, the urine does not escape except during an expulsive effort. The origin of fistula in connection with strictures of the urethra has already been adverted to. The diseases, which
May be several in number, are generally situated terminally between the arms and the scrotum, but sometimes extend into the latter, as well as the latter. The abscess which precedes the fistula has been known to perforate the colon bowel. The urine in that case passes by the ectomy, and the contents of the bowel at times by the urethra. In former times the treatment of this affection was of a very formidable nature. It is now found that removal of the structure in most instances without any application to the fistula, is speedily followed by closure of the sinuses. In fact the fistula is often healed before the structure is half-dilated. In cases that have been very long neglected, and in consequence of which the intestinal callosity, contraction may be hastened by the use of stimulating injections, the solid nitrate of silver, or when this obstinacy by introducing a red hot wire. When the latter is necessary which at very lowest is, there ought to be a pretty long interval between each application, otherwise instead of lessening, we shall increase the width of the sinous by the destructive effect of this contury. What is wanted, is merely such a
I may now relate a very interesting case of retention of urine from proclipsis, which came under my observation in the
Dispensary of the Royal Infirmary, caused by a great distension of the bladder, in which much difficulty was experienced
in passing the catheter from one-leading to the other, with hardened stumps. The patient was a joiner, about 60 years of age,
and stated that he had been employed alight the laceenda for about 6 weeks before admission, on a cold damp day, that he
had been passing plenty freely of all fluids, and that he had an convenient opportunity of making water, though he felt
an urgent desire to do so nearly all the day long. On attempting
a U. on guard, morning he was submitted to find that he
could pass only a small quantity which relieved him very little.
Indeed it is the course of a few days however, though he was
cable to pass little urine at a time, at short intervals, he
became easier, notwithstanding that the distension of the bowel
grace of the abdomen did not perceptibly abate. The state
of things continued for weeks, never having all the time obtained
medical advice, at length the patient became obstrucively
constipated, and he became sick and feebly and emaciated.
In this condition he presented himself at the Infirmary.
On admission he had a feverish, collapsed, anxious look.
Abdomen very much distended, urine constantly dribbling
involuntarily; bowels had not moved for about 10 days.
Stomach rejecting all kinds of food and medicine.
As the abdominal distension seemed rising, in part at least to the accumulation of urine, a catheter was introduced but could not be passed beyond the bulb, owing to the hardened pieces pressing upon the urethra, and it was not till the operation was employed by the use of the finger, knife, and instrument that the bladder could be intimated of any quantity of foetid ammoniacal urine. After this, the bowels being regulated by enemata and lavatious, and the bladder regularly emptied by an instrument; with the aid of good diet, in five or six weeks his health was completely restored, and he perfectly regained the power of expelling the urine minded.
degree of inflammatory action, as will lead to the
expression of lymph, granulation, and cicatrization.
It is well to keep the stitches open, by means
of a tent, or the application of protannin snow,
until the healing process has been completed
from the bottom. Since its premature closure
by confining the discharge, would cause the
formation of another abscess.

Retention of urine may be the result of a great
many different causes besides structure, of which
the most important are paralytics of the bladder,
congestion of blood in the bladder, enlarged prostate,
perineal abscess, injuries to the bladder, lodgment
of calculi, pressure from distended rectum.

The symptoms are very obvious, viz., urgent
desire, with inability to void urine, hypogastric
enlargement, pain and tenderness, restlessness,
abnormal of commenaded, ganst imlne, hot stomac.
If allowed to continue the following (more
alarming indicating expirience), diarrheum, or
cessation, it may be, if pain, cold perspirations,
possessing a micrums odour, accelerated expiration,
breath, delirium. If this Omni be not removed,
the patient may die Excruciating, in consequence
of accumulation of area in the blood.
by pressure of the wind through the distended
vessels, upon the kidneys, and to arresting their
secretion. The bladder may be so distended as
to reach even above the nipples. All the
distressing symptoms of retention however, may
be present, demanding puncture of the bladder
when that viscus contains only a few ounces of
urine, as in old cases of structure, where its
cavity has become permanently contracted.

If the Surgeon possesses ordinary dexterity in
passing the catheter, he will generally succeed
in giving Relief by that means, when called
sufficiently early. If the case admits of delay,
and the attempt to evacuate the bladder have
been unsuccessful, bleeding, antimonial, the warm
bath, irrigations, or enemata, and opiate may
be had recourse to. In the event of even failing
to grasp an instrument after the employment
of these measures, it will be necessary to resort
to rectal puncture of the bladder, in order to
avert extravasation of urine from rupture of the
bladder, or what is more common, of the urethra,
immediately behind the seat of the structure.
Without experience one would expect rupture
as soon much earlier than it is found to do,
A seldom happens before the lapse of three or four days, and may be protracted much longer; in such cases it will depend upon the retention being complete or not, upon the secretion of wind being scanty or abundant, and upon the dilatability of the bladder.

