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A

Treatise on the Diseases

OF THE

URETHRA, VESICA URINARIA, PROSTATE, AND RECTUM.

BY

CHARLES BELL,

SURGEON TO THE MIDDLESEX HOSPITAL;

AND

LECTURER ON ANATOMY IN THE SCHOOL OF GREAT WINDMILL STREET.

A NEW EDITION.

WITH NOTES, CONTAINING THE CRITICISMS OF THE EDITORS OF THE FOREIGN EDITIONS, AND THE OPINIONS OF FOREIGN AUTHORS ON THESE DISEASES, BY JOHN SHAW, SURGEON; DEMONSTRATOR OF ANATOMY IN THE SCHOOL OF GREAT WINDMILL STREET.

LONDON:

PRINTED FOR LONGMAN, HURST, REES, ORME, AND BROWN,

PATERNOSTER ROW;

AND BURGESS AND HILL, GREAT WINDMILL STREET.

1820.

CONTENTS.

The next three Cases are different from the preceding seven, in the Rupture not taking place so suddenly.

PREFACE.

The dissertations which this Volume contains, were written at intervals, and have received the Author's occasional corrections during fifteen years. When a case was attended with unusual anxiety, or when a dissection was made, or a preparation was brought to him, which illustrated something of this part of pathology, the Author has been in the habit of adding to his notes. It is on the information thus zealously and cautiously collected, that he rests his hopes of the approbation of the Profession.

The authority of a name has long served instead of that rigid examination which these practical matters required. The name of Mr. Hunter has been too much used, his example much too little followed. If the Author has in some instances disregarded this authority, or if he has

differed from the opinions of living authors, no less deserving respect, it has not been by trusting to his own reason, but to the evidences of anatomy, as being above all authorities.

If any apology be required for differing in opinion from those to whom he owes great personal obligations, as well as that gratitude due from him in common with the whole Profession, he can only offer their own excellent example. He, like them, has trusted more to what he has seen than to what he has heard, and to the work of his own hands, rather than to the authority of writers.

There has been a great deal of theoretical writing, on the subjects treated of in this volume; and therefore, the Author has thought it necessary distinctly to show the extent and accuracy of those observations, on which his practice has been formed. It is for this reason, that, in addition to the cases contained in the body of the work, he has added the Appendix; and sincerely does he wish that the facts detailed there may have their proper influence: that the numerous proofs of wrong practice, and of fatal errors, may not be met with prejudice, but that they may make that

impression on the reader's mind, for which they are so well calculated*.

In perusing the catalogue of these Preparations, as in examining the Collection itself, the reader must be convinced, that this is a part of surgery which ought to be reviewed, and which should be brought into a strict dependence on anatomy. He must feel that the practice in these diseases, requires a judgment matured by experience as well as study; and that when instruments are to be used, they require as much science as the greater, and as much dexterity as the nicer operations of surgery. If an awkward surgeon attempts any of the great operations, and fails, his incapacity is evident; men see, either that he has not the object of his operation distinctly before him, or that he is clumsy in the execution. Such a surgeon is de-

* No Preparation in this Collection can ever be brought to hurt the professional character, or feelings, of any individual. Wherever the injury, committed by the use of instruments, or the consequences of omission or delay, are evident in the Preparation, and might be thought to lead to inquiry into the conduct of the surgeon, no name or circumstance has been noted, even in the Author's private papers. Hereafter, the value of the Collection must rest on his authority, and the evidences in the Preparations themselves.

terred from a second exhibition. But *here*, the cause of his miscarriage is less obvious; the want of dexterity is not evident; timidity appears caution; and rashness is often called decision, and a commendable boldness. In short, the failure is attributed to its true cause, by those only who have studied the matter deeply. The error is sometimes in doing too much, nay, a very little more than is absolutely required; sometimes it is in doing too little; or, when the surgeon is deterred by the pressing danger, in doing nothing at all. On the whole, these perplexities are owing to the obscurity of symptoms, to the difficulty of detecting them, and of tracing them correctly, so as to deduce them from their causes.

The Author very lately had occasion to conclude a clinical report by this address to his Pupils: "And now, gentlemen, have you attended to those three cases which I have detailed to you? Or do you acknowledge, that you have often passed these patients, without being aware of their dangerous condition: that, seeing them daily, you yet have not seen them, so as to improve by their sufferings or their death? I say this, not to blame,

but only to incline you, by your own experience, to believe that a great part of the profession may have done what you have done. Here is a case of prolapsus ani,—a case of stricture in the vagina,—a common case of stricture of the urethra,—and the manner of death, and the appearances on dissection, have been exactly similar in all. We have in all of them inflammation on the peritoneum, and pus scattered over the abdominal cavity; but the symptoms have been so insidious, the approach of death so gradual, and the indications on dissection so slight, that, without the accidental combination of these bodies in circumstances so nearly similar, we might have had doubts of the abdominal inflammation having proceeded from the disorder of the canals, and I should have altogether failed in my object to-night. For I wish to convince you as it were through your own experience, rather than by my assertions, or my arguments, how much judgment, more even than dexterity, is necessary to the safe performance of the operations on the passages. If you previously knew that passing a common probe into the vagina, or tying a portion of the rectum, or passing a wax

bougie, could so soon prove fatal, I have been detaining you needlessly. But if you did not, I beg you to remember, that I have done what I can, to shift to your shoulders in future, a considerable share of the responsibility."

In this work the Author throws himself completely upon his Profession,—to be judged by them; for these Observations are unfit for any one who is not of the Profession. There is here no new method of curing stricture proposed; no multiplied cases of success, until the reader must suppose him infallible; no cases to suit the feelings of alarmed patients. On the contrary, he has dwelt only on the difficulties of practice, and has exhibited, with all the force he could command, the dangers we run by rashness.

The Author hopes that he has done something to further the advancement of this part of surgery; but the difficulties which remain, the many questions which are still to be decided, would have inclined him to defer this edition longer, had not its publication been solicited by his Pupils. His brother-in-law, Mr. Shaw, has, in his office of Demonstrator, the best means of knowing the defects in

the education of the Students, as well as the errors committed by young Practitioners. He has been unceasing in his importunity for the republication of these papers, offering at the same time to take the whole trouble of their arrangement upon himself; he has also translated the remarks which have been made on the foreign editions of these Observations; and he has compared and translated, and thrown into the form of foot notes, the best foreign authorities, on the practical questions discussed in the following pages.

It was not indolence which made the Author yield to these importunities, and accept of this assistance of Mr. Shaw; but the hope of seeing his reputation extended, by showing him to be, not only an excellent anatomist, but capable of forming a judicious opinion on matters of practice, which is the most useful, and yet the rarest accomplishment of the surgeon. The assiduity and ability of Mr. Shaw, in adding to his Museum of late years, and especially his labours in dissecting and preparing the specimens of diseases of the urethra, make it only an act of justice on the part of the Author, to render this acknowledgment, and

to let it weigh in his assistant's favour with the better informed part of the Profession.

The short description of the Anatomy of the Urethra, from the first to the eighth page, is by Mr. Shaw.

34, *Soho Square*,
1*st March*, 1820.

Fig. 1.

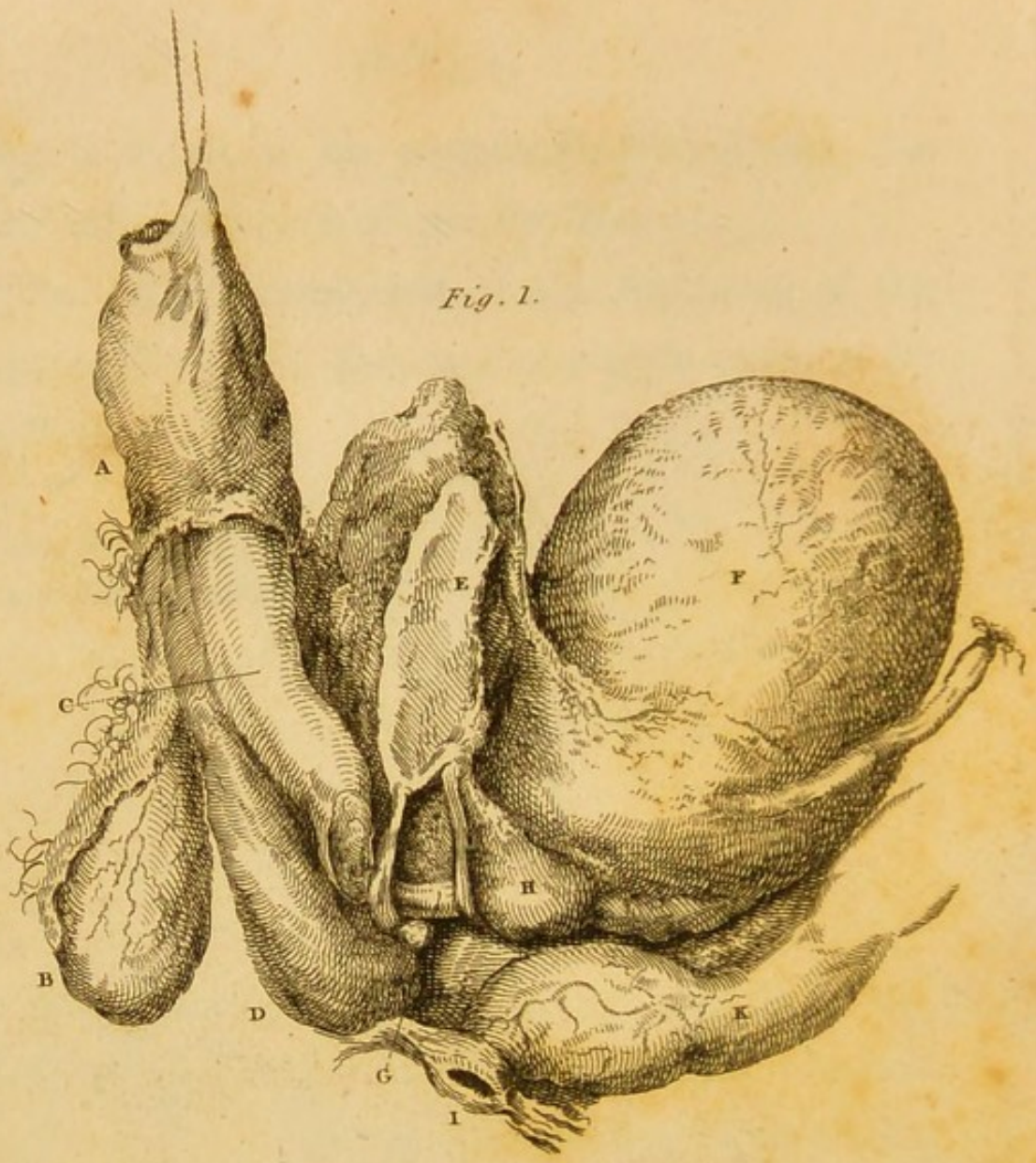
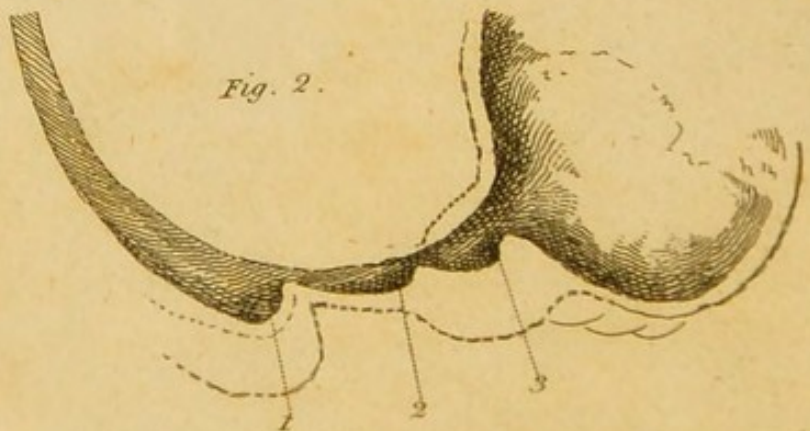


Fig. 2.



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EXPLANATION OF PLATE I.

FIG. 1. is a sketch of the parts in the male pelvis in a side view.

A. The PENIS hanging by a cord: the integuments cover only the upper parts; the body and crura are dissected.

B. The TESTICLE hanging in its place, but partly divested of the scrotum.

C. THE CRUS PENIS.

D. THE BULB OF THE SPONGY BODY OF THE URETHRA: the integuments and ejaculator seminis are dissected off the bulb.

E. THE OS PUBIS: the bones have been divided at their symphysis, and the cartilaginous face of the junction is here exposed. The place of the bone is to be marked carefully, and the bearing of the bladder, the prostate gland, and the turn of the urethra to it.

F. THE BODY OF THE BLADDER OF URINE.

G.* THE MEMBRANOUS PART OF THE URETHRA. From the lower part of the bone, or arch of the

* This plate was drawn from the dissected parts, the catheter being introduced. I can now observe, that the weight of the assistant's hand has pushed the catheter, and consequently the membranous part of the urethra, downwards, and separated the urethra G from the pubes E a little farther than it ought to be.

pubes, to the back of the bulb, and to the fore part of this membranous portion, a ligament is seen to stretch. This is a very important point of the demonstration; for, as the canal is tied by this ligament to the bone, and as the canal is wide anterior to the ligament, and narrower behind it, the catheter is very apt to be pressed on one side of the ligament, and consequently obstructed.

H. The prostate gland surrounding the urethra and the neck of the bladder, and, as its name implies, standing before the bladder. A ligament may be traced without the reference of a letter, descending from the back part of the os pubis to the fore part of the prostate gland.

Cowper's gland may be seen between the membranous part of the urethra and the bulb of the urethra, and very near to the pointing of the letter G.

I. The anus.

K. The rectum. The young surgeon has to consider the place and relation of the bulb, D; Cowper's gland, and the membranous part of the urethra, G; the prostate H, and the bladder F, as recognisable by the finger in ano.

Fig. 2. This figure is designed to represent the urethra, seen in the same position with that of the former figure, but opened; it is therefore a plan.

1. The dilatable part of the urethra (within the bulb D. fig. 1.) anterior to the ligament of the

Fig. 1.

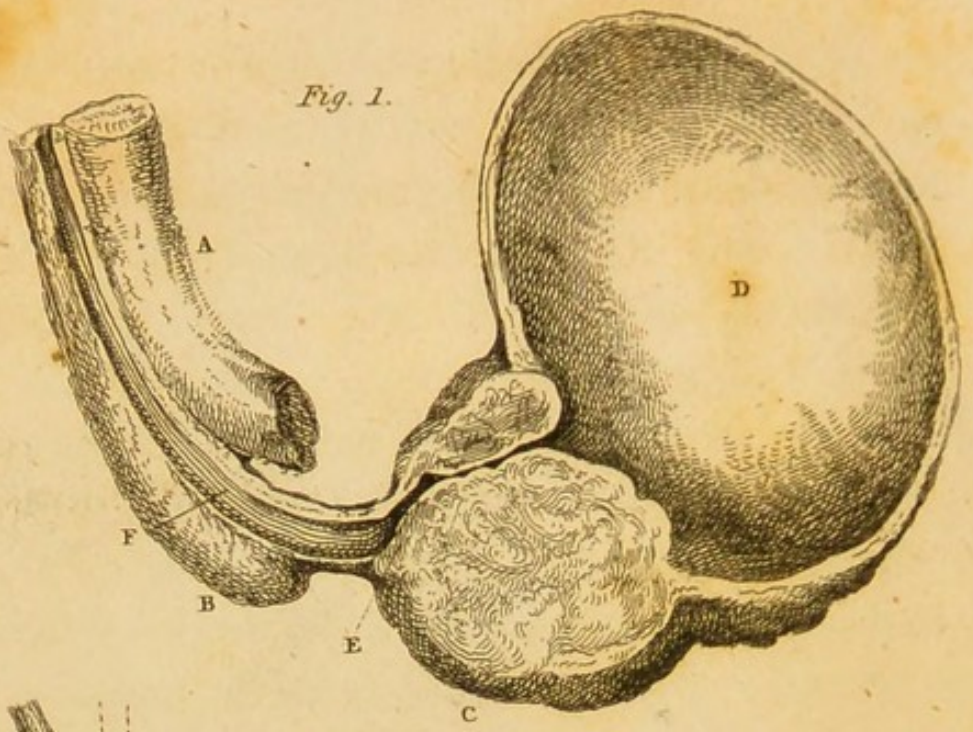


Fig. 2.

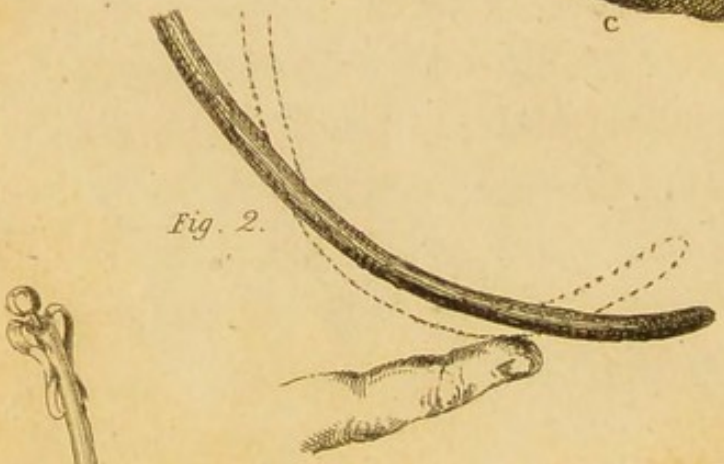
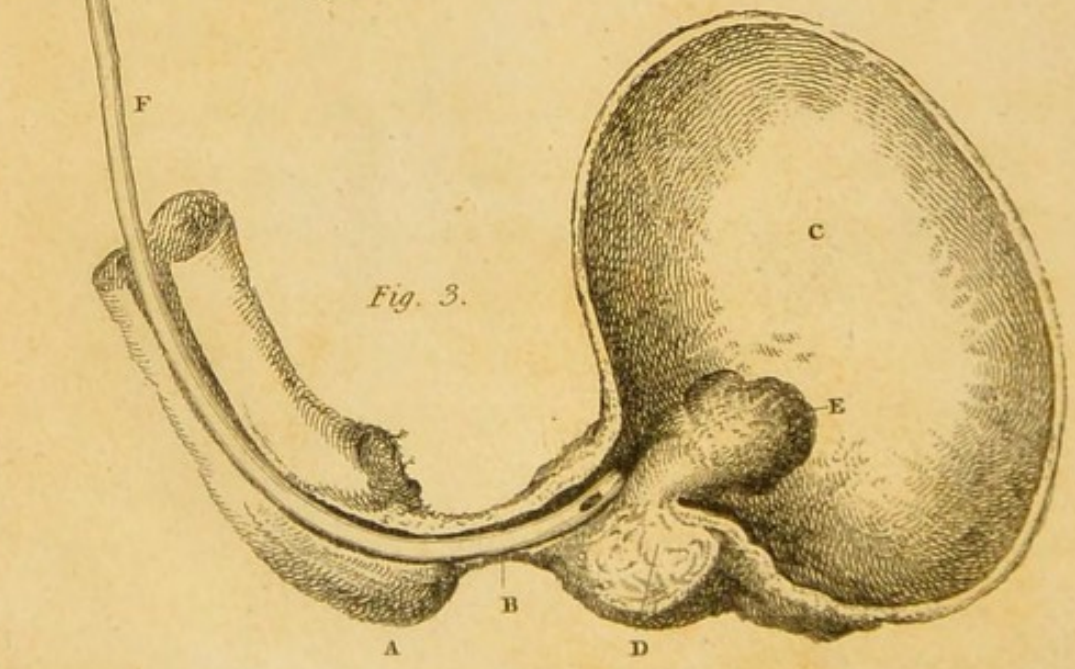


Fig. 3.



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urethra. Here generally the end of the catheter is caught in the attempt to introduce it.

2. The part of the urethra just anterior to the prostate, and anterior to the ligament or fascia of the prostate, where again the point of the catheter is apt to be entangled.

3. A third point, where the same sort of interruption to the introduction of the instrument may be experienced, viz. anterior to the internal sphincter of the bladder. The means of disentangling the point of the catheter or bougie from these interruptions, by withdrawing the instrument a little, and raising the point, are explained fully in the text.

EXPLANATION OF PLATE II.

Fig. 1. Represents the bladder encumbered with a diseased prostate, where the tumour is general, and of the whole body of the gland. It shows, that as the chief part of the natural gland is below the urethra, so is the largest portion of the enlarged gland; therefore the canal is raised up.

A. The BODY AND CRUS PENIS.

B. The BULB of the URETHRA.

C. The ENLARGED PROSTATE GLAND.

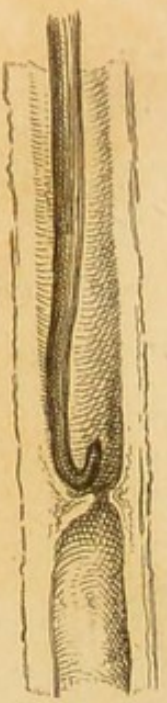
D. The cavity of the bladder.

E. The enlarged prostate opposed to the entrance of the catheter; for, it must be obvious, that when the catheter is introduced along the urethra (F), the point must butt against E. There are preparations in my collection, showing that the instrument has been thrust an inch deep into the gland at this part. Indeed, in one case it was thrust quite through the gland into the cavity of the bladder.

Fig. 2. Represents the bougie, and the manner of bending it up, by pressing it against the finger in ano. Suppose that the elastic gum catheter had arrived at the point E, Fig. 2, and was interrupted. The surgeon, instead of forcing the instrument, would introduce his finger into the anus, and, turning it up, he would feel the instrument by pressing against it; he would give a new direction to the point; and then, by pushing on the instrument, it would take the new direction of the canal.

If the reader will take the elastic gum catheter and place it against his finger, in the manner represented here, he will find, that without moving the finger, but merely by pressing down the instrument against it, it will take a new curve, and the point will rise and enter forward on a higher line. This I have repeatedly found necessary before I could get the point of the catheter through the urethra in this state of disease.

Fig. 1.



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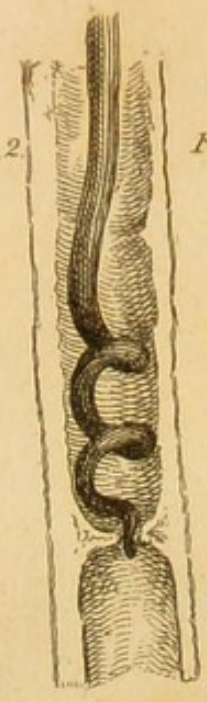

Fig. 3.

Fig. 4.

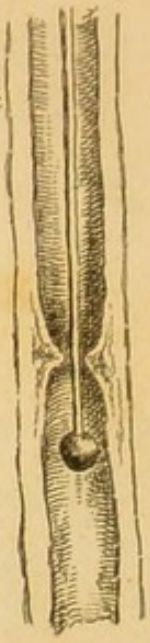

Fig. 5.

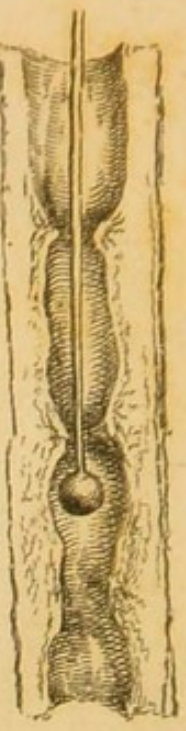

Fig. 6.

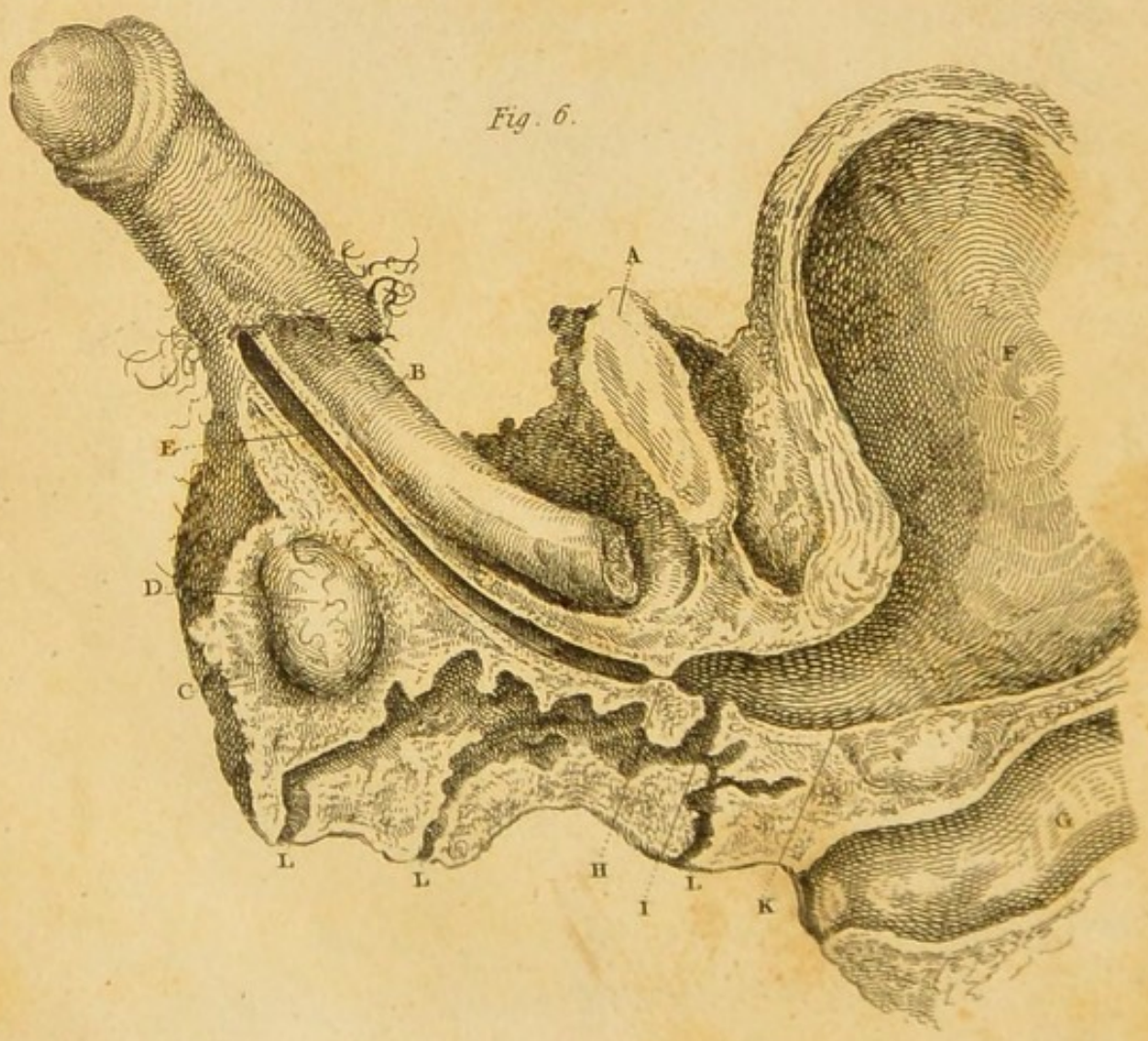

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Fig. 3. Represents the bladder with the disease called UVULA VESICÆ.

A. The BULB of the urethra.

B. The *membranous part* of the urethra.

C. The CAVITY OF THE BLADDER.

D. The PROSTATE GLAND.

E. The tumour, called UVULA, from its sometimes resembling the uvula of the throat. It falls forward against the orifice of the bladder, obstructs the flow of urine, and gives great distress.

F. The CATHETER. The point has just reached the orifice of the bladder, and would enter freely, but for the tumour E. However, as the tumour is only attached at D, and is therefore in a degree moveable, the instrument pushes it back.

But it is evident that if the point of the instrument F, be small or sharp, it will be caught under the tumour E, and do mischief, causing flow of blood and increase of irritation.

EXPLANATION OF PLATE III.

Fig. 1. Represents a stricture of the urethra with the bougie introduced and turned at the point. This takes place when the surgeon finds, from the narrowness of the stricture, that he is under the necessity of using a small wax bougie. The point not entering the narrow part of the pas-

ent degrees of sensibility of the several portions of the urethra, which is very imperfectly done by means of a bougie.

Explanation of Fig. 6. This is a section of the viscera of the pelvis, exhibiting the state of the parts after having suffered by *fistula in perinæo.*

A. *Section of the os pubis.*

B. The *corpus cavernosum penis.*

C. The *scrotum.*

D. The *testicle.*

E. The *urethra* anterior to the stricture.

F. The *bladder.* Its walls are much thickened in consequence of the long-continued stricture.

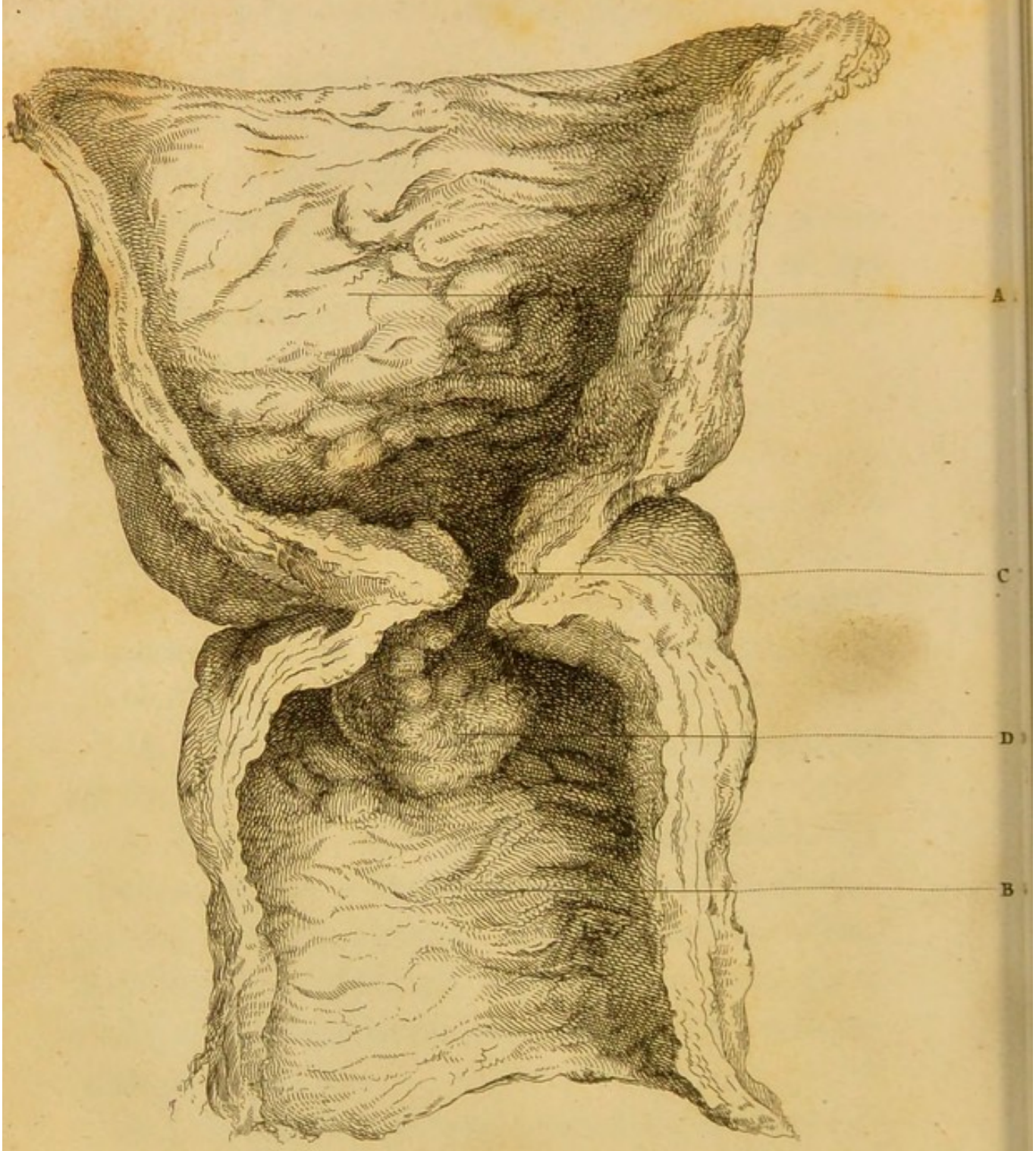
G. The rectum.

H. The stricture of the urethra, the source of all the disorder of the other parts.

I. The ulceration in the urethra behind the stricture, from whence the urine has been discharged into the sinuses. These sinuses have undermined the perineum and scrotum, and have made a large consolidated mass of the cellular substance.

K. The urethra dilated behind the stricture.

L. L. L. The several openings through which the matter and urine have successively burst.



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EXPLANATION OF PLATE IV.

This represents a common stricture of the Rectum.

A. The gut dilated above the stricture.

B. The cavity of the gut below the stricture.

C. The strictured part.

D. An irregularity of the gut around the stricture.

This irregularity will sometimes be so great, owing to the irritation, and consequent thickening of the surrounding parts, as to present the appearance of carcinoma. It is this circumstance which has given origin to the opinion that the scirrho-contracted rectum (meaning thereby the *exquisite scirrhus,* or carcinomatous thickening) can be cured by the bougie.

EXPLANATION OF PLATE V.

This represents a dissection of the Prolapsus Ani, where it had been attended with the same distressing symptoms, and with the same consequences, as a strangulated hernia.

A. The prolapsus exhibiting the inner surface of the rectum, everted, and dark, and gorged with blood.

B. The sphincter ani dissected; the fibres of the muscle having acted as a stricture on the protruded portion A.

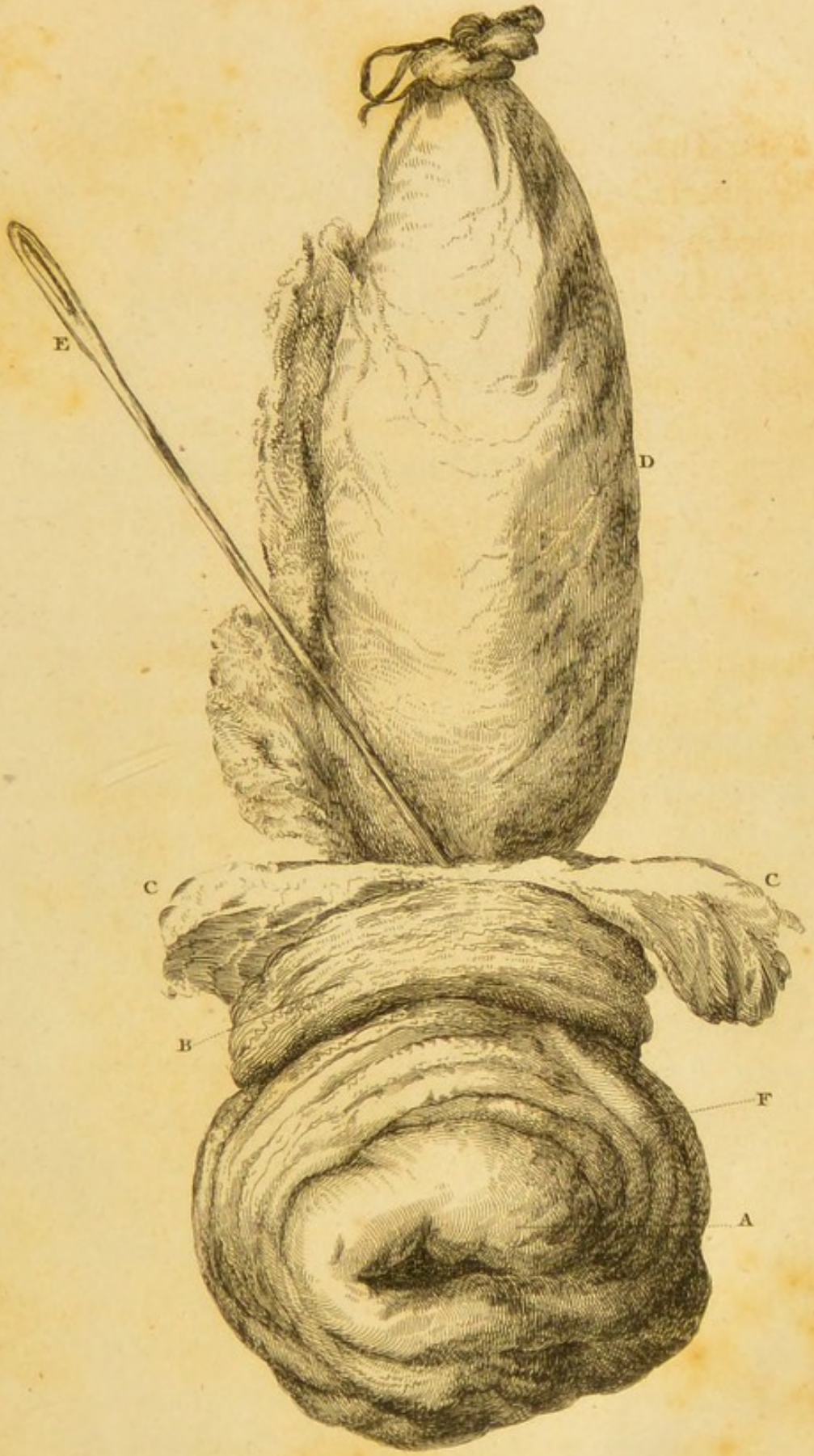
C. The peritoneum. This is a very important circumstance. The membrane was carried down with the gut, so as to reach beyond the sphincter, and make part of the prolapsus.

D. The rectum.

E. A probe passed on the inside of the peritoneum.

F. The extremity of the probe seen through the prolapsed gut. If this prolapsus had been cut off, an opening would have been made into the abdominal cavity.

While making this dissection, a physician present assured me, that he had seen death the consequence of the operation of excision, on a prolapsus similar to this.



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DESCRIPTION

OF

THE ANATOMY OF SOME PARTS OF THE URETHRA

AND

NECK OF THE BLADDER.

OF THE URETHRA, &c.

As the reader must be supposed to understand the general anatomy of the urinary organs, before he enters upon the consideration of their diseases, it will be unnecessary to give such a detailed description of the parts as may be found in every book on anatomy. The description will be confined to such parts as are more immediately connected with the subject of Stricture, and which have been only slightly noticed in the account generally given of the urinary organs.

The internal part of the urethra is formed by the continuation of the mucous membrane of the bladder, and the reticulated cellular texture, which separates the mucous from the muscular coat. The inner part of the urethra is of an exceedingly delicate texture. It is surrounded by

a set of vessels, the coats of which are so thin that they are not visible, except when injected or filled with blood. These vessels, which are of a very peculiar structure, commence on the posterior part of the prostate, and are continued to the glans. They form that which has been described in the second part of the tenth volume of the Medico-Chirurgical Transactions, as an internal spongy body. There, it is also shown, that the membranous part of the urethra, which has been hitherto described as differing from the rest of the canal, in being covered only by muscles and ligaments, is also surrounded with a spongy body.

The mucous membrane and the vessels forming the internal spongy body, are supported at the neck of the bladder by the prostate; between the prostate and the bulb, by strong muscles and ligaments; and between the bulb and the glans, by the proper corpus spongiosum, and the ejaculator seminis. Throughout the whole extent of the urethra there is an intimate connexion by anastomosis of vessels, between the proper corpus spongiosum and the internal spongy body; at the glans they become quite incorporated with each other.

When the anterior part of the urethra is laid open, we see that the internal membrane is a secreting coat, being continuous with the mucous coat of the bladder; we may observe also, that there is a provision for the secretion of mucus,

by lacunæ which open upon the surface *. Near to the glans there is one lacuna, which it is important to recollect, as it is sufficiently large to receive the point of a small bougie; and within an inch of the bulb there are two others, which though not so large, are still as important in another point of view, for they are the openings of the ducts of the glands of Cowper, which are very liable to disease in some constitutions.

The mucous membrane, though very thin, is elastic; and were it not for this elasticity, it would be impossible to introduce a bougie into the urethra without rupturing it.

Notwithstanding the thinness of this membrane, it has by all the modern English authors, except Mr. Bell, been described as possessed of muscular fibres. This is a question of the utmost importance in a practical point of view, for upon it, do certain plans of practice depend. It has been fully discussed by me in a paper published in the Medico-Chirurgical Transactions, Part II. Vol. X. It is also shown in that paper, that those anatomists have been mistaken who

* There is a good description of the lacunæ of the urethra, given by Terraneus, who wrote in the year 1720: he describes them as analogous to the glandulæ solitariæ of the intestines; he also particularly describes those glands which we now call Cowper's glands; he does not seem to have been aware, that they had been previously discovered by Cowper.

have said that they saw circular muscular fibres in the membrane of the urethra of the larger animals. Mr. Bell's observations have been also corroborated by experiments detailed in the same paper; and it has been there proved by the discovery of the internal spongy body surrounding the membranous part of the urethra, that the appearance which has been described as muscular fibres, is caused by the small vessels running on the outside of the membrane. The questions of muscularity of the urethra and of spasm in the stricture, are treated of in the present work, in the Chapter on Dilatable and Spasmodic Stricture.

It is possible to trace the mucous membrane of the urethra from the glans, along the canal to the bladder, to the ureters, to the pelvis of the kidney and its divisions. It may be traced in another direction: from the urethra along the seminal ducts and through the convoluted tubes of the testicle: and again, we may follow it from the urethra into the vesiculæ seminales.

Thus we can trace an inflammation of the urethra by continuous sympathy into the bladder, producing irritable bladder, into the kidneys, causing nephritis, and along the vas deferens, producing swelled testicle; each of these consequences being as likely to happen from irritation of the urethra, as the inflammation of the mucous membrane of the nose is, in common catarrh, to

proceed along the membrane of the trachea into the lungs.

It is also of some consequence to recollect, that particular parts of the passage are in sympathy with each other. Thus, if there be inflammation of the urethra near the glans, there will be pain near the neck of the bladder; and it as frequently happens, when the bougie enters the neck of an inflamed bladder, that the patient does not complain of pain at that part, but refers it to the glans; he often says, that the surgeon is holding the glans too tightly; and so difficult is it to persuade him of the true cause of his suffering in this case, that he will even insist that there must be an ulcer within the anterior part of the urethra. The purest example of this sympathy is in the case of stone in the bladder; for in that case the patient always complains of great pain in the glans.

It is incorrect to describe the urethra as a cylinder, because, when it is empty, its sides are in close contact; when the urine is propelled forward by the detrusor urinæ, the urethra opens; but on the urine ceasing to flow, the canal is again closed by the elasticity of the membrane and the surrounding cellular texture. Thus, a stricture cannot properly be said to be a contraction of the membrane (for it is always contracted when not distended by urine), but it is a loss of its power of dilatability.

Some parts of the canal are more dilatable than others. The orifice is the least dilatable, for it is surrounded by a firm band; as it is the narrowest part of the whole canal, a bougie, which enters it freely, ought to go into the bladder, if there be no disease in the passage. About three quarters of an inch below the orifice, the canal becomes a little larger, and there is situated the lacuna magna; the next four inches are nearly of equal diameter; then comes the sinus, which is the most dilatable part, and is covered by the bulb. Behind the sinus the urethra becomes suddenly very much narrower, in consequence of its being surrounded by a neat circular band, which descends from the transverse ligament. Beyond this ligament the urethra is again slightly dilated; upon passing further back, it contracts a little; and where it is within the prostate there is another sinus. All these points are marked in the first Plate, which is taken from the section of a healthy urethra. As it is difficult to convey in words the idea of the curve of the urethra, the reader is referred to the two figures of Plate 1.

It is of the utmost importance for the surgeon to recollect the circular ligament, posterior to the bulb; for this is the point at which the catheter is most liable to be obstructed. The reason of this, and the means of avoiding it, will be shown in describing the manner of passing the catheter.

But it is of still more importance to recollect this ligament, in examining the urethra of a patient who has the symptoms of stricture; for it not only surrounds the narrowest part of the whole canal, excepting the orifice, but as it is also the most irritable, it follows, that if the surgeon does not give his instrument the proper curve, he is very apt to strike against the ligament, and from the pain which he occasions, and the obstruction which he feels, he conceives that there is a stricture. Dissection leads us to suspect that strictures are more frequently made at this part by the surgeon's instruments, than by the effect of inflammation from common irritation.