Three methods of puncturing the bladder are practiced. 1. By the perineum. 2. By the Rectum. 3. Under the Jube. Considerable diversity of opinion exists among surgeons, regarding both the operator's safety of those operating, and the ease with which they may be performed. That by the perineum requires the greatest amount of anatomical knowledge and manual dexterity, and must be looked on as attended with considerable danger unless in very experienced hands. Professor Bell considers it decidedly the most preferable in retention from Stricture. There are other modes of performing it, but the one most generally approved of is by making an incision in the central line of the perineum, so as to bring into view, and open that portion of the urethra immediately behind the stricture which is obstructed with urine, or in the other method by making a deep incision a little to one side of the Tiphoe, similar to that for extracting
but less extensive, through which a long curved
trocar is thrust into the bladder.
Operation by the rectum is the safest, easiest
of execution, and least painful of these rectally
operating, and but for the occasional enlargement
of the prostate would doubtless be invariably
adopted, were it not from the fact that a
fistulous and fistulous communication is apt to remain
between the bladder and rectum. It is the one
most strongly recommended by Professor Syme.
Sir Ashley Cooper met with a number of instances
in which serious diseases of the rectum were
brought on by the irritation of the bowels, passing
after this operation. The fistula is made through
the centre of the bladder, a triangular space in
the neck of the bladder surrounding by serous
If the prostate is not enlarged, and the bladder
considerably distended, this space will be longer
than in the natural condition, and there will
be less danger of wounding the important
structures which bound it. Should be there be
any suspicion of prostatic enlargement, the
trocar should be entered nearer that gland
than otherwise, in order to avoid wounding
the serosum. After the operation is performed
the Nocher is withdrawn, and the Cauda
retained for 48 hours, or so, to prevent the wound
from closing until the urine can flow by the
natural passage.

The operation above the Jumbis, like the last
one, is very easily performed, requiring no
great amount of dexterity or anatomical knowledge.
but cannot be said to be so safe. The bladder
must be fully distended, otherwise the cellular
space left by the reflection of the peritoneum
from the os Jumbis upon the fore-part of the
bladder will not lie within reach. An incision
is to be made through the Linea Alba, just above
the Jumbis, 3 inches in length, and the edges
of the muscles being held aside, a short
Nocher is introduced obliquely upwards into the
distended bladder; care being taken not to enter
too near the Jumbis, lest on the contraction of the
bladder, the opening sink so deep as to favour the
infiltration of urine. The most suitable instrument
for the escape of the urine is a flexible catheter,
which ought not to be removed until the cellular
fluid along the artificial passage is sufficiently
consolidated. To prevent urine's infiltration, the only
other danger in addition to this one already mentioned.
In very fat people, besides the disadvantage of having J. It makes a much deeper incision, there is the additional difficulty, frequently experienced, in ascertaining whether the bladder is really sufficiently distended with fluid or not.

If there is complete retention of urine and the distended bladder be not evacuated by some means or other, ulceration or more rarely laceration of the bladder or urethra must necessarily occur, unless the patient becomes insensible andinky under what has been called the menses fever. The symptoms attendant upon extravasation of urine will vary much according to the seat of injury, which may be either vesical or urethral. If the aperture in the bladder permits the urine to escape into the abdominal cavity, violent peritonitis speedily ensues, and necessarily destroys the patient. In such an instance no treatment whatever is of any service. More frequently the bladder gives way near the neck, where there is no peritoneal covering. Though the infiltration of the cellular tissue of the pelvis is neither so certainly nor so speedily fatal, still in most instances little hope of recovery can be entertained.
If the urine finds it's way towards the perineum, and a free outlet is afforded, the case need not be despaired of altogether.

Fortunately extravasation is more commonly owing to rupture of the bladder than the bladder, which cases being much more amenable to control.

If it takes place behind the deep fascial layer, the local signs will be somewhat obscured at first, from the infiltration being confined for a time to deep seated parts by the investing and firmly attached membrane. When it happens more anteriorly, the extravasated fluid will diffuse itself at once along the loose cellular tissue of the prepuce, scrotum, and over the adjoining parts of the thighs and abdomen.

Unless steps are taken to arrest its progress.

The constitutional symptoms which supervene upon the extravasation of urine are of a very serious nature. The system is affected in much the same manner as by many of the most violent poisons; the pulse becomes rapid and feeble, the countenance collapsed, and expression of anguish, the skin clammy, and the tongue dry and brown. If the case is not fatal, death is usually preceded by Incon, vomiting, muttering delirium.
Under the circumstances, no inflammatory action observed so great as rapidly on its gangrene. The grains affected become rapidly isolated, and are long black and sooted. Early and free excision, hot fomentations, and liberal administration of stimulants are the remedies in which any hope can be placed of affording relief. Cases apparently hopeless often recover under the prompt employment of these measures. The more superficial the grains that are implicated, even though very extensively, the less imminent is the danger.