It has always been a rule of practice to examine the urethra with a large instrument in preference to a small one, that we may avoid the lacunæ; but besides this general rule, we have to recollect that there is in the posterior part of the canal a lacuna, which is sufficiently large to receive the point of a bougie, the size of No. 5. It is the sinus pocularis, or foramen cæcum, which is situated at the beginning of the caput galinaginis. This little sac is of a considerable size in the healthy urethra, but it generally becomes enlarged in a case of stricture. When a bougie enters it, the pain is so exceedingly acute that the patient springs back, even though the rest of the canal may not be at all irritable.

If we may be allowed to draw conclusions from dissection, and from the examination of preparations in different museums, it may be laid down as a principle, that whenever there has been irritation of any kind in the urethra, or bladder, the ducts of the prostate will be found enlarged, some of them to such a degree as to admit the point of the largest bougie*. This should make us cautious how we promise to the patient to pass an instrument into his bladder, even if we should cure his stricture.

I shall now refer the reader to the following Chapter on "the Sensibility of the Bladder, and some of its morbid Affections." He will find in it some very curious observations on the sensibility of the neck of the bladder.—J. S.

* See several examples of this in the Appendix.

CHAPTER I.

OF THE SENSIBILITY OF THE BLADDER, AND OF SOME OF ITS MORBID AFFECTIONS.

Of the Sphincter of the Bladder.

If we consider the double office of the urethra, and suppose that the seminal vessels, and the ducts of the prostate gland, open into the canal, at a part posterior to the muscles which close the orifice of the bladder, we must be also forced to admit that there is some imperfection in the mechanism of these parts. For, in that case, the fluids passing from those ducts would fall back into the bladder, and the orifices of the ducts would be exposed to the urine in the bladder, even when the bladder was closed. If this were really the case, it would be inconceivable how the contents of the *vesiculæ seminales* could be discharged forwards, or how the urine could be retained while the seminal discharge was made.

By such a train of reasoning I was led to look for the proper sphincter of the bladder, behind the prostate. The importance of the knowledge of

the complex apparatus of muscles about the neck of the bladder, to the comprehension of the various causes of obstructed urine, led me to review this part of the anatomy.

To exhibit the sphincter of the bladder, cut off all the appendages but the prostate gland: then make an incision into the fundus of the bladder, and invert it. Begin the dissection, by taking off the inner membrane of the bladder from around the orifice of the urethra.

A set of fibres will be discovered on the lower half of the orifice, which being carefully dissected, will be found to run in a semicircular form round the urethra. These fibres make a band of about half an inch in breadth, particularly strong on the lower part of the opening, and having mounted a little above the orifice on each side, they disperse a portion of their fibres in the substanee of the bladder. A smaller and somewhat weaker set of fibres will be seen to complete their course, surrounding the orifice on the upper part: to these sphincter fibres a bridle is joined, which comes from the union of the muscles of the ureters.

Here, then, we have the muscle which closes the internal extremity of the urethra, the most posterior of all those muscles which embrace the urethra. It resembles the sphincters of the other hollow viscera: for example, those fibres which encircle the pyloric orifice of the stomach.

Of the Sensibility of the Bladder.

Directly over the junction of the muscles of the ureters, with this internal sphincter of the bladder, the internal coat of the bladder is found to be more vascular than at any other part. In the dissection of the recent parts, there is generally seen a blush, as of inflammation here. This is the spot of the bladder, which is beyond all comparison, the most sensitive. Here is the seat of that sensibility which governs the action of the muscles; the excited sensibility of the glottis does not more perfectly control the muscles of respiration, than the sensibility of this spot does the muscles associated in the act of passing the urine. However unpleasant or painful the operation of the catheter may be, the patient does not suffer the call to make urine, while it is passing along the urethra, nor until the point touches this part; but as soon as the catheter, or bougie, rubs upon this sensitive spot, he says, "He must make water; he cannot retain the water longer;" and he feels the call, although there be not a drop of urine in the bladder, although it has been evacuated the instant before. When the stone rests here, the patient suffers what he calls a fit of the stone; for, while it touches this part, there is an unceasing *nisus*, the bladder is stimulated to con-

traction, and the coats come in contact with the rough surface of the stone.

S. Sharp, the best reasoner we have had on matters of practical surgery, says, "Nor is the body of the bladder so painful a situation for a moveable stone as the neck; for experience shows, that if we move a stone from the neck, either by means of a sound, or by suspending the patient, with his head downwards, we sometimes procure immediate ease. I suppose this may be accounted for from its touching the bladder in more points when it lies in the neck, than when it is in its body, or fundus; in consequence of which it must irritate more."

But it is not an increase of pain merely, which the patient experiences when the stone falls forward from its common place of lodgment; it is the call to make water; it is the pain of retained urine, and the sudden spasmodic action of the bladder, excited by the presence of the stone on this *sensible spot*, attended with a squirting of the urine as from the bladder of a dog.

When a patient suffers little from the presence of a stone, it is because it lodges behind the muscles of the ureters, and because they form a sort of imperfect skreen, guarding this sensitive spot. It will sometimes occur, that the inflammation originally seated in the urethra, spreads backward to this spot, and then the call to make

water is incessant; and by the incessant call to action, a general inflammation of the bladder is at length produced. Certainly we do not find the excessive and general inflammation of the bladder to be accompanied with so remarkable an increase of that kind of irritation, which is attended by the desire to make urine.

This sensibility, concentrated in a spot, is neither accidental nor morbid. It proceeds from a nerve distributed here, and which has its branches ramifying to all the muscles engaged in the act of passing urine. The immediate effect of the exercise of this sensibility, is the action of the muscles of the ureters, and the relaxation of the sphincter; but by the connexion of nerves, there is, at the same time, a consent widely established among numerous muscles engaged in the act of discharging the contents of the bladder.

Of the Action of the Muscles which surround the Neck of the Bladder and posterior Part of the Urethra.

The action of the muscles at the neck of the bladder is a subject which will appear the more curious the more deeply we consider it. That the matter is somewhat intricate, will be evident on a mere enumeration of muscles: 1. The proper internal sphincter of the bladder. 2. The compressor prostatæ. 3. The levator ani. 4. The le-

vator or compressor urethræ of Mr. Wilson. 5. The ejaculator seminis. 6. The internal and oblique perineal muscles. These are all of one class: they must relax by consent with the sphincter, else the urine cannot flow. They may be said to be of the class of sphincter muscles. Their opponents are the detrusor urinæ, or muscular coat of the bladder, and (in consent with it) the abdominal muscle and diaphragm. The irritation of the glottis does not more necessarily (by the consent established betwixt the eighth pair of nerves, and the other respiratory nerves) call into action all the muscles of expiration, than the sensible spot at the neck of the bladder does these muscles of the perineum.

However remotely the muscles acting in the discharge of urine be situated, they are drawn into combination by nervous connexions, having their centre at the neck of the bladder. This may not be so easily admitted, until we reflect how extensive the combination of muscles is in connexion with other organs. If the glottis be irritated, the muscles of respiration will be combined in the act of coughing: but if the membrane of the nose be irritated, these muscles will suffer a different arrangement, and the air will be directed through the nose in sneezing: or if the pharynx be tickled, the same muscles will enter into a different combination in the act of vomiting. Much in the same

manner the muscles of the neck of the bladder will be called into one arrangement, as in passing the urine, or into another, as in ejecting the semen; and the difference will be according to the seat of the irritation: if it be in this spot, within the neck of the bladder, the parts will be excited to expel the urine: but if the sense which seems principally seated in the seminal caruncle be excited, the venereal orgasm will be brought on, and the arrangement of the muscles will be quite different.

When we consider the complication of muscles employed even in the simple act of passing urine, we cannot be surprised that the flow should be very frequently stopped by the mere derangement of their natural association, without any mechanical* or permanent obstruction; or that, when there is a certain degree of mechanical obstruction, there should be consequent upon it an addition of spasmodic obstruction†.

* I use this word to distinguish the obstruction of urine which is occasioned by stricture, by pressure against the tube, by stone in the urethra; from such contractions, spasms, or paralysis of muscles, as sometimes produce a similar effect.

† For the derangement of the seminal discharge, consult Samuel Sharp's Critical Inquiry, fourth edit. p. 163. It requires only that there should be a want of contraction in the proper sphincter of the bladder, to account for the semen falling back into the bladder, while a derangement of the associated action will delay it in the urethra.

Since Mr. Bell wrote this paper, I have discovered that the membranous part of the urethra is supplied with a spongy body

Of Incontinence of Urine.

Is it beneath the dignity of the subject to inquire why children pass urine in bed? Many a little urchin might be spared his flogging if the very simple cure was known*. I remember to

of the same structure as the proper corpus spongiosum. It has an eminence somewhat analogous to the bulb: as this eminence is anterior to the sphincter muscle described by Mr. Bell, and as it is erectile, it will be enlarged, while the penis is in a state of erection, so as in union with the sphincter of the bladder to form a complete obstacle to the passage of the semen back into the bladder. The semen will consequently be driven into the channel which is formed between the two columns of the internal spongy body. I have described this part at length, in the second part of the tenth volume of the Medico-Chirurgical Transactions; and have there hazarded the opinion, that the circumstance of the regurgitation of the semen into the bladder, in some cases, may be in consequence of an imperfect erection of the internal bulb.—J. S.

* To what a horrible extent the system of frightening children, in order to break the habit of wetting the bed, was carried in France, may be seen by the following quotation from Desault, in which he tells us they were forced to crush live mice in their hands, and obliged even to sit by the bed of a dying person. "La crainte les rend plus attentifs au besoin d'uriner et fait qu'ils epient en quelque sort le premier aiguillon qui annonce ce besoin. C'est à cette manière d'agir, que l'on doit rapporter les guérisons qu'ont produit une foule des moyens plus effrayans, les uns que les autres; c'est ainsi qu'on a vu des enfans être pour toujours delivrés de cette incommodité en leur faisant ecraser des souris vivantes dans les mains, en les faisant assister au lit d'un mourant," &c.—J. S.

have seen a child brought into the hospital, where a cord tied round the penis, to spare the jade who attended him the trouble of raising the child from bed, had cut through the urethra. Boys have been made miserable, during what should be the happiest period of life, from this circumstance alone. I have known a man of twenty, kept from a public education owing to the same cause. And very lately a young gentleman confessed, that when visiting neighbouring families in the country, he was under the necessity of sitting up all night, lest he should disgrace himself by passing urine in bed. If all this will not prove the importance of the matter, I can add a case more professional and grave:—I have known a young man suffer a long and painful attendance on a surgeon, going through a course of medicine, with the use of bougies to remove this complaint, which he might have got rid of, as I shall show, by turning himself round. This occurrence never takes place, but when the boy is asleep upon his back; and the cure is a simple one: he is to accustom himself to sleep upon his face or side; the urine is not passed, nor is he excited to dream of making urine while he keeps this position.

The circumstance is unaccountable, until we reflect on the position of this master spring of the muscles of the bladder; the sensible spot a little behind and below the orifice of the bladder. When

a person lies upon his belly, the urine gravitates towards the fundus; but when he lies on his back, it presses upon this sensible spot, and distends that part of the bladder which is towards the rectum. If, when the bladder is full, we press upon the lower part of the belly, we feel very distinctly that the pain excited is in this spot near the orifice of the bladder. If, in a morning when inclined to sleep, we are sensible of a similar pain, and a desire to make urine, by a change of posture, turning so as to lie on the belly, the sensation, and the necessity of rising, is removed. When a child wets the bed*, it is in consequence of a

* The following extract from Richerand will show how little this subject has been understood. "Ordinairement l'incontinence des urines se lie à la faiblesse generale qu'il faut combattre par l'usage des antiscorbutiques et des amers, l'exercise, &c. Les frictions irritantes sur les lombes et la region hypogastric, l'application des vesicatoires sur les mêmes parties, l'usage des toniques, les bains froids, un regime fortifiant, doivent être conseillés." What tortures a poor child is to be put to, to make him strong, at a time we see him running about during the day, in all the delight of full health and strength! But even all this is unavailing, and a bandage on the penis is recommended; but it is confessed, that "l'application n'est pas sans danger. Il peut arriver que l'enfant profondément endormi ne se reveille pas qu'au moment où la vessie est paralysée par l'effet de sa distention excessive."

It must not be forgotten, however, that there are cases in which the boy makes water very frequently, even through the day, without suffering much irritation. In such a case, the boy may be obliged to retain his water longer, by compressing

dream, excited by the irritation of this sensible spot of the bladder, by the urine resting there, and stretching the bladder; it is cruel to chastise the child; and raising it frequently to make water does not mend the matter. But if the child be made to lie on the belly, or inclining to that position, with the cheek upon the pillow, the habit will be broken.

Boys are subject to a more serious incontinence, troubling them night and day, attended with inflammation and pain, and all the symptoms of stone in the bladder.

Stillicidium urinæ from want of action in the sphincter muscles, is generally owing to the same cause, an increased sensibility of this spot of the bladder.

The peculiar Sensibility of the Neck of the Bladder, and the continued Irritation of the Muscles, occasion Abscess around the Prostate.

An inflammation of the membrane of the fauces will cause suppuration in the duplicature of the arches of the throat. A long-continued inflammation in the membrane of the larynx will produce very dangerous suppurations about the

the urethra: by a careful distention of the bladder and by gradually increasing the interval of making water, the bladder may be at last brought to contain its natural quantity.—J. S.

cartilages of the larynx. Irritation long continued at the anus will produce abscess and fistula there. Now, the natural susceptibility of the spot behind the orifice of the bladder is very great; and in its morbid derangement, exquisite. The consequences are sometimes very alarming, and always exceedingly distressing: I mean the formation of abscesses around the prostate gland and vesiculæ seminales. I do not know a complaint more painful and exhausting than this, or one which we are more apt to mistake, or which it is more difficult to remove. How frequent and destructive the complaint is, may appear from the specimens in my collection*.

This disease is marked by frequent and painful calls to make urine; by a burning sensation and violent spasms after the urine has been discharged. There is, also, pain in the extremity of the penis as in stone. It is attended with a purulent discharge from the urethra, not continually and in small quantities, but at irregular periods and copiously. The patient is subject to cold shivering and fever; and he is pale, harassed, and wasted. On introducing a bougie, there is violent pain as it enters the neck of the bladder, and it comes out smeared with matter, and, perhaps, bloody matter. On examining per anum, a thickening is felt around the

* See Cases in the Appendix.

prostate gland or vesiculæ; and the patient experiences pain when you press against the part.

The causes of this complaint are violent inflammations in the urethra, aggravated by free living and debauchery, and by irritating injections, the unskilful use of bougies, caustic, and cantharides: but most of all, I fear it, in a scrofulous constitution *.

Treatment.

The treatment of this complaint must be on the principle of diminishing inflammation; for which purpose we must lessen the irritability of the part, diminish the vascular action, and dilute and change the quality of the urine, so that it shall be less stimulating and acrid. The means are, laxatives; the application of leeches to the verge of the anus; emollient and anodyne clysters; mucilaginous drinks, to dilute the salts of the urine; as decoctions of althea, infusions of linseed, or of the gums, with emulsions; to which may be added, the alkalies and opiates. I have sometimes ordered, with advantage, the introduction, by the patient's finger, of a mercurial cerate; which is to be rubbed upon the anterior part of the rectum. But all these are of less consequence than

* See the Chapter on the Introduction of the Catheter.

The Injection of the Bladder.

Owing to circumstances, to which it is needless now to revert, the practice of injecting the bladder was not favourably recommended to the English surgeon. I have found it a very effectual means of relieving the irritation at the neck of the bladder.

1. In stricture of the urethra, it is well known that sometimes the unfortunate patient cannot make a drop of urine without introducing a bougie into the passage. The occasion sometimes recurs so frequently, that the canal is hurt by it. A patient has been known to thrust a straw into his urethra, and thus, by the substitution of actual pain, to relieve himself from a morbid irritation. On most occasions, but especially in this condition of the neck of the bladder, the bougie is a dangerous instrument in the hands of a patient. But it is sufficient on these occasions to throw up a little tepid water into the urethra. The presence of the injection brings on the consent of parts, and is followed by discharge of water, with relief. Instead of putting bougies into the hands of a patient, I have made him furnish himself with a small elastic gum bottle, with which he could inject two ounces of tepid water into the urinary canal, when suffering irritation and retention.

2.* During the fit of stone, by injecting tepid water, the bladder may be distended, and the stone removed from the sensible spot of the neck of the bladder. If two or three ounces of fluid be very slowly injected into the bladder, the excess of pain will be immediately mitigated.

3. But it is in the case of inflammation and irritation within the neck of the bladder, that this injection is of the most essential service; and I much wonder, that the practice has obtained so little. During last year I have used it in five cases. Two of these were old gentlemen, who had symptoms of stone, and who had been repeatedly sounded, without detecting the stone; the bladder was regularly injected, and their pains were sensibly relieved, but not permanently: however, in both these cases, after using the injection, the stone was detected by sounding, and they afterwards submitted to the operation of lithotomy. Two of these patients were boys; who suffered cruelly with all the symptoms of stone. The first of these was a

* The French have been always very partial to the use of injections, although Chopart says, that sometimes the mildest injection will produce irritation in the inflamed bladder. The French surgeons recommend different kinds of mucilaginous injections; but Mr. Bell has found so much benefit from the injection of warm water alone, that he has been unwilling to risque the deposition of any solid matter from a compound injection.—J. S.

dwarfish boy, who was brought into the hospital with the suspicion of stone: he was sounded twice, and no stone discovered. Some months after, he returned with the same complaint; a painful and frequent call to make water, with pain in the extremity of the penis. He was put under the charge of a dresser, to have the bladder injected. He expressed himself relieved from the first; gradually more and more water was admitted into the bladder; every day the bladder could contain an increased quantity of water; and, after some weeks, he was dismissed well.

Soon after, I put a private patient under the care of the same apprentice, who had occasionally injected the former. This was a boy of twelve years of age: he, also, had been sounded. His complaints were, pain in the bladder; frequent and uncontrollable desire to make urine; and pain in the extremity of the penis: he was pale, and had a face of suffering. I was tempted to sound him; but I found no stone. I therefore ordered the bladder to be injected every morning. In a short time, the bladder could contain more water, and the frequent and urgent calls to make water diminished daily; the bladder, from being incapable of containing a wine glass full, came to hold more than a pound; the boy slept the whole night, without making water; and, in the end, the father

brought him, to make his acknowledgments for the cure *.

The fifth case furnished an instance of those extensive suppurations around the neck of the bladder, which we see in scrofulous habits. The patient was thin, pale, exhausted, and hectic. For the disease is as much consumption, as if the suppurations were in the lungs. A thin, copious, purulent discharge came at all times from the urethra; he was not benefited by the use of injections, but he came from a distance, and probably did not execute my instructions.

Above all, I recommend the injection of the bladder in the commencement of the disease called uvula vesicæ. When there is an inordinate

* This boy continued well for some time; but the irritation returned, and was accompanied with great pain in the loins. It was now evident, from the purulent matter which the boy passed with the urine, and from other symptoms, that he had abscess in the kidney. The injection of warm water still gave him so much relief, that although his mother could not in any way induce him to move from his chair, he, of his own accord, continued to come from Oxford Street to Windmill Street twice a day, to have his bladder injected.

But the scrofulous disease of the kidney continued, and at last wore him out. The kidney gave an extraordinary example of the destruction of the gland by abscess; and so much had the bladder been irritated by the lodgment of the matter, that there was actually an enlargement of the middle part of the prostate, which is generally considered to be a disease incident only to old men.—J. S.

irritation of the sensible spot at the neck of the bladder, nothing is so likely to allay the irritation.

The rationale here is obvious enough. We sooth the irritability of the part, by substituting the tepid water for the acrid urine. In the natural state of the bladder, the surface is not susceptible of the stimulus of the urine, or only in a due degree; but when inflammation attacks this sensible spot, the acrid urine becomes a continual source of excitement, and the muscles have no rest to recover themselves. By gently and gradually filling the bladder with tepid water, a longer interval of rest is afforded, and the detrusor urinæ relaxes; and when the urine, filtering from the ureters, distends the bladder, in addition to the fluid already in it, the urine is so much diluted, and so much less acrid than usual, that the bladder is only stimulated to contraction by distention, and not by the presence of the acrid urine. Besides, by this injection of the bladder, the ropy mucus and the purulent secretion, when there is any, are washed away, and that sort of tenesmus vesicæ, caused by their presence, is relieved.

CHAPTER II.

IN WHICH THE CASES ARE DESCRIBED WHICH REQUIRE THE URINE TO BE DRAWN OFF BY INSTRUMENTS; AND OF THE OPERATION OF THE CATHETER.

The occasions which require the use of instruments to draw off the urine, are,

1st. Paralysis of the bladder — when it partakes of the insensibility of the lower part of the body.

2d. Spasm and irregular action of the muscles at the neck of the bladder.—This want of consent among the muscles of the pelvis, may proceed from a variety of causes.

3d. Injury committed on the perineum, as by falls and kicks—where, in consequence of the rising inflammation and the swelling, the urine is obstructed *.

4th. Disease of the rectum †, or operations performed there—when the pain and irritation disorder the action of the muscles at the neck of the

* This case is fully explained in the Chapter on Rupture of the Urethra.

† See the Chapter on Diseases of the Rectum.

bladder, and cause obstruction of urine. To these may be added, the plugging up of the urethra by the passage of a small calculus: for examples of this see Cases in the Appendix.

5th. Extravasation of blood compressing the urethra *.

6th. Disease of the prostate gland.

7th. Stricture of the urethra; which, although not sufficiently close to obstruct the urine altogether, yet being attended with inflammation in the canal, and consequent spasms in the surrounding muscles, there is a distention of the bladder, and an inability of expelling the urine.

The case of Paralysis, which is here first enumerated, is one of peculiar importance to the surgeon; and with regard to it, very terrible mistakes have been committed. For, as the distention proceeds from insensibility, the patient makes no complaint; and the bladder may be distended until it burst. An injury to the spine may be the cause of this insensibility; so that when called to a patient who has suffered a fracture of the spine, or even only a concussion, the first inquiry the surgeon makes, is whether the urine has been passed since the injury.

* This case is explained in the Chapter on the Rupture of the Urethra, where the case of retention, in consequence of a clot of blood in the bladder, is also given.

But there is another sort of paralysis which the urinary bladder suffers, from a cause not at first apparent to the young surgeon. If the bladder be distended and the muscular fibres stretched beyond their natural and due limit, the bladder cannot be emptied by its natural effort; and thus the simplest case of over-distention, even where there is neither disease, inflammation, nor obstruction of any kind in the urethra, becomes at length formidable.

For example, the following is a frequent occurrence:—A gentleman, being in the company of women, through false modesty remains, although he feels great inclination to make water: for some time the call is more and more urgent; but at length it is more bearable, and he continues in his seat. When, at last, he has the opportunity of retiring, he thinks he shall empty his bladder, but not a drop of urine flows. The muscular coat of the bladder has lost all power of contraction: but this is not all: for were it only the loss of power, he might make water by calling in the aid of the abdominal muscles. The surgeon, instead of using the catheter, would only have to press the belly, if the defect was merely in the loss of power in the fibres of the bladder. While the *musculus detrusor urinæ*, or muscular coat of the bladder, does not contract, neither do the class of sphincter

muscles relax. Here, then, the urine must be drawn off by the catheter *.

Although the muscles of the female urethra be fewer, and the whole apparatus of urinary organs, as it were, simpler in their construction; yet we have the same effect in women, that is, a total inability of evacuating the bladder, when it is over-distended; although in all respects but the want of consent among the muscles, the ure-

* There is a good example of this given by Ambroise Paré: "Jeune serviteur qui revenoit des champs menant en croupe une honneste damoiselle sa maitresse, bien accompagnée et estant à cheval, luy print vouloir de pisser; toutefois n'osoit descendre; et moins encore faire son urine à cheval: estant arrivé à cette ville Paris, il voulut pisser, mais il ne peut nullement, et avait de les grandes douleurs et espreintes avec une sueur universelle, et tomba presque en syncopé, et alors l'on m'envoya quérir, et disoit on que c'estoit une pierre que l'enguardoit de pisser, et estant arrivé lui mis une sonde dedans la vessie et pressai le ventre, et par ce moyen tirait environ une pinte d'eau, et n'y trouvay aucune pierre, et depuis ne s'en est senty."—Book XVII. chap. 30.

In Hildanus there is a case somewhat similar, the subject of which was the famous Tycho Brahe: "Vir iste pius ac celebris cum Pragæ in magno quodam convivio, ultra vires et consuetudinem suam detentus, diuque urinam retinere coactus fuisset, postea reperto idoneo ad deonerandam vesicam loco, urinam amplius decernere non potuit; cumque inflammatio vesicæ subsecuta esset e vita ei excedendum fuit."—Many similar cases might be given, but these may be considered sufficient to mark the danger of retaining the water too long.—J. S.

thra be pervious. When a woman is taken in labour, and the child's head descends into the pelvis, and the occiput presses against the urethra; if either the bladder has not been emptied before the labour commences, or if the labour be tedious, and the child's head remains long in the position described, the bladder suffers distention: and it may be here observed, as another example of the extensive sympathy which exists among the viscera of the pelvis, that such a distention of the bladder impedes the action of the uterus and the progress of the labour; so that, to accelerate the labour, the urine must be drawn off. But to proceed with our illustration: when the state of the bladder has been neglected, and the delivery is at length accomplished; next day there is a fulness of the belly, the bladder is so distended as to rise above the pubes, it appears as if the uterus had resumed its situation. While the bladder is more and more distended every hour, still there is no obstruction in the urethra. The obstruction was temporary—it was occasioned by the child's head —that is removed—the difficulty now is purely from distention of the bladder, and the want of sympathy betwixt the detrusor urinæ and the sphincter; and simple as this case may seem, the bladder will continue to rise further and further until it bursts, unless the urine be drawn off, and

time given for the bladder to recover its powers of contraction.

Let the reader consider these causes of impeded discharge of urine before entering on those, where the obstruction is of a more complicated nature, and he will advance to the investigation of the latter cases with so clear an understanding of what is termed the spasmodic difficulty, as must save him from entertaining those blundering and confused notions that have but too extensively prevailed *. He understands, that when the muscles at the neck of the bladder are deranged in their action, simply by the distention of the bladder, the urine no longer flows. There is in one sense an *obstruction*. Must not the same cause prevail, more or less, in all cases of obstruction, whether from stricture, from the diseased prostate, or from any other cause that diminishes the tube of the urethra? And must not this additional and spasmodic obstruction vary with circumstances? Must it not also happen, that if we can manage

* The French writers class among the causes of retention, the metastasis of rheumatism or gout to the bladder. There can be little doubt that in some cases there is a rheumatic or gouty affection of the bladder; but Desault goes too far into the humoral pathology, when he supposes that retention may sometimes be in consequence of "une humeur contagieuse repercutée:" to relieve this, the patient is advised to catch the itch again, by sleeping with, or wearing the shirt of a person affected with the disease!—J. S.

to relieve these spasms, we shall be able to restore the stream of urine in many cases, although the original obstruction remain?

From what has been said above, it will come as a fair deduction, that the danger is not quite over when the urine is drawn off; that is to say, the bladder does not immediately recover its tone; it is liable to have the urine again accumulated in it. This is especially the case when the distention is occasioned by injury to the spine; and even when the accumulation has taken place from other causes, the patient's condition must be watched, for the catheter may be again and again required *.

* Desault gives cases of retention in old men, which he supposes to be simply in consequence of age: he says, " Tous les vieillards ne sont pas également exposés à cette maladie, elle attaque ceux qui sont d'un tempérament phlegmatique; les personnes replétes, sedentaires, les gens de cabinet, ceux qui par paresse, par negligence ou par vivacité ne se donnent pas le temps de vider jusqu'à la derniere goutte de leur urine; ceux qui urinent la nuit, étant couché sur la cote, au lieu de se lever ou de se mettre à genoux sur le lit, &c. La Physiologie des livres n'avouera peut-être cette derniere cause de retention; mais l'observation clinique l'atteste, et nous ne doutous pas de sa realité." After describing the progress of this case, from the first difficulty to the total retention, he says it comes on very gradually, and quotes in his favour Sabatier:—" Sabatier a vu des malades qui en étoient attaqués depuis six mois sans s'en douter. Le regorgement a souvent trompé au point de faire meconnoitre la nature de la tumeur. Le même chirurgien a été consulté pour une femme envoyée aux eaux pour fondre

The circumstance which tends most to deceive the inexperienced in the case of distended bladder, is, that while the urine is really accumulating in the bladder, it is dribbling off by the penis. This is what is called *stillicidium urinæ*, and it seems inconsistent with the obstruction of the urethra. Besides, the patient, at length, expresses a general uneasiness rather than a call to make urine; and the attendants, seeing the clothes wet, and the urine dropping away, think the sufferer cannot retain his urine; they have no longer fears of obstruction. Nevertheless more urine is secreted into the bladder than is discharged by the stillicidium; and while the attendants are dreaming of incontinence, the bladder* is distended more and more, until

une tumeur survenue à la suite d'un accouchement et que n'étoit autre chose que la vessie distendue par l'urine." Desault describes another case: "Retention d'Urine par Débauche." "Cette espèce de retention a beaucoup d'analogie avec celle qui dépend de la vieillesse; toutes deux ne supposent aucun vice pre-existant dans la vessie, et ne doivent leur origine qu'à un état de langueur et d'épuisement general." "Dans le premier cas, la maladie dépend d'une vieillesse tardive et naturelle, dans le second, elle est l'effet d'une vieillesse prematurée et contre nature."

We are not now disposed to give credit to these cases being independent of some irritation in the urethra or neck of the bladder: the principle of treatment will be similar to that laid down by Mr. Bell in the cases of over-distention.—J. S.

* In the progress of such a case the patient will have the true "Urinous Fever." He will have burning heat, great

at last it gives way, urine goes abroad into the cavity of the abdomen, and the patient is irrecoverably lost *.

Although it be possible for the bladder to be actually torn, by a fall for example, when it is very full (an instance of which occurred in the Middlesex Hospital), yet the term rupture is not very strictly applicable to the present subject. When the body has been examined after death in consequence of rupture from distention, I have seen three small ulcerated holes, with black edges, at the fundus of the bladder, through which the urine had escaped: they were not larger than might have been made by a probe thrust through the coats.

The statement of these consequences is sufficient to make a strong impression on the reader's mind. But he ought to be aware that there is a manner of death where the symptoms are more insidious, where he is more apt to be thrown off his guard, and yet the danger is as imminent. For we find that a certain degree of obstruction

thirst, rapid pulse, with an ammoniacal and urinous smell of the whole body, and the skin covered with a yellow and oily moisture. See Richerand's Nosographie Chirurgicale.—J. S.

* It must have been in this way that a distended bladder was mistaken for dropsy of the cavity of the abdomen, and Mr. Hunter employed to tap the belly in the usual way. Observations on the Diseases of the Prostate Gland, by Sir Everard Home.

in the urethra, not such as altogether to impede the urine, but only to irritate the bladder to powerful and frequent action, will at length bring on inflammation. There is great irritation, perpetual *nisus* in the bladder attended with fever, the patient is raised twenty times in the course of the night; at last there is delirium or frenzy, or still worse, oppression, and he is lost. He is lost in consequence of obstruction, although during life he was discharging the contents of the bladder every ten minutes, and although on dissection there are hardly a few ounces of urine remaining in the bladder; but the coats of the bladder are found loaded with blood, the effect of inflammation.

The cases which might be enumerated under the second head, viz. spasm and irregular action of the muscles at the neck of the bladder, would make a long list. It is particularly incumbent on tne surgeon to study this department, from the common occurrence of this cause of obstruction, as well as from the danger which attends it. We shall take a case which frequently happens.

A young man has had a gonorrhœa—he thinks he is well—he is so far recovered, at least, that he joins a joyous party of his friends—for the first time, since he has been under regimen, he takes his glass of wine freely. In the course of the evening he finds that he cannot pass his urine—he strains, but it is to no effect—the bladder becomes painfully distended—still he cannot relieve him-

self, and he becomes alarmed. In this state he comes to his surgeon—the motion of the carriage is painful, from the distention of the bladder—he complains of pain and contractions in the perineum and neck of the bladder. He says that at first he was able to make a few drops of urine, but it came scalding hot, it was squirted out as by a little dog, and now not a drop can pass. He is in great pain, his face is flushed, and his pulse throbbing.

What is more evident than this, that when the patient thought he was quite well, there remained a degree of inflammation far back in the urethra (that part so frequently affected in the latter stage of gonorrhœa), and that the same cause which has inflamed his face, has increased the inflammation of the urethra? The few drops of acrid urine, which came over the inflamed surface, have caused a contraction in the surrounding muscles. That spasm has checked the action of the bladder, and it is now no longer possible, without an operation, to bring the muscles to their natural sympathy. If the patient be left unrelieved, the bladder will become more and more distended, and the cause of obstruction explained in the last section will be superadded to the original spasmodic affection of the sphincter muscles.

It is said that in such a case we are not immediately to introduce the catheter; but that we

ought to bleed the patient, and apply leeches to the perineum, and fomentations, or put him into the warm bath. But I must confess, when I have seen a man in indescribable agony, moving about my room, with his body bent to an angle, and when I have understood that before this attack his urethra was free, and that now the bladder can be distinguished above the pubes, I have followed the dictates of common sense and common charity, I have done that, which I knew would immediately relieve him, and with perfect safety: I have introduced the catheter, and have drawn off the urine.

It may be asked, is there any reason in this aphorism in surgery, that when you can relieve a man at once, yet you are not to do it, but to bleed and purge? The rule has arisen from not making a due distinction of cases. If the cause of the sudden retention is a stricture in the urethra, then, indeed, it becomes a most delicate matter to pass instruments into the passage; for, if the attempt does not succeed, the symptoms are certainly aggravated. It is, therefore, in these doubtful cases, when the state of the urethra is not known, where there is stricture, or there has been some injury previously done to the membrane of the urethra, that we are to use all the palliative means to remove the spasm, and restore the stream of urine.

There is another view of this subject that demands attention. The inflammation of the bladder, which in some cases * is justly attributed to

* Desault attaches much importance to the diagnosis of this case. He says it is necessary to draw off the urine immediately; he objects to the catheter remaining in the bladder, as it would be a great source of irritation to the inflamed coats; but before withdrawing the catheter we ought to throw some mild injection into the bladder, the urine is to be again drawn off a few hours afterwards, and the injection to be repeated. This is a practice which Mr. Bell has frequently found to be of great benefit.—See the Chapter on the Sensibility of the Bladder.

Desault continues: If after all our attempts by tisans, diuretics, fomentations, &c. the inflammation continues, and hiccup comes on, the patient will certainly sink. Chopart gives similar cases; one of them is very likely to occur frequently: "Un jeune homme d'une forte constitution avoit une gonorrhée inflammatoire avec cuissons en urinant et des erections très douloureuses, &c. Un soldat qui s'étoit guéri plusieurs chaudepisses en buvant de l'huile de terebintine lui en fit prendre trois onces dans l'espace de 12 heures. Il survint une vive inflammation aux voies urinaires, le malade jettoit des cris perçants et faisoit de violens efforts pour uriner, cependant il ne rendoit point d'urine—le soir où m'envoya chercher pour le sonder, il n'avoit point uriné depuis 36 heures, son ventre étoit tendu, &c." Chopart drew off a pint and a half of urine "très chaude, rouge, et troublé." The patient could not bear the instrument in his bladder. It was necessary to repeat the catheter several times. At length, from continuing in an antiphlogistic and soothing plan, the patient got well. Chopart remarks upon this case, "Ce jeune homme a risqué de perdre la vie en prenant une dose aussi forte d'huile de terebintine. Cette substance très active, très échauffante, a irrité violemment la vessie et l'a en-

obstruction, and the consequent excitement of the bladder, may in other cases be the cause and not the consequence of the inactivity of the bladder. The bladder becoming inflamed, ceases to act, and prevents distention. This is an opinion supported by the authority of *Desault;* and certainly I must acquiesce in his reasoning, so far as regards the analogy of inflamed intestine; since I have again and again seen the inflamed gut refuse to contract upon the strongest purgatives. However this may be, in regard to the cause of accumulation of urine in the bladder, the practice will not materially differ. The urine must be evacuated by the catheter, and means used to sooth and diminish inflammation *.

On the supposition that there is something more amiss, than a spasmodic and irregular action of the muscles at the neck of the bladder, that there is a stricture suddenly aggravated by increase of inflammation, or, perhaps, an inflammation brought on by the rude and improper employment of instruments (and it must be confessed, this is the most frequent of all the causes of ob-

flammée au point de la rendre impuissante à la contraction." This case is analogous to that described by Mr. Bell, where the inflammation of the urethra, after gonorrhœa, causes spasm of the muscles at the neck of the bladder.—J. S.

* See the Chapter upon the peculiar Sensibility of the Bladder.

struction), we are to try to sooth the parts. The means are: 1. *Bleeding*. And general bleeding may be had recourse to, when there is much flushing of the face, with pain and rising fever, and throbbing in the part. Only be it remembered in cases of this kind, that irritation will often assume the character of fever; and if we bleed unnecessarily, we shall reduce the patient too low. Local bleeding is more certain to do good, and cannot do harm. Leeches may be applied to the verge of the anus, or the patient may be cupped in the loins.—*Bathing*. After the pulse is reduced, the warm bath will be of advantage; but in general it will be sufficient that the patient sit down in warm water. Even bathing the hips and scrotum and penis with a large sponge and warm water, will be attended with relief; for there is a direct sympathy betwixt the external surface, and the muscles of the perineum.—*Clysters*. Large clysters of tepid water and oil, are of great benefit in these spasmodic attacks. After procuring stools, the opiate enema made with starch or barley decoction, and 50 drops of laudanum, will relieve the grinding pain and irritation. These are the immediate and obvious means, and they may be followed with the Dover's powder and the tepid bath, with tepid mucilaginous drinks, as of the compound decoction of marshmallows; and a mixture may be given

from time to time, in which tincture of opium, æther, and the liquor potassæ are ingredients.

But the question returns upon us, when these means fail to restore the stream of urine, what is next to be attempted? If the state of the urethra be such, as to make the introduction of the catheter improper, the simple bougie may be used. The reader must now distinguish two things, very obvious to reason, we might say, were they not perversely confounded every day. The stricture has diminished the canal, and in a degree obstructs the urine; but the present distress is from a superadded difficulty arising from the deranged action of the muscles. It is this latter circumstance that is now to be attended to: we must relieve the spasm, and let the original stricture remain, until by time, and perseverance in other means, it can be removed.

Operation of drawing off the Urine by the Use of the Bougie.

It is not the hollow elastic bougie of which we now speak, but the common soft wax bougie. It is to be introduced into the canal, not to draw off the urine through it, but only to bring back the muscles to their natural action, and thereby to cause the urine to flow naturally by the urethra. The patient should be standing, or resting on his knees, if he is in bed. Take a wax bougie, oil it,

soften it, give it the proper curve to pass the turn of the urethra, introduce it into the bladder; now make gentle pressure above the pubes; make the patient exert himself to discharge the urine; sprinkle cold water on his thighs; withdraw the bougie while he continues the effort; and when he has the sensation as if he could pass the urine, withdraw the bougie altogether, and the urine will probably flow.

Even if there should be a stricture preventing the introduction of the catheter or of the bougie, the patient may be relieved by the operation of the bougie, and time obtained for soothing the bladder or destroying the stricture.

Place the patient as before; take a small bougie, introduce it into the stricture, press gently for some time, until the bougie, if it be soft, has moulded itself in the stricture; or if it be of catgut or elastic gum, until it has entered and wedged itself into the stricture. Now press gently upon the belly; make the patient exert himself to pass the urine; put his hands in cold water, or sprinkle cold water on the thighs; slowly withdraw the bougie, and the urine will generally follow the instrument.

Such means failing, we must have recourse to the small catheter; and this also failing, the case resolves itself into that, which is hereafter to be treated of.

Of the Operation of the Catheter.

The surgeon ought to have by him, catheters of silver and of elastic gum, of all sizes, and of various curves. The general fault of these instruments is, the great length of the extremity beyond the curve, which makes it difficult to accommodate the instrument to the course of the urethra. Yet we ought to have such a catheter with a prolonged extremity beyond the curve, as it is particularly required in the case of obstruction from enlargement of the prostate gland.

In selecting the instrument to be used, take that which has a proper curve, a full round extremity, and which is of a size to pass easily through the orifice of the urethra, filling the orifice, but not painfully stretching it. Lay the catheter in a basin of warm water, oil it. If the patient be in a condition to do so, he ought to stand before the surgeon, with his back to the wall. In this position of the patient, the surgeon will find that he can introduce the instrument with least uneasiness to the patient when he carries the convexity of the catheter towards the pubes. That is to say, the curve of the instrument will correspond better with the natural position of the penis, and he will introduce it to a certain length with less alarm to the patient. But when the point of the catheter has arrived in the sinus of the urethra, or, in other words, in that part of the canal which is in the perineum, he must turn the instrument round, so as to bring

the curve of the catheter into a just correspondence with the natural turn of the urethra, and so as to have the concavity of the catheter towards the os pubis.

But here it must be confessed, that notwithstanding the old writers make much ado about this turn of the catheter, calling it the *tour de maitre*, it has nothing to do with the real difficulty in introducing the catheter; for, as the delicacy of hand required in this operation is to pass the instrument at once through the narrow part and the sudden turn of the urethra, this difficulty is still to be encountered after we have twisted the instrument round in this knowing and seemingly dexterous method. Accordingly, the catheter may be introduced without the affected *tour de maitre*, by resting the edge of the hand on the left ilium of the patient, and introducing it at once in one uniform light motion of the hand, carrying the concavity of the instrument towards the os pubis through the whole course of the canal until it enters the bladder. This manner of introducing the catheter will be found the best, when the patient is lying supine in bed.

Except from extreme awkwardness, the surgeon should not encounter any difficulty until the extremity of the catheter arrives at the curve of the urethra, which is just under the arch of the ossa pubis*. Here, very often, the end of the catheter meets

* The reader is now recommended to look to Plate I. and read the explanation.

with an obstruction; a sort of elastic resistance to the entrance of the instrument is felt. This, however, may be called a natural obstruction, since it is from the point of the catheter lodging in the sinus of the urethra that the interruption is felt. See Fig. 2, Plate I. Where the canal is braced up by the ligament of the urethra, the point of the instrument is apt to catch up a fold of the membrane; and if the instrument be forced on, the membrane is torn, and a false passage is made. By merely lowering the handle of the instrument, the further extremity may be raised, so as to start over the fold; but this is not the proper manner of disentangling the point. The instrument should be withdrawn a little, and the point carried onward on a higher level, or so as to make the point press along the upper part of the canal, and consequently avoid the natural obstructions, which are all on the lower part of the urethra.

However, the better method of performing this part of the operation, is this:—When by an easy sweep of the hand, finely adjusted to the course of the canal, we do not succeed in passing the catheter through this part, we must take the catheter more firmly in the fingers of the right hand, and laying the three fingers of the left hand along the perineum, we must press deep, just anterior to the anus; and then, without lifting the fingers from the skin, we must draw the whole in-

teguments forward, as if our purpose was rather to draw the urethra over the instrument, than to carry it through the obstruction; and when this is done, let the fingers in the perineum be as a fulcrum and the catheter a lever; and now pressing down the handle of the instrument a little, the further extremity will be raised, and pass over the obstructions.

Some of the old surgeons give very good advice, in telling us to study to attain a correspondence between the left hand which holds the penis, and the right in which is the catheter. I have been told that the catheter is to be introduced by pulling on the penis, as a fisherman would worm his hook. By this singular illustration, they have probably felt the necessity of drawing forward the parts as I have described above.

But besides the first natural obstruction which occurs in introducing the catheter, there are two other points of its progress, at which the extremity of the instrument may be entangled very much, in the same manner as in the sinus of the urethra. The second natural obstruction is, where the membranous part of the urethra joins the prostate gland; for here too, there is a ligamentous band or fascia, which ties the fore part of the prostate gland to the ligament of the pubes; and before the ligamentous band, which surrounds the urethra at this part, the extremity of the catheter may be

entangled. See 2, Fig. 2, Plate I. There is a third point where a similar interruption may be met with, that is just before the interior and proper sphincter of the bladder. The instrument may sink into this dilatable part of the canal which is within the prostate gland, and be hindered from starting over the band which divides the urethra from the cavity of the bladder, and marks the commencement of the urethra when we trace it from the bladder forwards. See 3, Fig. 2, Plate I.* In these three points where the extremity of the catheter may be as it were entangled, and which I call the *natural obstructions* to the passing the catheter, the means of overcoming them are the same. In the second and third point of obstruction, if the surgeon cannot succeed by withdrawing the instrument and carrying it on higher, he must introduce the finger into the anus, and make it the fulcrum, or central point of movement for the instrument, so that the further extremity may be raised and directed over the prostate and into the orifice of the bladder.

When, owing to the narrowness of the urethra, from stricture, we are under the necessity of

* It has happened in a case where the prostate was slightly diseased, that the catheter has been pushed on here, and has passed through the substance of the prostate and entered the bladder, posterior to the union of the muscles of the ureters.—J. S.

using a catheter of small diameter, the point is much more apt to encounter natural obstructions, and at other parts of the canal, besides those described above. Indeed, if the point of the instrument be small, it will fall into the lacunæ and be entangled there; for the edges of those little sacculi are like valves of veins, and readily catch the point of a catheter or bougie if they be not of a full size. When this occurs, it will not do to persevere and force the obstruction; the instrument must be withdrawn, and carried forward with its point rubbing along the opposite side of the passage to that, where the lacuna was encountered. We must, in short, feel our way, and still avoid all violence.

Of the Introduction of the Catheter in the Case of enlarged Prostate Gland.

It is impossible to touch upon the subject of diseased prostate without going a little deeper into the matter. It will be admitted that English surgeons are very bold; and if there be a method which promises to be a shorter road to success, that they will take at all hazards. There is not a young man who does not prefer the caustic to all other means of relieving the bladder; and if it shall be proposed to destroy the stricture at once, by breaking it down, with what avidity does he seize the occasion! hence those iron pokers imported,

they say, from France, which ornament the window of my neighbour Mr. Thomson, and which they call bougies! Advantage was never gained by violence in this class of complaints.

We may divide the diseases of the prostate gland, and arrange them under two heads: first, those inflammatory affections which are a consequence of the irritation of neighbouring parts, disorders to which men of all ages are liable; and secondly, those still more formidable diseases to which the gland is subject in the latter stage of life. The disorders under the first head are very frequent, and produce great distress. We frequently follow the progress of a case in this manner: a patient, after a tedious and imperfectly cured attack of gonorrhœa*, will occasionally have a copious discharge of purulent matter,—occasionally, because the discharge is not as from gonorrhœa; it cannot be squeezed from the urethra: it does not flow regularly: it is not every morning that it is found to cover the linen. There is great irritation about the neck of the bladder, frequent call to make water, sometimes pain in the glans penis. If the bougie should be introduced, it is attended with a burning sensation when passing the neck of the bladder; and when it is withdrawn, much bloody mucus and pus fol-

* See more of this subject in the Chapter on the *Sensibility of the Bladder*.

lows. If the prostate gland be examined per anum, it is full, one lobe feels much larger than the other, and there is an induration and irregular hardness perceptible in the seat of the prostate gland and vesiculæ seminales.

What has taken place to produce these effects? There has been a gonorrhœa of the ducts of the prostate; the inflammation originally seated in the membrane of the urethra has spread back to them; the gland itself has also become inflamed, and suppurations are established in the surrounding cellular substance. It is by thrusting the point of the instrument into the prostate, and opening these bags of matter, that the sudden and copious discharge of pus and bloody mucus follows after an attempt to use the catheter or bougie. There is little doubt in my mind, that this disease is one of the evils following gonorrhœa in a scrofulous constitution. It is difficult of cure, and severe and harassing to the patient. Indeed I think I may say I have seen consumption, where the neck of the bladder was the chief seat of the complaint.

The cure of this distressing disease is to be accomplished by persevering in all the means of allaying irritation. The bowels must be kept easy and natural. The occasional attack of irritation must be soothed by opiate clysters and suppositories, the warm bath, and by mucilaginous drinks, and

by leeches applied occasionally to the anus. Here I have found the injection of the bladder to be of the greatest advantage*, and also friction on the part, with ointment introduced through the anus upon the point of the patient's finger.

This state of the neck of the bladder being attended with burning and irritation will sometimes be followed by spasm and difficulty of passing the urine; and here, if we are to attempt the introduction of the catheter, it must be done with great caution. The ducts of the prostate are enlarged, and the point of the instrument is apt to fall into them, or into abscesses formed in the substance, or by the side of the gland, and which open into the urethra.

The last case we have to consider, in which the catheter is required, is that where the prostate gland is scirrhous and enlarged. It is indeed a formidable complaint.

When this disease attacks a patient, it is after much uncomfortable feeling in the pelvis, in the rectum as well as in the bladder, with sympathetic pain and uneasiness in the hips, perineum, and pubes. The fæces are passed with some difficulty, and the figured stool is flattened. The patient thinks he has got a contracted bladder, and an incontinence of urine; he is positive that he expels

* See what is said on *injection* of the *bladder* in the Chapter on the *Sensibility of the Bladder*.

the last drop of urine, when there is a pound or two contained in the bladder. It surprises the patient very much, when, after making him strain, as he says, to pass the last drop of urine, we introduce a catheter, and draw off two or three pounds *. The surprise is attended with this advantage, that he is convinced of his own imperfect judgment, and becomes docile and submissive to that which is dictated by his unfortunate condition.

The prostate gland may in this disease be generally enlarged †, and then the urethra is pushed upwards. The gland may be indurated and enlarged on one side, and then the canal is

* The question has been much agitated, whether the bladder should be completely emptied at once, or a certain quantity be left, or the catheter be allowed to remain, so that the water may constantly flow. The following remarks of Desault appear very good:—"Nous croyons donc qu'il vaut toujours mieux donner issue à la totalité des urines, pousser même des injections dans la vessie pour la nettoyer des matières muqueuses et puriformes qui pourroient y être déposées, fermer ensuite la sonde ou la retirer, et n'evacuer de nouveau l'urine que lorsque il s'en sera amassé une quantité suffissante pour etendre moderément les fibres de la vessie. Ces alternatives d'extension mediocre et de relachement font sur ce viscere ce que fait l'exercice modéré sur les autres parties du corps." The reader is referred to the Chapter on the Injection of the Bladder, where he will find some cases given by Mr. Bell, illustrative of the good effects of that practice.—J. S.

† See Cases in the Appendix.

twisted laterally; there may be an enlargement of that surface which is towards the cavity of the bladder, and then the catheter is directly opposed by the tumour, when the point is entering the bladder. Some idea of the condition of the gland may be formed by examining per anum. Let the patient stoop forward: the fore finger of the surgeon being oiled, and introduced into the rectum, the swelled gland will be at once discovered (in this position) below the finger. But I have so often found the patient falsely alarmed, on account of a supposed disease of the prostate, that I must conclude there are many surgeons to whom the feeling of those parts is not familiar. It does indeed require, that they should have both an accurate recollection of the relation of the parts, and of their natural size, to make proper diagnosis. If the great body of the gland should not be enlarged, the surgeon ought to examine the state of the posterior lobe of the gland *. This he may do by pushing the finger still deeper, and feeling through the coats of the bladder. It must be confessed, that it is a thing difficult to ascertain; and yet by the fulness, in conjunction with the symptoms, we may be enabled to form an opinion. We shall

* See Cases illustrative of each of those diseases in the Appendix; and the drawing of the disease in Plate III. of the folio edition of the Morbid Anatomy of the Urethra.

be much assisted in this investigation by having the catheter in the bladder.

In the true disease of the prostate, it may be recollected, that although the patient does not complain at the time we feel and press the gland in the examination, yet some time after the operation, he does feel very distressingly, the gland being, in its sensibility, like an internal part, where the pain of pressure arises some time after the finger is removed.

From what is delivered above, we see that the surrounding cellular membrane may be inflamed and swollen; and this we are, if possible, to distinguish from the more formidable disease of the body of the gland.

The remedies in the case of enlarged prostate, may be considered under the three heads, medicine, local applications, and the use of the catheter.

I hope it is understood through the whole class of these diseases, that any thing lodging in the rectum, or great intestines, will closely mimic the symptoms of disordered bladder, and greatly aggravate the symptoms when they really proceed from disease in the urinary passages*. Therefore the bowels should be moved, and the fæces softened by a mild laxative; and their regu-

* See the Chapter on Pain and Irritation, &c.

lar operation should be secured by a large clyster of tepid water every morning: this should be done, not only to procure full evacuations, but that the parts in the pelvis may not be teased for the rest of the day. We shall find a pill composed of the pil. hydrargyri, the extract. conii, and the extract. colocynthidis, a combination that will answer the indication in this complaint. The Dover's powder is here also conducive to allay inflammatory action; so is the use of the tepid bath. The patient should be cupped upon the loins, or have leeches applied to the margin of the anus, when there is unusual pain and irritation, or sense of fulness in the part, and afterwards the injection of an opiate clyster, or the introduction of a suppository. In this case the catheter must be employed, and upon the following principle: the sensibility which controls the bladder in its action, is not seated generally in the coats of the bladder, but at the neck of the bladder, a little below its orifice. It is the high excitement of this part, which causes the swelling and protrusion of the middle part of the prostate gland into the cavity of the bladder; certainly there is no rest to the part diseased*, while this excitement continues. It must continue while the bladder is full of urine; and therefore, to relieve the part from this incessant irritation, the catheter

* See the Cases in the Appendix.

must be used, and the urine drawn off regularly. It will also be of essential service in this disease, to inject the bladder with tepid water, so as still further to sooth the irritated part. See the Chapter on the Sensibility of the Bladder.

The use of the catheter in disease of the prostate gland is an operation of great delicacy; for, by abrading the surface, and tearing the soft membrane of the passage, which is very likely to happen to a heavy hand, the source of irritation is increased; and where an impression has once been made with the point of the instrument upon the surface of the tumour, there the point will hit again and again every time it is introduced, the surface will be kept raw and ulcerated *, and a false passage will be at length formed †.

* The reader should here turn to Plate II. and read the explanation.

† Desault's rule of practice, in this case, is exceedingly bad. He says, when this obstruction is felt, instead of withdrawing the instrument to try a new course, the point of the catheter should be pressed against the part, because, says he, the pressure of the beak of the instrument will subdue the swelling of the urethra, which is caused by a varicose state of the veins. The consequence of following this rule is shown in a Case in the Appendix. The modern French surgeons talk much of the varicose state of the veins of the neck of the bladder; and upon the reasoning of Petit they advise the tearing of the membrane, to allow the blood to escape from the varicose veins, and thus make room for the catheter. In this

We should select a large catheter of elastic gum for this occasion, because the large full end of such a catheter is least likely to be entangled with the tumour of the prostate. It is evident, that if the point of the catheter were small, it would be more apt to catch the overhanging tumour, than if it were blunt and large. For example: the point of the catheter F, Fig. 2, Plate II. would be more likely to be entangled with the tumour E, if it were small or pointed, than if it were large and round. The large round extremity would push the tumour, which acts like a valve on the passage, backwards into the bladder, and would, therefore, enter into the cavity without abrading the surface of the tumour. There is an obvious reason, too, why the catheter should be flexible, since it has to accommodate itself to the distorted form of the canal, and overcome the resistance offered by the tumefaction of the gland, not by pressing against it, but by eluding it. When the catheter reaches the anterior part of the diseased prostate, it is sometimes stopped abruptly; and if the surgeon perseveres, injury will certainly be done

country, the same authority has made the drawing of blood by the introduction of the catheter, to be considered not only as a trifling accident, but even as beneficial. It ought to be a sufficient interdict to this practice to know that the instrument must have passed into the spongy body. This will be again noticed in the Chapter on forcing the Stricture.—J. S.

to that body. The manner of the prostate gland opposing itself to the introduction of the catheter, is the circumstance explained in Fig. 1, Plate II.; for, if the gland swells generally, it must swell most beneath the urethra: the great mass of the gland is under the urethra; therefore it presents an abrupt angle (at E), against which the instrument butts; to overcome this, the finger must be passed into the rectum, and the point of the elastic catheter is to be raised with the finger (see Fig. 2, Plate II.); so that it may take a new direction, and be carried over the tumour in the course of the urethra.

When the tumour of the prostate assumes the form of a uvula, and hangs by a neck into the cavity of the bladder (E, Fig. 3, Plate II.), the position of the patient should be supine, that gravitation may assist in displacing the valvelike tumour from the orifice of the bladder. Here, too, it may be necessary to guide the catheter with the finger, introduced into the rectum: and if resistance be made by the finger at the curve of the instrument (Fig. 2), although the catheter be pressed as before; yet the extreme point will rise, so as to avoid the pendulous tumour, and pass over it.

CHAPTER III.

OF PAIN AND IRRITATION FELT IN THE BLADDER, URETHRA, AND PERINEUM, NOT REALLY SEATED THERE, BUT PROCEEDING FROM DISORDER OF THE BOWELS.

THOSE sympathetic pains which seem to affect the urinary organs, and which have their real seat in irritation of the rectum, or the other intestines, bring full one half of those patients to the surgeon, who are considered as labouring under stricture of the urethra. How this subject should make no part of those numerous treatises on stricture we possess, is very remarkable, unless we are to suppose that experience follows, and does not precede, those publications. It is a fact that ought never to be absent from the surgeon's consideration, when a patient presents himself, complaining of frequent micturition, pain in the bladder, and pain in the perineum, that these symptoms very frequently depend, neither on stone, nor stricture, nor inflammation, nor any mischief in these parts, but on remote irritation. If the practitioner does not carefully distinguish these cases, he will become a party to the patient's fears and misconceptions, and expose

himself, in the end, to the supposition of being either very ignorant of the matter, or guilty of a still worse fault. Were it not owing to the remarkable neglect of nervous sympathies which prevails, indeed I may say, without reservation, were it not to be attributed to the neglect of this part of pathology, I should have cases, not of mistakes, but of selfishness and dishonesty to detail. The fact is simply this, that I have received patients, after having used bougies for months, nay years, who had no other complaint than an habitual disorder of their large intestines. There are two classes of gentlemen who will know how to appreciate these remarks: those who have had much experience in diseases of the viscera of the pelvis; and those who have attended my demonstrations of the nerves of the pelvis, the hips, loins, and thigh.

Therefore I conceive that the reader, having perused the many cases of long suffering from organic disease to be found in the course of the present work, must feel relieved, on knowing that our worst apprehensions from pain and spasm in the bladder and urethra, are very often occasioned by intestinal irritation, instead of stone or stricture. Mistakes about this matter continually occurring, and the distress of mind which they occasion, as well as the severe and hurtful practice which is too frequently the consequence, give it a

strong claim upon our attention. At one time we find a patient living an indolent life, and thereby hurting his health, lest by a sudden motion he should displace a stone in his bladder; at another, irritation and strange feelings in the perineum lead the patient to believe that he has stricture. In the one case, the person is exhausted by the harassment of this imaginary evil, and his health disturbed by the confinement and want of exercise. In the other case, it is still worse, since the irritation in the urethra draws the patient to a surgeon; he introduces a bougie, and as this usually gives relief, it is repeated until some mischief is actually the consequence. Very often there is a slight abrasion of the membrane by the unskilful use of the bougie, which, were it not for the frequent repetition, would soon heal; but by a perseverance in a wrong practice, it becomes the source of pain and discharge.

Mr. A. returned from Bengal in June. He complained of pain and irritation at the neck of the bladder, and discharge from the urethra, heat in making urine, and a frequent call to void it. He showed me various bougies, and a catheter which he had been in the habit of using regularly since the time of his embarkation. And he further informed me, that the instrument was interrupted near what he supposed to be the neck of the bladder. On introducing one of his bougies, and in

the manner in which he said he was in the habit of doing it, I found that it passed without obstruction along the whole of that part of the canal where stricture is usually found. But when, by calculation, the point had gone through the membranous part of the urethra, and was about to enter the neck of the bladder, it was entangled, and on pressing it forward it gave pain. I desisted that day; but on the succeeding one, taking a large wax bougie, and turning the point up, I passed it quite into the bladder. The extremity started over some obstruction; but when home into the bladder, it was not grasped: the obstruction was not therefore of the nature of stricture.

This gentleman having originally the symptoms of stricture in the urethra, had been treated with the bougie, and a lodgment made betwixt the cords which are around the caput gallinaginis; and hence arose a new source of uneasiness, and of inflammation and discharge.

Since this case was first published, I have had a very extraordinary confirmation of the truth of these remarks. After I had dismissed this gentleman, entirely relieved from his complaint, when travelling on the Continent, he was seized so suddenly with obstruction in the urethra, that he sought relief, and had the lunar caustic applied to his urethra several times. He wrote to me, expressing his gratitude to his surgeon; and that,

still feeling uneasiness, he would return home, if I desired that he should. I recommended him by all means to continue his tour into Holland, and promised him, that when he returned home I would pass the largest bougie into his bladder, and satisfy him on that head. This was a bold promise, since caustic will make strictures where there are none. Some time after, he returned home. I passed a full-sized bougie into his bladder, without giving him pain. He was surprised; but what signifies the surprise, and of what value is the gratitude of one entirely deceived by his own morbid sensations; who can make no estimation of his surgeon, whether he dismisses him honestly, or continues to attend him *kindly!*— Such cases are very common, and very provoking, to witness. I had lately a young gentleman from the army of occupation, who had furnished his purse, obtained his leave, and engaged lodgings near me, and then presented himself to be cured, he said, of a confirmed stricture. He had long been exercising his ingenuity to destroy it, but finding that the symptoms did not abate, he came to town, resolved to sit down to a regular attack upon it. Somebody had given him a beginning, by hurting the membrane of the urethra, near the curve, with the end of the bougie, and he by successive injuries had prevented this breach healing. All that was required was to allow the parts rest,

and to manage the bowels, which were the cause of the original irritation.

There is a certain class of patients, for which those surgeons who may not inaptly, however vulgarly, be said to have a run of business, find no time or patience: their complaints are called imaginary. The surgeon is vexed with the obscurity of symptoms, and with a long history in strong language, expressive of that distress which it is difficult to comprehend.

A patient came to me after having been under the care of four surgeons successively, for the cure of stricture in the urethra. I found his chief complaint to be an excessive tenderness in the perineum, so that as he walked across the room he lifted his leg with an awkward and straddling gait, afraid to bring his thighs together. He told me that he had commanded a corps of yeomanry cavalry, had been an active magistrate, and a great fox-hunter; but that for a long time, he had not been able to mount a horse. He had been obliged to have the seat of his carriage made with a hole answering to his perineum, and had taken every precaution to prevent pressure against that part. I introduced a bougie into the urethra, but found no obstruction, nor any unusual tenderness in the passage. I examined him also per anum. It was remarkable, that in putting him in the posture of lithotomy, and in fingering, kneading, and press-

ing the perineum, he was not sensible to pain, although, when he arose to walk, his progression was as before, in the same singularly cautious manner, betraying the utmost anxiety, that not even the clothes should touch the perineum. I was by this, confirmed in my opinion, that it was a pain referable to the perineum, but not actually seated there. By attention to the bowels, he was relieved, so as to resume his horse exercise, and venture into the country.

A professional gentleman suffered much uneasiness of mind from a pain in the bladder, accompanied with frequent desire to make water, and an increase of pain on voiding it. He took alarm about stone in the bladder, because the pain was especially severe when the bladder was empty. In the commencement of the attack he suffered indescribable irritation extending over his whole body, and beginning at the lower part of the belly. It was with difficulty he could command his temper when in this state. These symptoms were particularly apt to come on when he lay down in bed; but he could not discover whether this was owing to the influence of the cold sheets upon his skin, to the change of posture, or the emptying of the bladder before going into bed. The first attack continued only during one day and night; but from time to time, these disagreeable symptoms returned; and during their continuance he

found it quite impossible to dismiss uneasy reflections from his mind. At length the pain became more severe and continued, but happily at the same time he was convinced that the whole depended on the state of his bowels. For being urged to consider, if there was not something in his diet, which lodged and irritated the intestinal canal; his suspicion fell on a most preposterous indulgence in figs and Spanish white wine at supper, for several successive nights. By clearing out the canal, avoiding indigestible matters, and by the use of a mild laxative, the complaint entirely ceased. The singular circumstance here, was the severity of the pain, apparently fixed and local, and the distinct sensation of tenderness in the neck of the bladder, although certainly there was no actual disease there.

I have frequently removed complaints falsely attributed to stricture, as well as the aggravation of the proper symptoms attending such obstructions, by dislodging scybalæ from the colon and rectum. There is an old patient of mine, who when distressed in this manner, with pain in making water, can ascertain, by his finger in ano, that it proceeds from hardened fæces there; and by a clyster of warm water and soap he removes the pain. To exhibit these symptoms in another point, I have prevailed on a patient to make his own statement: it is to the following effect:—

"The attack does not come on except when I am a little out of health, and when, by confinement to the house, the bowels have become torpid. Though there be no pain before going to stool, still there is a certain sensation before sitting down, which warns me that I am to have an attack. It is after passing the fæces, that there is a sudden sensation of pain within the anus, and at the neck of the bladder. This is immediately followed by a pain, as of a sharp instrument driven from behind along the urethra, and giving the glans repeated darts. There follows this an intolerable spasm; being an attempt to pass more urine. These symptoms are not relieved, until I bathe or foment all the parts thereabout with warm water. The attack not only returns on the occasion I have mentioned, but also frequently comes on when I am sitting in my chair; and even after I have been so well as to venture on horseback, it will come on suddenly, and with great violence. The principal distress, then, is lancing pains along the urethra, with great irritation of the bladder.

"Considering this as inflammation of the bladder, I abstained from wine, until one day being in a large company, and suffering very severely, I in despair took several glasses of Port wine, which not only soothed me at this time, but made me much better the next day. After this, I found myself always better, on taking a few glasses of

Port wine. Purges increased the irritation. The medicine which has done me the most good, is the balsam of copaiba, which acts as a gentle laxative. Though quickly removed by attention to the bowels, the attack is very apt to return."

When thinking of this subject, I had a visit of an old patient who is occasionally disturbed in nearly the same manner. But in him were contrasted the disease actually seated in these parts, and the sympathetic affection from irritation of the intestinal canal. Some years ago, being in Ireland, he had a gonorrhœa, and during the inflammatory stage his surgeon used a large bougie to remove the discharge. To this treatment he attributed an excess of suffering and inflammation in the neck of the bladder, which kept him long on his back. When he came over here, he still complained of pain in making water, and had a frequent desire to void it; and especially the pain was great in discharging the last drops of urine. On account of these symptoms, I was called in to sound him for the stone. He had very naturally great dread of this operation; for he thought it must occasion a return of all his sufferings. No stone was felt. Next visit I examined the prostate, and found it enlarged on one side, and painful to the touch.

For the removal of these symptoms, he took a pill of cicuta and calomel every night; every three

days he had leeches applied to the verge of the anus, and rubbed upon the anterior part of the rectum an ointment with camphor and mercury: and as the bougie was found to relieve the distressing symptoms, it was introduced for ten minutes, twice a week. Under this treatment he got rapidly better, and the more formidable train of symptoms never returned. These complaints were indeed in contrast with others, in themselves sufficiently distressing. There came upon him, from time to time, a pain at the lower part of his belly, and behind the pubes, attended with great irritation in his bladder, with spasms, and a stinging along the urethra. These I traced to irregularities of diet, and to the congestion of matter in his bowels. In conversation he observed, "that abroad, we were not accustomed to sit after dinner as you do here, which if I am constrained to do, this irritation comes on; and if I ask a lady to drink wine, the wine is no sooner in my stomach, than the irritation of my bladder commences: if I am long confined to the room, it rises to a dreadful degree of annoyance; but if I am free to leave the company, especially if I mount my horse, which I am in the habit of doing abroad, I prevent its occurrence, or am presently relieved, if it has begun." This gentleman was at length cured of all his complaints by due attention to his bowels.

But this is not the whole of the case. Since the last publication of these remarks, this gentleman being at Paris, introduced himself to M. Cullerier, to have a thorough search for a stone in his bladder. That gentleman sounded him, and turned him about in all manner of postures, but found no stone. After a mission of two years in a foreign country, he came again under my care. And I shall venture to predict, that whenever out of health, or with derangement in the bowels, he will have his old apprehensions; for, when actually suffering this kind of irritation, it is impossible for the patient to dismiss his fears.

Such are among the most common occurrences in general practice. They are in themselves trifling complaints, but in their consequences very serious, from the mistakes into which they lead the surgeon; and the patient, in these circumstances, is always ready of belief.

I have affirmed, that there never occurs a proper stricture, posterior to the internal fascia of the perineum. But the inflammation to which the parts behind are peculiarly exposed, very often gives rise to symptoms which are readily attributed to stricture—these parts are *Cowper's gland*, the *Sinus pocularis*, the *Prostate gland*, and the *Vesiculæ seminales*. There are men whose hourly business is poking into this passage with bougies, who, if they have heard the names, know neither

the place nor diseases of these parts, and sometimes, by forcing what they consider a stricture, they rupture the membrane, and enter their instrument into the substance of the prostate, or fix it in the sinus of the seminal caruncle*.

Col. G. returned from India with health very much impaired, and with symptoms of what he thought stricture in the urethra. He went to a surgeon, who told him that he had only a very slight stricture, and that he would destroy it by one introduction of the bougie. He introduced a large wax bougie: it gave exquisite pain, and when withdrawn, it was doubled at the point; and the blood came out in jets from the end of the urethra. After this operation, the patient had no rest for many months. He went next to a surgeon, who also treated him with bougies, and under whom he was nearly two years.

When the time of his return to India drew near, he became excessively anxious, for still the introduction of the bougie was thought necessary; and every time it was introduced, with whatever degree of care, it drew blood. At this time I sounded him, and passed a large bougie along the whole urethra without giving him pain; but when the extremity of the instrument was pushed through the prostate gland, and over the seminal caruncle, there was an insufferable pain excited, and he be-

* See Cases in the Appendix.

came very faint. It was evident that he had no stricture. On further questioning him, as to the size of the bougie, and the marks which might have been upon it on former trials, he told me the bougies had always been brought out as easily as this last one, and without any mark upon them. As the bougies had always been brought out easily, and without being grasped, although it appeared that they had remained long in the passage, and as they had exhibited no nip nor mark of stricture, I could not resist the belief that there never had been a stricture, although he had been treated for it upwards of two years! I need not add, that I put this patient upon a very different plan. It was my object to sooth the complaint of the viscera, to which he was subject, to attend to the secretions from the intestines, and to see that they were in due quantity, for his liver was out of order; and in the mean time, to relieve the inflammation of the neck of the bladder from the injury it had suffered from the frequent and needless introduction of bougies.

By disturbance in the bowels a train of symptoms are produced, which are attributed to disease of the urethra. It requires the patient to have a strong mind, or very implicit confidence in his surgeon, to be enabled to dismiss his apprehensions of stone or stricture.

How those sympathies take place, which give rise to these consequences, it were quite needless to attempt explaining, unless my reader had accompanied me in the demonstration of the visceral nerves. It is sufficient for practical purposes, at present, to observe, that there is not only a sympathy betwixt the bladder and the other parts contained within the pelvis, by which the diseases of the one may be mistaken for those of the other; but certain parts of the intestinal canal through its whole extent, sometimes the stomach, sometimes the ileon, often the colon, and still oftener the rectum, being the seat of irritation, will produce sensations in the bladder, the perineum, or urethra. These will fill the mind of the sufferer with the most serious apprehensions, and lay him open to the mistakes of ignorance. With regard to the external pains which accompany these internal irritations, they will in general be attended with a sort of scalding or sensation of heat upon the skin; and if the patient be capable of attending to the circumstance, the pain will be found to correspond to the progress of indigested food or acrid matter along the canal. The pain, for example, will often precede the call to stool, and be relieved as soon as that different sensation is experienced.

What I have done in these cases is soon told—to enter fully into the subject, would be to usurp the physician's province.

The violent operation of purgatives is to be avoided. The combination of laxatives is better: thus, after emptying the canal, with the oleum ricini and tinctura sennæ, preserve the intestinal surface in activity by combinations of ipecacuanha, pulvis rhei, and pulvis cretæ cum opio; or a combination of the pulvis antimonialis with the pulvis rhei, and the extractum papaveris albi; or, it may be, that it will suit better to give the electuarium sennæ with sulphur, or sharpened by the addition of jalap and oleum ricini. It may be necessary to combine opium with the oleum ricini, when there is much pain and spasm, or to add hyoscyamus to a pill of soap and extract of colocynth. Superior to all, in some constitutions, is a tea-spoonful or two tea-spoonfuls of the balsam of copaiba taken at night. When by such means the canal is disposed to a gentle action, let the morning evacuation be assisted by a large clyster of warm water. Very often, in these conditions of the viscera, there is only something wrong in the diet, and the symptoms will vanish, by avoiding what harbours and is offensive. We shall find it often impossible to restore to the bowels their permanent healthy action, without stirring up the liver to its office. What I have found of most advantage, is a pill at night of three grains of the pil. hydrargyri, and two grains of the compound extract of colocynth, and in the

morning, the patient may take a very small portion of neutral salts in solution, so as still to avoid purging, but only gently and regularly to move the intestines, or the carbonate of soda and tartrite of soda in a state of effervescence with the citric acid.

If mistakes have been committed with instruments, it will be well to apply leeches to the verge of the anus, and sooth by bathing and fomentations, by drinking mucilaginous decoctions, or by taking occasionally a mucilaginous electuary, or a tea-spoonful of Hoffman's anodyne in almond emulsion.

Clysters of warm water, during the paroxysm, are very soothing, and go directly to the seat of the irritation. The clyster of cold water is often advantageous. The anodyne clyster of starch, or milk with tincture of opium, or the opiate suppository, will naturally be suggested in the violence of the paroxysm. But a regulated diet, air, and exercise, are here, as in many complaints, the most natural, the most obvious, and the best means of cure.

CHAPTER IV.

SYMPTOMS OF THE DILATABLE STRICTURE, AND OF THE SPASMODIC STRICTURE.

We have now to consider those symptoms which are consequent upon an affection of the urethra, and which precede the confirmed stricture.

The account which the patient, in the early stage of stricture, gives of himself, is nearly this: That, some time before, he had a severe gonorrhœa; that being particularly circumstanced, he could not so well observe the directions of his medical attendant as perhaps the case required; that the disease continued long severe, and he doubts even now, whether he be entirely well; for he has observed that, although the discharge sometimes disappears, and he is free from any uneasiness, yet occasionally the symptoms return; at which time he has been sensible of a fulness in the perineum, even during the absence of the discharge: there is still a heat of urine, and he has imagined a diminution of the stream of urine; that of late, the call to make urine has become frequent, and he is obliged to rise often in the night to make water; and that whenever he exceeds in

wine, or takes unusual exercise, or has connexion, the symptoms increase with a considerable discharge from the urethra. Sometimes the patient imagines that he has got another attack of gonorrhœa; but although there be a discharge, there is no redness or swelling of the lips of the urethra, or inflammation of the glans or prepuce.

When the urethra thus affected is examined by the bougie, it is found to be unusually sensible; and when we carry the bougie down to a certain point, there is severe pain, and the patient shrinks from the hand. If he allows us to persist, we shall be sensible of resistance to the point of the bougie; and if we force the instrument on, we shall feel it grasped as by a stricture.

When the urethra-sound is used, as the ball is passed into the urethra, there is much increased sensibility near the glans: having passed the ball a little way down the canal, the patient ceases to complain of it; but when, in its further progress, the diseased part is touched, and the ball passes along it, there is pain and a feeling of soreness.

Perhaps the history of the symptoms in such a case, will be found correct in the following extracts from the letter of a patient:

"Early in December last, I had for the first time a virulent gonorrhœa. The discharge continued for about five weeks; it then stopped, and I thought the cure was complete. In the middle

of January, I occasionally felt a slight tickling pain at the end of the penis, and middle of the urethra, with uneasiness at the neck of the bladder, and a desire to make water more frequently than formerly. I then called upon a surgeon, and told him I was afraid I had got a stricture. He told me it was only a trifling irritation about the neck of the bladder, and he gave me some medicines to keep the bowels open, and to diminish the irritability of the system; he desired me also to drink freely of mucilaginous liquids. The uneasiness about the neck of the bladder subsided in about eight days, and left me quite well, with the exception of a slight prickling pain occasionally felt in the urethra. I continued perfectly well until about the 20th of March. I then felt a fulness and oppression about the neck of the bladder, and a pulsative or creeping motion with slight pain along the urethra. I was frequently sick, and had a white tongue.

"I again applied to the surgeon who had attended me during the attack of gonorrhœa. On describing my symptoms to him, he told me that a stricture was forming, and he introduced a *small* bougie, upon withdrawing which, he said it indicated a stricture. The bougie was repeated for three successive evenings. On the fourth day I felt lancinating pains pass through the testicles, and in the evening they swelled; and the glands of the groin became tender. The

pain was not severe; but I was very sick, and much annoyed with a burning heat, not only about the testicles, but all around the loins, and down along the thighs and legs. In ten days, the inflammatory effects were subdued by leeching and purging. As I suffered so much in consequence of the introduction of the bougie, I have been afraid to try it again; and since the inflammation of the testicles subsided, I have done nothing for the irritation of the urethra. My present state is nearly the following: I get up at night more frequently than usual; I have an uneasy feeling in the perineum; slight pain in the glans, and there is one spot of the urethra which is sore to the touch; there is still a little gleety discharge in the morning, which is increased if I drink wine or have connexion. I have rather a hesitation than a difficulty in making water; it does not pass with much force, and I am very apt to sprinkle my legs, as the urine does not flow exactly in a straight stream. If I overheat myself, there is considerable pain in the canal while making water, particularly in making the last drops. I have a sensation of fulness about the bladder, with weight or oppression, accompanied with a degree of warmth in the perineum, and occasionally a dull heavy pain in the testicles."

It is very easy to trace the symptoms in this case. The slight irritation so frequently conse-

quent upon gonorrhœa had alarmed the patient: in the first instance he luckily went to a surgeon who understood the case. By soothing applications the patient is relieved; another attack of irritation comes on, probably after drinking wine or having connexion; another surgeon tells him that he has got a stricture, and introduces a *small* bougie: this has probably entered into one of the lacunæ, or it is stopped by a fold of the urethra under the arch of the pubes. The patient feeling the bougie obstructed, is satisfied that the surgeon is correct in his notion of stricture, and allows him to proceed in the use of the instrument. But the consequence is an increase of inflammation in the canal, which is propagated along the vas deferens; the testicle swells, and the difficulty in passing the water becomes greater than before the first introduction of the bougie. The probability is, that the injury done to the delicate membrane by the small bougie, has caused such a degree of inflammation as to form a stricture. But even now, if a bougie were to be introduced, though there may be difficulty of passing it at one or two points, still it may be pushed into the bladder; for the stricture, as yet, is only in the state which I have called the dilatable stricture; being in fact in the same state as that described at page 102, as the precursor of the confirmed stricture. Such a stricture is a very puzzling case to

some practitioners; for though there is, at first, a distinct resistance to the point of the bougie, still the stricture is not firm, nor are the sides of the canal callous. The surgeon finds, that although at first he has difficulty, yet, by introducing a succession of bougies in the same morning, he is able to pass the largest bougie with ease, and the contraction seems to be destroyed; but in a few days the symptoms are as bad as before. If in these circumstances, the surgeon says that there is still a stricture, the patient may be told by another surgeon, that his attendant has been deceived, and that there is no stricture. And to prove this, he takes a large bougie and passes it directly into the bladder, regardless of the pain which he occasions. Though this may, perchance, cure the disease, the reason of which will be afterwards explained, the probability is, that the complaint will be much aggravated, and be accompanied by those symptoms which have been called spasmodic stricture. As all strictures are attended with symptoms which would incline us to believe that they are liable to spasmodic contraction, it is indispensably necessary to examine this set of symptoms, before we enter upon the consideration of the confirmed stricture; for upon the right view of their cause, does our practice depend.

This name, of spasmodic stricture, which implies a particular theory, originated with Mr.

Hunter; for he explained the commencement of the disease in the following words: "This contraction and relaxation are the natural and healthy actions of the urethra; but this membrane, like every other muscular structure, is liable to a spasmodic action, which produces a degree of contraction beyond the natural; and in that state the canal loses the power of relaxing till the spasm is removed. When this happens it constitutes disease, and is termed a spasmodic stricture.

"While a stricture is in this stage, it is only a wrong action of the membrane of the urethra; and if the parts could be examined in their relaxed state, there would be no appearance of disease.

"When a portion of the urethra is disposed to contract beyond its natural easy state, this disposition commonly increases till the part becomes incapable of falling back into a state of complete relaxation, and the canal remains always narrower at that part.

"In this stage it is both a permanent stricture and a spasmodic one. It is so far permanent that it is always narrower than the rest of the canal, and so far spasmodic that it is liable to contract occasionally in a still greater degree.

"A stricture in the urethra, whether in the spasmodic or permanent state, is a contraction of the transverse fibres of the membrane which forms that canal."

It is evident that Mr. Hunter's opinion was founded on the assumed fact, that there were muscular fibres in the membrane of the urethra; but this has been already proved to be an erroneous idea *.

* In the first edition of the Essays on Stricture, Mr. Bell related several experiments which proved that the urethra was not muscular, but elastic. In my paper on the minute stricture of the urethra, which has been published by the Medico-Chirurgical Society, I have entered fully into this question. I have in it, detailed several experiments which corroborate Mr. Bell's opinions. I may now only remark, that it may be shown that a fluid injected into the urethra of a dead body, will be thrown out with as much force as it is in the living body; and that it may be asked, if the gonorrheal matter is ever thrown out with a jerk? Or could the invisible fibres be sufficient to withstand the force with which the urine will be driven against a stricture by the muscular coat of the bladder; or are they sufficiently strong to form an obstacle to an instrument pushed in, by the whole weight of the arm? In the question of natural structure we are supported by the authority of the Italian anatomists Mascagni and Moreschi, and in the formation of stricture by Sœmmering, in his Abhandlung über die Schnell und Langsam todlichten Krankheiten der Harnblase und Harnröhre bey Mannern in hohen alter.

In the notes which Professor Græfe, of Berlin, has made upon Mr. Bell's Observations on Stricture, he says, that he is fully borne out in denying the truth of Mr. Hunter's opinions: "Die sehr instructiven zeichnungen von harnröhren strickturen auf der ersten tafel belegen die meinung, die der Verfasser gegen Hunter auspricht, daz nicht alle strikturen jene geringe länge haben, durch die sie den effekt eines um den kanal gebun-

It is very easy to persuade a patient, when he has a stricture, that the occasional obstruction to the discharge of the urine arises from spasm; and when, after any little irregularity, he is unable to pass his urine, and feels a girding and pain in the seat of the stricture; and when he finds that the surgeon cannot introduce a bougie, he attributes these indirect effects to a spasmodic state of the stricture. If he is relieved by the warm bath, opium, and other antispasmodic medicines, he is then convinced that he has a stricture, which is occasionally spasmodic.

But the patient is deceived, and, what is of more consequence, the surgeon is also in an error; for it can be shown, that this spasm is not in the stricture itself, but that it is a spasmodic action of the muscles surrounding the urethra, and the question may be argued thus:—

In the voluntary motions of our limbs there are two distinct states of muscular action necessary to the movement. If the finger or hand is extended, or closed, it is not by the mere contraction of one muscle forcibly elongating its antagonist, nor does the relaxation of the one follow the contraction of the other; but if the action be

denen fadens hervorbringen." Nearly the same opinion is given by Professor Barovero, in the notes upon the Turin edition of Mr. Bell's work.—J. S.

to bend the finger, the same influence which is exerted to excite the flexor to contraction, is also exerted to relax the extensor.

There is an analogy between those muscles, and those surrounding the several viscera. Thus, in the effort to evacuate the rectum, the contraction of the upper part of the gut is necessarily attended with the perfect relaxation of the sphincter ani. It is the same in the womb during delivery. The orifice and fundus have antagonist fibres, and the contraction of the body and fundus, is accompanied by relaxation of the fibres surrounding the orifice.

The bladder is surrounded with its muscular coat, the *detrusor urinæ;* the neck of the bladder is surrounded with the *sphincter;* the prostate gland is embraced by the *compressor prostatæ;* the membranous part of the urethra is pressed by the *compressor urethræ* and *levator ani;* and the sinus, and a considerable part of the urethra, are surrounded by the *ejaculator seminis.* These muscles are all opponents to the muscular coat of the bladder, and are in sympathy with it: not that sympathy which combines in simultaneous action, but that connexion which exists betwixt flexor and extensor muscles, and which provides that the action of the one shall be attended with the relaxation of the other.

Perhaps the affection called spasm of the urethra, will be more easily understood by first

examining the case of irritable bladder, which has been erroneously called paralysis of the urethra, and as such, it has been treated as a disease: and the incontinence of urine has been considered as an effect of the diseased inactivity of the muscles of the urethra. But the disease is rather in the sensibility of the bladder and the over action and irritability of the muscular coat: for the smallest quantity of urine falling down into the bladder, produces an action there, and consequent relaxation of the sphincter; and the water dribbles insensibly away. The disease is of the same nature with that, which produces the relaxed anus and pendulous gut of a child whose rectum is irritated by ascarides. Blisters, tincture of cantharides, spices, and steel medicines, are improperly given on the idea of exciting the relaxed sphincters; whereas the attention should be directed to ascertain the cause of the contraction of the bladder. As soon as we know that the contraction of the bladder, and the relaxation of the muscles of the urethra, or the contraction of those muscles and quiescence of the bladder, form one combined action, we can comprehend how a blister to the sacrum or pubes will sometimes produce strangury, sometimes incontinence of urine; for it produces an immoderate irritation on the parts, which stand united in function, disordering their natural relations.

When the bladder is distended with urine, and the muscular coat has no disposition to contract, the introduction of the bougie into the urethra, will cause the urine to flow. The reason is, that the muscles of the urethra being distended with the instrument, this state of distention calls the muscular coat of the bladder into action, without which no distention of the urethra would procure evacuation. We may observe, that when a bougie is introduced into the urethra a few inches only, there is no consent with the bladder; but when the point of the bougie reaches the sphincter muscles, and even when it distends only the fore part of the ejaculator seminis, the desire of passing urine is sometimes produced *.

Spasm of the urethra is supposed to be directly the reverse of paralysis in the urethra. But in spasm of the urethra, the bladder and the muscles surrounding the urethra are still engaged together, and are mutually disordered as antagonist muscles.

If we look into authors, we shall find that the urine is said to be obstructed from many causes: from debauch, inducing spasm in the neck of the bladder; from fulness in the vessels of the neck of the bladder; from stricture; from piles; from injury to the perineum, or disease of the prostate

* See the Chapter on the Sensibility of the Bladder.

gland. In all these instances, the obstruction to the flow of urine is in a great measure owing to the diseased action of the muscles; in some of them it is entirely to be attributed to this cause *.

In a former Chapter it has been shown, that mere distention of the bladder, without obstruction, properly speaking, will be attended with retention of urine. It has been also shown, that, however obstruction of urine may commence, in the end the muscular apparatus is engaged, and becomes a cause of increased difficulty of passing the urine. This is especially the case in stricture of the urethra; and while the stricture is stationary, neither contracting nor relaxing, it has the effect of disordering the natural sympathy of the muscles, and of inducing contraction of the sphincter fibres, and obstructing the urine.

But there is another and a more frequent cause of spasm in the urethra and neck of the bladder.

In the diseases of the urethra, as in other parts of the body, inflammation precedes or accompanies increased sensibility. Where stricture is,

* The observations which Chopart makes upon the *spasm* are very good: for, though he speaks of the sides of the urethra of some patients being so irritable as to contract, so as to prevent the entry of the bougie; still, by what follows, it is evident that he never dreamt of its being possible for a spasmodic state of the delicate membrane of the urethra, to be sufficient to oppose the entry of an instrument.—J. S.

there is much increased sensibility; and wherever the stricture is exquisitely sensible, there we are sure to find the function of the muscles deranged, forming the case which is called spasmodic stricture. This spasm is produced by the acrid urine coming in contact with the sensible surface of the urethra, which being inflamed is not imbued with its sheathing secretion; instantly the muscles are called into action; the ejaculator seminis contracts by impulse, as is its nature, when excited; and the other sphincter fibres contract firmly; so there is frequent call, and frequent stoppage, of the urine, with painful contractions of the fibres on the inflamed and excited parts. This action of the muscles of the urethra does not merely mechanically obstruct the flow of urine, but by the sympathy existing betwixt these muscles and the *detrusor urinæ*, or muscular coat of the bladder, the contraction of the bladder ceases.

Thus, out of a party of men drinking together, there will often be one who before the end of the evening cannot pass a drop of urine. On inquiry it will be found, that he has had slight disorder in the urethra, perhaps the remains of gonorrhœa. It is a mistake to suppose, in such a case, that the fulness of the vessels has closed the passage to the urine; the same cause which has inflamed his countenance adds to the inflammation and sensibility of the urethra; and the first drop of acrid

urine is followed by contraction, and spasm and obstruction.

Thus the apparent changes in the stricture of the urethra are attributable to the disorder of the neighbouring muscles, muscles which surround the stricture, if it be seated within five inches of the bladder.

As all strictures are accompanied by inflammation, which is severer at one time than another, they may be all attended with those symptoms, which have been by the greater number of surgeons erroneously supposed to indicate a spasm in the stricture itself. It is not necessary to follow this argument farther, as it has been already sufficiently discussed. If the term spasmodic stricture be used in the course of this book, it is to be taken, as only implying that stricture which is attended with much inflammation, with high sensibility on its surface, or in the neighbourhood of the canal, and with a morbid irritability of the surrounding muscles.

CHAPTER V.

OF THE CURE OF THE DILATABLE STRICTURE.

So much importance has been attached to the degree of inflammation in the first stages of stricture, that in proposing a cure for the disease, in its commencement, we should naturally suppose it possible to remove it, by putting the patient upon low diet, confining him to his sofa, leeching the perineum, fomenting or applying wet cloths, &c. This practice will always be in a certain degree beneficial; but the patient may be long confined and greatly reduced, and after all, derive but slight and temporary benefit from this severe treatment.

In the use of the bougie, we have the means of applying pressure, and at the same time distending the inflamed membrane; by which, the low chronic inflammation is disturbed and remedied.

Being assured that the violence of inflammatory action is gone, if it ever was violent, take a large-sized bougie, introduce it, and press it, until it passes the stricture: let it remain there two or three minutes. On the fourth day introduce it again; and this is to be repeated every other day, until the bougie passes without pain,

and the stream of urine is full. But the use of the bougie in this state of the canal is a painful remedy. Sometimes the inflammation does not diminish, but is greatly increased with frequent spasms, and there follow swelled testicle and all the train of distressing symptoms, which delay the cure and irritate the patient.

But sometimes, as has been already said, this severe practice is attended with good results, and the explanation of it is this, that it is the pressure on the inflamed surface, and most of all, the stretching of the inflamed membrane, which disturbs the chronic inflammation of the part. Pain, even swelling, and an increased soreness, are the effects of this practice; but with this new disturbance, the peculiar irritability depending on the former morbid state is diminished. The following is a daily occurrence. N— complained, that although the violence of his gonorrhœa was subdued, and he had been comparatively well for some time, there yet remained a clear gleety discharge. He was prevailed on, to allow of the introduction of the bougie. One of the largest size was passed: he fainted during the operation, from that indescribable nervous sensation, which will sometimes creep over a man, who has a bougie introduced for the first time. The resistance to the bougie was only such, as indicated that the membrane of the urethra was fully on the stretch.

There succeeded to this, a copious purulent discharge, which subsiding, left him free of all complaint: repeated experience establishes this fact. D— came with symptoms of stricture: a resistance was felt near the bulb to the introduction of the bougie, and there was extreme tenderness. Notwithstanding the sufferings of the patient, the bougie was forced in. A similar operation was performed on the third day after, on the seventh, and on the twelfth, when the bougie passed without pain, and the urine flowed freely without heat or spasm.

During this inquiry, we find in the observations of Bruninghausen * something worthy of attention. He made his patients dilate the canal of the urethra with the urine, by stopping the orifice and forcing with the bladder: he gives several cases in proof of his remarkable success in destroying strictures, by this method of distending the canal. There is no doubt, but that in some instances this

* " Bruninghausen a découvert une méthode plus facile, plus commode et plus simple que celle des bougies. Elle consiste à dilater le canal de l'urétre par l'urine même, pour cela il faut, que chaque fois que la malade veut uriner il comprime légèrement avec les doigts le canal de l'urétre, derriere le gland, &c." This has, at least, the merit of simplicity and convenience; and it will have more chance of curing a confirmed stricture, than some of the extraordinary air machines that are recommended in the present day for blowing up strictures.—J. S.

practice succeeded, from what may be done with the injecting syringe. A patient had used a strong injection for weeks, and returned no better. He was shown how to distend the urethra, and to keep it distended for a few minutes; the consequence was apparent, after once using the syringe.

In all these examples, there is a degree of violence done to the membrane of the urethra; and neither the bougie, nor the urine, nor even the injection, has any thing medicinal in it: there is only a dilatation of the canal, and a pressure on its surface. We might be inclined to say, that the contact of the foreign body was the cause of the salutary change, if in the two last instances the contrary was not proved, viz. that, unless the membrane of the urethra be stretched, the change does not take place.

Still we must suppose that Bruninghausen did not cure the firm stricture of the urethra, but only subdued the remaining inflammation, which produces and accompanies this *dilatable stricture.*

After all, then, the dilatable stricture is the early stage of true stricture. It is that state of the membrane of the urethra, where the chronic inflammation is limited to a spot, by which the fine elasticity of the membrane is diminished. In illustrating its nature, I have detailed the remedy, viz. removing the inflammation, allaying the irritation,

and occasionally stretching the membrane, by the introduction of the simple bougie. But I have accomplished the same purpose more rapidly, if not more effectually, by using the caustic. To those who imagine that the application of the caustic, is necessarily to produce a slough, this will appear very unnecessary severity. But in the application of the caustic to the inflamed urethra, I have proceeded on a very just analogy. We use caustic to the eye to diminish the sensibility and irritability, not to produce a slough, not to abrade and injure the surface, but to close and give a healthy surface, even to an ulcer of the cornea. We apply caustic in solution to the most sensible ulcer, and still by diminishing sensibility we subdue inflammation. I have applied it to the mouth, the throat, and even the inside of the windpipe, and still it has diminished inflammation, and cough, and spasm.

To employ the sedative power of the caustic without its injurious effects, is all the delicacy required. In the urethra it may be used with ease and safety. If, for example, we find that, notwithstanding the use of the bougie, this troublesome spot of the urethra continues inflamed, and likely to be followed by worse consequences, we make a hole with the point of the probe in the end of a large soft wax bougie; into this we introduce a

small portion of the argentum nitratum. This portion of caustic is not to project beyond the wax, and is not to come directly in contact with the membrane of the urethra. The bougie being thus prepared and oiled, and having received the proper curve (a curve corresponding with the place of the stricture), it is to be introduced in the common manner, and rapidly, until it encounters the sensible and contracted part of the canal: there it is to remain until the caustic is dissolved. If the patient feels any thing but the pressure of the bougie; or, if he can make any distinction betwixt the simple bougie and the instrument thus used, it is only an agreeable warmth—a heat not amounting to pain. And now it will be apparent, that the degree of severity of the application is to be regulated by the size of the portion of caustic, not by the time of the instrument remaining in the urethra.

But the urethra probes enable us to touch the inflamed surface of the urethra, in a manner much more exact, than can be accomplished with the bougie. I have the ball of the urethra probe, Fig. 4, Plate III. made with a small hole in it; and into that hole I put a minute portion of the caustic; the following is the method of using it:—

Having examined the state of the urethra, by means of one of these balls, and discovered that there is a contracted and inflamed portion of the canal; and having played the ball of the instrument

repeatedly through the stricture, so as accurately to ascertain its distance from the extremity of the urethra, the probe is withdrawn. Then putting it by the side of the instrument that is charged with the caustic, the distance of the stricture already ascertained, is measured off, and marked by holding the wire of the instrument that is charged with the caustic, in such a manner, and at such a distance from the extremity, that when the fingers are brought close to the glans penis, the ball may reach the inflamed and contracted portion of the canal—it is then introduced into the canal. There it remains, the ball at the extremity in contact with the inflamed surface. Giving time for the minute portion of the caustic to dissolve, the ball is pushed through the stricture and withdrawn, and thus alternately, until a gentle sensation of warmth is produced, and then the instrument is to be entirely withdrawn.

I have already stated, that the effect of the caustic thus applied, is produced by destroying the morbid sensibility of the surface, as in the case of ulcerated cornea. After such an application a bougie may be introduced. And here a surgeon, who is so disposed, may have an opportunity of deceiving his patient. When a bougie of a small size is resisted by a stricture, and gives pain, he may yet assure the patient, that, if he will submit to the caustic, he will introduce a much larger

bougie with less pain, and that immediately after the application of the caustic. The reason is, that the sensibility being diminished, the patient does not shrink from the hand; and now the dilatation of the part of the passage suffers the instrument to enter, and the patient thinks that the stricture is destroyed. This is one of many occasions which exposes the patient to deception, and makes it of importance in the cure of this disease, above all others, that the sufferer should be satisfied of the honour and fair professional fame of the surgeon, before he intrusts himself to his hands.

The result of this application of the caustic is, a relief of the urgent symptoms. It is to be repeated at the end of three days. After three or four applications, the bougie alone is to be used, and the caustic to be had recourse to, only, if the morbid irritability and sensibility of the urethra are unsubdued.

CHAPTER VI.

FORMATION OF TRUE STRICTURE.—VARIETIES AND CONSEQUENCES OF STRICTURE.

The state of the urethra, which has been described in the last Chapter, may continue for a long time, if nothing be done, the symptoms neither increasing in severity, nor altogether subsiding. There are patients to whom it seems difficult to remember the time, when they were entirely free from uneasiness, and occasional discharge; and yet, they have not a confirmed stricture, though the bougie passes through a part of the canal with difficulty; but if the complaint is of long standing, and if the inflammation continues, a stricture will be at last formed. If we consider the effects of inflammation, together with the history of this complaint, we shall have no difficulty in forming an opinion of the state of the part when thus diseased; and of the manner in which a confirmed stricture is formed *. The urethra is a dilatable

* The observations of Desault, on the formation of stricture, are very short. He does not seem to have ever supposed that spasm was a cause of stricture. He is of the old opinion, that they were always the consequences of ulceration: "Ces

tube, but it has in itself, no power of expansion. It is distended only by the force of the bladder, and by means of the urine flowing from the bladder; and to facilitate this operation, it is elastic, and very easily stretched. Inflammation changes the natural structure of all the parts of the body: the hard bone by inflammation becomes soft; the firm tendon becomes spongy; the transparent

retrécissements paroissent être formés par les cicatrices d'anciens ulcères du canal, celles ci sont fréquemment les suites des gonnorhées, cordées, sur tout de celles qui ont été accompagnées d'hemmoragies."

Richerand does not go so far as Desault: he says, "La membrane muqueuse de l'urétre s'épaissit par des inflammations repetées, et lorsque cet effet a lieu dans les parties les plus étroites du canal, comme dans sa portion membraneuse ou dans celle qui la prostate enveloppe, on conçoit que la moindre augmentation dans l'épaisseur de la membrane doit en produire l'oblitération, &c." There is one expression here which shows that Professor Richerand has not examined many cases of stricture by dissection; for, if he had, he would not have described the part of the urethra which is surrounded by the prostate as liable to stricture. On referring to Chopart it will be found, that Richerand has copied the theory of the formation of stricture from him. Calisen has fallen into the error of calling the irritable urethra, spasm of the coats. "Datur vero alia species cito insurgens; a spasmodica urethræ coarctatione ortum ducens, insolita urethræ sensilitate juncta." The German authors have not written much on this question. Professor Græfe acknowledges, in his observations upon Mr. Bell's opinions, that the diagnosis of stricture has been by them too often neglected.—J. S.

membrane becomes thick and opaque; and pliant parts become firm. So, when the urethra is inflamed, there is a diminution of its natural elasticity; and a greater force of the bladder is necessary to the discharge of urine through the inflamed part of the passage. When the general state of inflammation of the urethra subsides, if it has not been violent or of long continuance, the membrane resumes its pliancy. But it often happens that a part of the canal continues more permanently inflamed; a residue, as it were, of the more general inflammation. This part does not yield to the impulse of the urine (and the urine being of necessity driven more forcibly against this contracted part, is, no doubt, one cause of the continuance of the inflammation); the bougie which passes easily along that part of the canal which is not inflamed, will be resisted by this inflamed part of the canal: I had almost said by this contracted part: but the word *contracted* is improper as applied to strictures of the urethra, for the sides of the canal are always in contact, and cannot be brought closer by the formation of a stricture. A stricture at first, is only a loss of elasticity, which prevents the due distention, when the push of urine is made, or the bougie is introduced.

I shall confess that at one time I stated this reasoning theoretically, but since that I have had repeated occasions of ascertaining the fact. I

attended an officer for a dilatable stricture, that is, pain in the urethra, with loss of elasticity and some discharge. I could stretch the passage by a large bougie. His profession called him abroad, and on his return a stricture was formed in the same spot, so firm and sharp as to cut and impress the wax bougie: it was become a confirmed stricture *.

The most common cause of stricture is gonorrhœa; still this specific inflammation is not always the occasion of it. It may be the consequence of any injury to the parts. I have known a very bad stricture formed in consequence of a blow; and I think I have seen inflammation and stricture in the urethra, in consequence of an inflamed bladder.

So constantly is inflammation the forerunner of stricture, that it may be held a point as well

* In the notes which Professor Barovero makes on Mr. Bell's theory of the formation of stricture, he says, that the author is supported by the analogy of the effect of inflammation on all other parts. He quotes also the authority of Professor Tommazini in favour of his opinion; but this is a remark considered now so just, that it is useless to comment upon it.—J. S.

" L'asserzione dell' autore che la cause dello stringimento risieda nell' inflammazione cronica d'un punto dell' uretra é dal medesimo provato, ed é resa piu evidente dall' osservare che la natura semplicissima agisce sempre cogli stessi principii, &c. Che poi i'inflammazione dia sempre luogo ad un alterazione di struttura é questo pure l'aviso del Professore Tommazini: ' La flogosi dice egli tende sempre a desorganizzare o in una o nell' altra maniera le parti che sono da essa attacate, &c.' "

established by evidence, that the origin of all strictures in the urethra, is in consequence of inflammation, as that adhesions of the pleura are produced by it.

The degree and firmness of the stricture will correspond with the length of time the inflammation has continued, and with the frequency of the occasional increase of the irritation, pain, and discharge. The appearances on dissection will also depend upon this; for, though there might be such a train of symptoms during life, as to satisfy us that there was stricture, still, if they have only existed for a short time, the change of structure in consequence of the inflammation will be so slight, that the appearance will be destroyed by soaking the parts in water.

But if the stricture has been of long standing, and if the patient has been under the care of several surgeons, then the stricture will be sufficiently distinct upon dissection.

It is almost impossible to describe all the morbid appearances that may be seen in the preparations of the diseases of the urethra, which are to be found in the Museum, but those of most common occurrence may be arranged.

The first is, that simple stricture which has very often the appearance described by Mr. Hunter, as if a thread were tied round the urethra, and as if there were a membrane tucked, and hanging across the canal. But this very idea of a thread

around the canal must have been taken up from the appearance presented by the bougie withdrawn from the stricture in the living body, rather than from any thing we can see in the dead body. In introducing the bougie, or probe, we feel the point start over the stricture, so as to convey to us precisely this notion. This, the simplest form of stricture, I have examined very many times, by dissection, as may be seen from the number of preparations in my collection. When a stricture of this kind is of long standing, and has no inflammation or coagulable lymph around it, there is seen in the substance, or on the surface of the membrane of the urethra, a pure white dense fibre. This small fibre is distinguished from the soft mucous and dilatable membrane of the urethra, by its resemblance to such filaments, as form the texture of the common fascia: I call it the bridle stricture. The term *bride* * of the French authors must have been applied to this appearance. The fibre is not always in the circle of the canal, but often it splits and branches, and sometimes runs nearly longitudinally. Similar effects to this, are seen in other membranes to be the consequence of inflammation, particularly in the peritoneum. This kind of stricture is very frequent, if the urethra has not been disturbed by the operations of the surgeon †.

* See Lafaye's notes on Dionis.

† It is not uncommon to find two or more of those little fila-

When the stricture is newly formed, there is around the firm line of the stricture a thickened base.

If inflammation occurs as a consequence of stricture, the stricture itself not only increases, but the passage is apt to be further choked by a crust of coagulable lymph which is deposited behind. Through this crust, as it is forming, the urine makes its way, and forms a hole corresponding with the stricture. Indeed the new membrane will become consolidated, apparently by successive attacks of inflammation behind the stricture, and, at last, will form of the simple stricture one more irregular.

This irregular stricture frequently constitutes what has been called the callous urethra. The term callosity may still be retained; for, both in dissection, and in the examination of a patient, there is evidence of a considerable portion of the canal having become firm, and almost of cartilaginous hardness. The notion commonly entertained of these long strictures or callosities is, that there have been two strictures, and that the intermediate portion of the canal being no longer distended with the urine, the channel has diminished. This is the explanation given by Sir Everard Home in his excellent treatise. But it does not accord with

ments running across the urethra, so as to form distinct strictures, the space between them being sufficiently dilatable.—J. S.

the circumstances. I have examined the parts where the stricture had absolutely closed, so that not a drop of urine passed along the urethra. The bladder had been punctured, and the man lived for years, discharging his urine by the puncture. That part of the urethra which was anterior to the total obstruction, was wide or dilatable, as in the natural state of the parts. It is evident, therefore, that the mere cessation of the usual distention of the urethra will not be followed by stricture or permanent contraction of the canal. These callosities, or long strictures, are always irregular; and this irregularity cannot be accounted for, on the supposition that the canal at this part has become rigid for want of the usual distention of the urine. I entertain no doubt that these contractions of the urethra, which extend along to a considerable part of the canal, are produced by more severe attacks of inflammation than those which attend the common stricture. This sort of callosity of the canal differs from the more common stricture in this, that, in consequence of the spongy body, which surrounds the canal of the urethra, often partaking of the effect of the inflammation, the cells are obliterated; and what was loose, spongy, and dilatable, becomes condensed and rigid. This undilatable condition of the urethra, when examined by the bougie or probe, gives the sensation of great irregularity; the point is inter-

rupted, and feels as if it were moving over eminences on alternate sides of the canal. When the ball probe, or urethra sound, is introduced through the anterior part of the stricture, there is difficulty in pushing it down, and a slight impediment is felt in retracting it.

There is a state of the canal which differs from this in some respects. There is a considerable portion diminished in width. On dissection, two or three inches of the canal may be found diminished in capacity, and rigid: and all around this part of the urethra, the spongy body is so obliterated, that we could almost suppose the urethra and spongy body to have suffered from compression.

There is another variety of stricture, which was at one time described as the only one, for it was the common opinion formerly, that gonorrhœa was the effect of ulceration, and that stricture was a consequence of the cicatrix. But when Dr. Hunter proved, that a purulent discharge might come from a surface inflamed, though not ulcerated; then it was supposed that stricture was a consequence of spasm, and that there never was ulceration combined with stricture. But this was going into the opposite extreme: for a firm stricture may very frequently be seen, in the centre of which there is ulceration. In such a case we must conclude, that either a stricture had been formed,

and afterwards ulcerated; or that there was originally an ulcer, the sides of which became hardened, so as to condense the surrounding cellular membrane, and produce a very firm cicatrix, and consequent stricture. Such a case is occasionally formed by the cicatrix of a venereal ulcer, which runs in the course of the urethra.

The idea of seeing a stricture of the urethra, is somewhat ridiculous; but there is a stricture of a very obstinate nature, which forms just within the lips of the urethra. This stricture has not been much noticed. It is a very common occurrence from a severe attack of inflammation in gonorrhœa. The orifice may become so contracted as not to allow of a probe being passed into the urethra.

In my collection there is a preparation exhibiting extensive destruction of parts, from bursting of the urethra in the perineum, when the cause, viz. the stricture, was in the orifice.

Those examples which have been enumerated, are the most commonly found; but there are many cases which differ from them in some minor respects: the enumeration is sufficient to show, that the plan of treatment ought to be very much varied *.

* Each of these varieties is particularly described in the Appendix of Cases; and accurate drawings of them may be found in the folio edition of the Morbid Anatomy of the Urethra.

The

The natural course to follow will be, to show the effects of stricture on the parts posterior to it.

The most common effect of stricture is ulceration of the membrane of the urethra behind the stricture; for the push of urine there, produces continual irritation and inflammation, and this is one of the effects of stricture the most to be dreaded. However, this is a subject to which we must return: at present it will be sufficient to give a description of the most common effects visible on dissection.

Where there is stricture in the urethra, that portion of the canal which is betwixt the stricture in the urethra and the bladder, is much enlarged *. When the patient has died in consequence of stricture and an acute attack of inflammation, the

The French authors dwell much on what they call the varicose state of the internal membrane of the urethra. They have given it as one of the causes of stricture. Both Petit and Arnaud have described it as similar to the state of the mucous membrane of the nose in coryza. By Goulard it was called Embarras Vasculeuse, and was supposed by him to form an obstacle to the bougie. I have no doubt that what these authors saw upon dissection, was the turgid vessels of the internal spongy body, which certainly sometimes have the appearance of varicose veins, when injected. Mr. Bell, in a former edition, expressed his opinion, that the symptoms during life were in consequence of what he has called the dilatable stricture.—J. S.

* There are some extraordinary examples of this given in the Appendix. In one preparation, the urethra is half an inch in diameter posterior to the stricture.—J. S.

whole extent of the urethra is inflamed, but chiefly that portion which lay between the stricture and the bladder. In many cases a firm coat of coagulable lymph is deposited, and hangs fleecy in the dilated cavity of the canal. Under this inflammatory crust, the proper surface of the urethra is highly inflamed. In one instance, where the manner of death was not known, there was behind the stricture a patch of coagulable lymph, and considerable inflammation around it; but in the part of the urethra anterior to the stricture, there were no marks remaining of inflammation *.

In the instance of a gentleman who resisted all means of cure, and who died of inflammation of the bladder, the coagulable lymph formed a dense coat to the inside of the urethra, behind the stricture, so as to close the seminal ducts and mucous follicles, and produce distention of the vesiculæ seminales.

In all cases of confirmed narrow stricture, the prostate gland is found more or less affected †. Sometimes the whole of the interior of the gland is disorganized, the exterior dense covering of the gland forming the wall of an abscess. Occasionally there are several abscesses in the substance

* See several cases in the Appendix.

† The real structure of the prostate can only be understood by examining the gland in a state of disease; and by comparing it with that of some animal, as the horse. It will be found to be very analogous in its internal structure to the tonsil.—J. S.

of the gland unconnected with each other. But the most frequent appearance is a number of cavities on each side of the verumontanum. These cavities are only enlargements of the natural ducts of the gland. They are sometimes so large as to admit the end of the largest bougie: examples of this are given in the Appendix. Having observed that, in bad cases of fistula in perinæo, the urine came from the neck of the bladder and prostate gland, I am inclined to believe that these cavities in the side of the urethra and prostate gland sometimes ulcerate, and produce the worst kind of fistula, because they receive the urine direct from the bladder, uninterrupted by the action of the sphincter. The incessant infiltration of the urine into the cellular texture of the perineum is probably the cause, that in most cases of this kind there has been extensive mortification.

There is sometimes a very minute crop of soft warts growing from the membrane of the urethra, behind a stricture *.

* There is in the Museum, a very fine specimen of Caruncles; it is described in the Appendix; and a plate of it is given in the folio edition of the Morbid Anatomy of the Urethra. It must be confessed, that Chopart and Desault were correct in supposing that this appearance, which was much talked of in their day, was very seldom seen. Daran, and the authors previous to him, asserted, that these carnosities were always the cause of the obstruction to the urine; but we have sufficient grounds in the works of Morgagni, Lafaye, Chopart, Desault,

On the bladder the effect of stricture is always manifest. If the difficulty of passing the urine has been long continued, the coats of the bladder are very much thickened; apparently by frequent lesser degrees of inflammation, but principally from the necessity of increased force in throwing out the urine, and the consequent increase in strength of the muscular fibre. Several extraordinary examples are given in the Appendix. When the patient has been cut off by irritation more rapidly, the fundus of the bladder, on the outside, is loaded with blood, and black with a congeries of turgid vessels; on the inside, masses of coagulable lymph are discovered, and, in the interstices, the natural surface is loaded with blood. If, by accession of inflammation in stricture, absolute obstruction comes on suddenly, the bladder suffers an extraordinary degree of distention until the urine at last escapes into the cavity of the abdomen. On examining the fundus of the bladder in such a case, dark spots may be observed upon it, and in the centre of these dark spots small ragged holes. This may be distinguished from a bladder burst by an accident; for, in such a case, the opening would appear rent. There are cases recorded where the hand could be put through a rupture

and Hunter, for asserting that these warty excrescences are very seldom found, nor does it appear that they are exactly the same as those described by the early authors.—J. S.

of the bladder, which had been occasioned by a fall. In gangrene, the bladder would have been black over a greater extent, and inflamed like a gangrened intestine. But as in rupture there is more than one small hole, it is probable that the urine escapes from the fundus of the bladder, as it does from the urethra in the more common case of fistula in perinæo, that is, by ulceration. Sometimes it would appear, the urine escapes from the bladder without the outer peritoneal coat giving way; then the urine insinuates itself extensively into the cellular substance behind the peritoneum.

The effect of stricture on the ureters is to enlarge them in a remarkable degree. They are sometimes as large as a small intestine, and much inflamed*.

On the kidney †, the effect of stricture, or any other kind of obstruction to the course of the urine, is very remarkable. It suffers great distention; the surrounding cellular membrane is inflamed; the substance of the kidney itself is inflamed;

* See Cases in the Appendix.

† We must not forget that the sediment which is so commonly found in the urine of patients affected with stricture, has been considered, to their great alarm, as symptomatic of ulceration in the bladder or kidneys. It is in consequence of the irritation of the stricture, producing a greater secretion than natural from the prostate. It will disappear on curing the stricture. This is particularly mentioned by Monteggia in his Instituzioni Chirurgiche.—J. S.

the pelvis, with its digital processes, is greatly distended, and the vessels are turgid with vermilion-coloured blood *.

The effect of stricture on the bladder, ureters, and kidneys combined, brings on fever, with great irritation, from which, at last, there results an effusion on the surface of the brain.

If these distinctions in the nature of stricture, drawn from appearances in the dead body, are important, it is of course equally necessary to learn to distinguish them in practice.

* See Cases in the Appendix.

CHAPTER VII.

OF THE SYMPTOMS OF CONFIRMED STRICTURE, AND OF SOUNDING THE URETHRA TO ASCERTAIN THE PLACE AND EXTENT OF THE STRICTURE; AND OF THE TREATMENT BY THE BOUGIE, AND BY CAUSTIC.

We can be satisfied of the nature of the stricture, only by the examination of the urethra; but there are many circumstances which it is important to inquire into, before we use instruments of any kind.

All the symptoms which have been detailed, in describing the dilatable stricture, may be present in the case of confirmed stricture; but in addition, the following questions may be put to the patient: Has he long suffered irritation in a particular point of the urethra? Does he rise often at night to make water? Does he make long and painful efforts before the urine flows? Does the urine occasionally pass almost involuntarily, and after, according to his sensation, he would have supposed it had stopped? Has he any discharge, at certain times, from the urethra? Is he subject to occasional chills, or to an attack like an ague?

If the patient answers these questions in the affirmative, there can be little doubt that he has some disease either in the urethra or bladder. But he will probably also detail other symptoms; for example, he may complain of pain, with occasional spasm in a particular part of the urethra, and that the urine flows in jets, with a burning pain when passing a particular point. He may have pains in the thighs and testicles, shooting from the groin up to the loins, with a fixed pain above the pubes. In more severe cases, where the ureters and kidney are affected, he will have difficulty of breathing.

If there be much difficulty in propelling the urine, piles will probably follow and aggravate the symptoms of stricture. In some cases, prolapsus ani will be produced by the long-continued straining; and here I must once more remind my reader of what has been delivered under the head of sympathetic pains. Piles and prolapsus ani are of themselves capable of inducing those pains which are commonly symptomatic of stricture; and the disorder of the anus or rectum will sometimes cause an obstruction of urine*, as, on the other hand, an obstruction of urine will produce piles.

* Chopart gives a very instructive case:—A Jew, fifty-five years of age, had large piles, which became violently inflamed: previous to this, he never had any difficulty of making water; but on the third day of the attack he had frequent calls to void

In the one case, the cure of the piles will relieve the symptoms of stricture; in the other, the removal of the stricture will cure the irritation in the rectum.

After having satisfied ourselves with the history of the symptoms, we proceed to examine the state of the urethra by means of the wax bougie.

his urine, and it came only drop by drop; at last the retention became complete. A surgeon endeavoured to introduce a catheter into the bladder; but he drove it between the prostate and rectum,—consequently no urine flowed. The surgeon, not aware that he had made a false passage, imagined that he had been mistaken in the nature of the case, and that it was suppression, not retention of urine, and under that impression he gave him cantharides, &c. A pupil of Chopart's was called: he could not succeed in introducing the instrument that evening, as the point went into the false passage, and it was not possible to pass the finger into the rectum in consequence of the piles. He applied leeches to the piles, and the next morning he introduced a large catheter, and drew off two pints and a half of very fetid urine. The bad symptoms all subsided. The patient in turning in bed drew out the instrument. It was impossible to replace it: all the dangerous symptoms returned. Chopart was brought next day: he found the patient with hiccup, sickness, small pulse, cold extremities, swelled scrotum, the belly "meteroisé," the hypogastric region tense as a drum, in consequence of the distended bladder. Finding the patient in this state, he immediately punctured the bladder above the pubes. The patient was relieved; but on the third day, in a fit of restlessness, he pulled out the canula. Instead of introducing the canula again, Chopart attempted to pass a large catheter, and succeeded. After a great deal of management the patient got well, except that a fistulous opening remained in the perineum in consequence of abscess.—J. S.

Of sounding the Urethra, to ascertain the Place and Extent of the Stricture.

As in a natural state the orifice of the urethra is the narrowest, or rather the least dilatable part, we must, in the first instance, adapt the size of the bougie to it. It is a general position, that the larger the bougie, the less is the risk of its meeting with any accidental interruption *, and consequently there is the better assurance of its stopping at a stricture only.

Having given the proper curve to the bougie, and dipped it in oil, it is introduced a little into the urethra. The penis should now be moderately stretched with the left hand, and held steady; and then with an easy unrestrained motion of the wrist and fingers, the bougie is to be carried down. The motion ought not to be too slow, nor, on the other hand, should the bougie be harshly introduced; for, in either case, the resistance and size of the urethra are not so easily felt. Sometimes only a degree of hesitation and difficulty is found in passing the first stricture, while the bougie sticks fast in the second †.

* The bougie, when very small in the point, is apt to catch in the lacunæ, and on a fold of the urethra, when it is making the curve under the os pubis.

† We cannot examine the urethra properly with a conical bougie; it may be wedged in the first stricture, which will feel like the opposition of a second.

When with a bougie of the largest size we are opposed by a firm stricture, we mark the depth of the stricture on the bougie, and, withdrawing it, take successively smaller ones until we find one which passes the obstruction; and then we proceed to examine the whole extent of the canal.

In introducing a smaller bougie, if it does not pass, but has the point turned directly backward, it has probably hit the angle made by the stricture, Fig. 1, Plate III. and has been directed across the mouth of the opening, so as to be reflected on itself. If it has been pushed against the opening directly, the point will infallibly show some appearance of its being moulded to the stricture, perhaps sharpened, and of a conical form, the point having entered the stricture.

When an obstruction is felt, which our bougie with moderate pressure will not pass, we have recourse to the soft bougie, to take an impression of the stricture.

The *soft bougie* is used to take an impression of the stricture, in order in some measure to ascertain its degree and extent. The bougie is oiled and heated, so as to take the due curve adapted to the urethra: just before using it, the point is dipt into warm water to soften it. It is then to be introduced and carried down to the obstruction, and allowed to remain there; it is pressed with a very steady hand into the stricture; where being

allowed to remain a little time, it takes the impression of the stricture. Upon withdrawing it, we have a cast of the stricture; and we are now enabled to pass a common bougie curved upon the model of the soft bougie.

In withdrawing the bougie, we must be careful to preserve the relations of the instrument to the urethra: if the centre of the soft extremity of the bougie be found moulded into the stricture, it is obvious, that when we attempt the introduction of the small bougie, the point ought to be carried directly in the middle of the tube. But if the projection on the end of the bougie be on one side, then it indicates the propriety of bending the small bougie, so that the extremity may move laterally and enter the stricture.

If the soft bougie is pressed into a stricture which occupies more of one side of the canal than the other, then there will be an indentation on the bougie corresponding to the greater projection of the stricture. If we observe to pass the bougie with an exact relation to this mark, we shall be able to apply the caustic with effect.

Mr. Hunter has said, that a stricture is of very small extent, and resembles the effect of tying a thread round the canal. But this fact has, I think, been proceeded on too blindly. As several varieties of stricture have been already pointed out, it is important that a very accurate survey of

the canal should be made before the caustic is used. For this purpose I have now to propose the use of probes, which, on many occasions, give more accurate information of the extent of the stricture than the bougie.

In Fig. 2 of Plate III. there is a plan of a common stricture, with the point of the bougie introduced into it. If this bougie had been of an equal thickness in all its length, it would have passed the stricture with a uniform degree of difficulty. But as it is conical towards the point, it has only entered the stricture, and sticks there; and when softened, it begins to yield and curve in the upper part of the urethra, giving a deceitful sensation of still proceeding. In neither of these cases is any information conveyed to the operator of the extent of the disease. And although the contractions are very often, merely such as are represented in Fig. 1 and 2, yet they are often far from simple; for there are very frequently irregular contractions for half an inch, or an inch in length found on dissection.

To ascertain the extent of the stricture, I use a series of the silver probes, with circular knobs*

* These probes have been now used for a long time with great effect. I have heard objections made to them, which prove how necessary it is, in this disease, to have correct notions of the natural structure of the part. It has been said, that, after they were passed through, a spasm would take place in the stricture,

(as represented in Fig. 4 and 5, Plate III.), the knobs varying from the full size of the urethra, to what will just pass the narrowest stricture. By successively introducing smaller balls, I ascertain the degree of stricture by the ball which passes easily, and I am secure of being in the passage by passing the probe onward when it has got beyond the stricture. By the slight feeling of resistance in passing the ball, and in withdrawing it again through the obstruction, I ascertain the extent of the contraction. If the ball of this probe be liable, like the point of the bougie, to enter one of the lacunæ, or, passing it, to rub upon the edge, yet, by feeling whether the same roughness or difficulty attends the withdrawing of the ball of the probe, as when it passed downward, we may learn whether there be a stricture and callosity of the canal, or whether the obstruction be not caused merely by the lacuna; for, as the lacunæ are directed with their openings towards the orifice of the urethra, their edges cannot catch the probe in withdrawing it; and, consequently, unless there be a disease, there is a uniform smoothness in withdrawing the instrument.

In Fig. 5 there is an irregular hardening of the urethra for a considerable extent, along which the

so as to prevent the withdrawing of them, perhaps pull off the ball! They are much praised by Professor Græfe, of Berlin, as quite sufficient for the purpose for which they were intended.—J. S.

probe moves with hesitation and difficulty; while, in Fig. 4, having passed the obstruction, it moves on with freedom. These balls then ascertain the nature and extent of the stricture.

I give importance to this knowledge of the extent of the stricture, because I believe that the practice and method of cure ought to be varied with the circumstances. With the bougie we are seldom able to ascertain the number, and probable obstinacy of the strictures below the first; while with this instrument, the ball passing the first stricture, we are enabled, from the fineness of the wire, round which the stricture cannot close, to examine the second stricture with as much facility as we did the first. This instrument, the *urethra sound*, has enabled me to make observations on the urethra, when it is the seat of inflammation or of morbid sensibility, as well as when it is the seat of strictures. In the treatment of the diseases of the urethra, it is of the first importance to know the presence and extent of these inflammations.

There are some other circumstances which it is necessary to recollect in examining the urethra. Every surgeon knows that a bougie may enter into a lacuna, and the obstruction be mistaken for a stricture; but there is another source of error, which, though it is most important, has been very little noticed—the enlargement of all the ducts in the lower part of the canal,

whenever there has been irritation in the bladder or urethra from stricture. The specimens in the Museum of Great Windmill Street, and in the College Museum, prove not only this, but also that the surgeon's instruments are very apt to pass into these ducts, and that the consequence of the perseverance in the attempt to push on the bougie is a false passage in the substance of the prostate. It is difficult to imagine that any surgeon of education could mistake the obstruction felt by the entry of the bougie into the sinus, or cul de sac at the bulb, for a stricture; nevertheless it is a case that occurs very frequently, in consequence of the operator forgetting the form of this part, and that the circular ligament surrounds the urethra, immediately posterior to the sinus. It has been already explained in describing the introduction of the catheter, how this part, which is the narrowest and most irritable of the whole urethra, is so frequently supposed to be the seat of stricture, when it is not.

When a bougie passes into one of the enlarged ducts, or into a false passage, it will be obstructed in its progress; but it will not be grasped while it is withdrawn, as it is in a case of stricture. If, then, we find an obstruction to the bougie, notwithstanding which it passes forward a little, and if, after letting it remain a certain time, we can withdraw it without any degree of resistance, we may be satisfied that we are on a wrong track.

Of the Bougie as a Cure for Stricture.

The too sanguine favourers of the application of the caustic in stricture, have misconstrued the operation of the bougie in this disease, when they say it operates like a wedge merely, and dilates the passage. By the pressure of the bougie, an action is excited in the stricture, and the activity of the vessels adapts the form of the canal to the state of dilatation.

The bougie can never be laid aside in practice: in very many cases it is sufficient to remove strictures; and even when the caustic is employed, we also require occasionally to make use of the simple bougie.

It was formerly a practice to introduce a firm bougie, to press it against the stricture, and then to tie it in its place, so that the forcible impression was continued until the part ulcerated under the point of the bougie. This is a practice never to be imitated: a false passage is almost a certain consequence.

The operator has first to measure accurately, with a common-sized bougie, the exact place of the stricture; then, taking one of a conical form and of a smaller size, he marks upon it the depth of the stricture, by comparison with the other. On introducing it, he knows that no obstruction short of the insertion of the bougie to the full depth, as already marked, can be the stricture.

He now presses gently, and ascertains that he has introduced the bougie into the stricture, by its sticking when he slightly attempts to draw it back; and when it gives the feeling of having passed the contraction, he can ascertain the fact, by quitting his hold of the bougie, and observing whether it recoils, and rises a little from the urethra; for it does so when it is bending in the canal, and not entering the stricture.

Upon withdrawing the bougie, and examining the point, we have to observe whether the end be blunted; in which case either the stricture must be close indeed, or the instrument must have struck on the angle formed in the urethra by the prominent stricture. If the bougie is sharpened or flattened towards the point, it has probably entered the stricture, and we are made certain of this, if there be a defined circular impression round the bougie, at a little distance from its point.

The time that the bougie should remain in the passage must be determined by the feelings of the patient; for it should never give pain if possible. At first, a few minutes (in an irritable urethra) may be sufficient. I seldom keep it longer than twenty minutes; and the repetition of the operation every second morning, will, in good time, reduce the most confirmed stricture*. If the

* Both Chopart and Desault have strongly recommended that the bougie should be left for some days in the urethra.

There

stricture retains any degree of the natural elasticity of the canal, we may proceed rapidly to

There are a few bad cases where we may be obliged to pursue this practice; but certainly it ought never to be done in common cases. It is evident, in reading Chopart, that the instrument in the passage was a source of great distress, and that abscess was frequently formed round the canal in consequence. In the Appendix there is a case given where the whole of the lower part of the urethra ulcerated in consequence of the pressure of an instrument. If we read the following passage from Richerand, which is descriptive of the mildest part of the French practice in the cure of stricture, we must allow that there are very few patients who would submit to it.—J. S. "La présence des sondes même elastiques et flexibles, dans le canal de l'urétre, est assez douloureuse, les premiers jours pour forcer le malade de garder le lit et la chambre; quelquefois même la sensibilité du malade est telle qu'il ne peut endurer leur présence, et qu'on est obligé d'user des calmans, soit à l'intérieur, soit en injection, avant de le soumettre à leur usage. L'irritation que la sonde exerce sur les parois du canal, souvent produit l'engorgement inflammatoire du testicule. On le combat par les saignées, les applications emollientes, et la suspension de l'usage de la sonde, jusqu'à ce que cette inflammation sympathetique soit dissipée. Une secretion mucuso-purulente s'établit dans l'urétre, elle est surtout abondante aux endroits retrécis, aussi les parois de la sonde sont elles la macerées plus qu'ailleurs et couvertes d'une mucosité blanchâtre. On juge du progrès vers la guérison, par la quantité et la qualité de ces matières, et par la facilité plus ou moins grande, qu'on éprouve pour faire pénétrer les sondes dont on augmente graduellement la grosseur. On n'en doit cesser l'usage qu'à l'époque où celles du plus gros calibre sont introduites sans obstacle et lorsque tout écoulement muqueux par l'urétre a cessé, trois, six, neuf mois et même une année sont necéssaires pour obtenir une dilatation convénable."

increase the size of the bougie; but when it is firm, a change of structure being a necessary prelude to our success, the pressure must be more gradually increased.

Here I must pointedly give my reader a caution in regard to the impression or nip which the stricture makes upon the bougie. The urethra is oftener injured, and dangerous irritation brought on, by drawing out a bougie rudely, than by forcing it into a stricture. When a soft wax bougie is used to dilate a stricture, as the wax softens, the edge of the stricture sinks into the bougie, and grasps it so firmly, that in drawing it out it is very apt to tear and injure the urethra. It is for this reason that the bougie should be moved a little, so as to shift its place from time to time, and to prevent the stricture making a deep impression. This must be particularly attended to, when the catgut bougie is used, as the extremity which is beyond the stricture is apt to swell and form a button.

We must not forget, that to give pain is to induce a reaction, a tendency to contraction in the stricture*; and that, while we are proceeding

* The following remarks were made upon this part of the first edition, by Professor Barovero: "Questa proposizione ammette qualche eccezione. Io so che i nostri professori di chirurgia *Ballarini* e *Filipi* curavano anni sono uno stringimento dell uretra in un personaggio raguardevole dimorante in questa capitale. Questo stringimento era cosi indolente

without giving the patient much uneasiness, we are proceeding most prosperously to the final though gradual removal of the stricture.

The total removal of a stricture must necessarily be a gradual operation; and when the

che sebbene s'impiegasse grande violenza per superare l'ostacolo sino ad incurvare piccoli catetéri a tal uopo introdotti, tuttavia ne l'uretra gemeva sangue, ne l'immalato soffriva dolore.

"Questa osservazione ci prova che quantunque gli stringimenti dell uretra in origine dipendano dall infiammazione lenta e cronica come assai bene ce lo dimostrano le osservazioni patologiche fatte dal nostro Autore, puo accadere tuttavia che lo stringimento quale conseguenza della preceduta infiammazione susista mentre non v'ha piu la menoma traccia della medesima."

This is a very important point for consideration. It is sometimes possible to use great violence in a case of old stricture. And in this case Professor Ballarini used so much force that he twisted the catheter, and still no blood flowed from the urethra, nor did the patient suffer from it. Upon this, the Professor argues that this opinion of Mr. Bell's should be received with exceptions; for, says he, although it is sufficiently proved that strictures arise from inflammation, still, after it has once subsided, there is no trace of it left.

It is true, that in some strictures it is possible to use great force, because in them the stricture is so changed that the natural sensibility of the part is lost. But this very circumstance ought to make us cautious in what we do in such cases, because we are not in them checked by the feelings of the patient.

Barovero gives another case, of a patient who was under the care of Eynaudi, surgeon major of the Piedmontese cavalry, where, though in consequence of the sensibility of the stricture, the patient had retention of urine, from which he was re-

obstruction is removed, and a full-sized instrument can be introduced into the bladder, the treatment is not concluded,—the bougie should be introduced every third day; then every week; then once a fortnight; and finally omitted. The more gradually it is left off, the more secure the benefit to be derived. But if there remain tenderness and inflammation in the canal, the patient is not secured against a relapse; for inflammation originally produced the stricture, and the continuance of inflammation will reproduce it.

I have been long in the habit of using a silver instrument* in the form of a bougie, further to dilate the stricture as soon as I have gained a certain degree upon the obstruction. The soft wax bougie I apprehend to be the best instrument while the stricture is narrow.

Of the Caustic.

The bad effects which may be brought on by the use of the caustic, are, an attack of fever like

lieved by a severe antiphlogistic treatment, yet it became at last quite insensible. The consequence of considering an old stricture insensible to violence, will be shown in the Chapter on forcing the Stricture.—J. S.

* This is preferable to the sounds made of steel, or of the flexible metal. The elastic gum bougie is very useful in many cases. The French recommend it as the only instrument. As they have completely given up the use of the wax bougie, they can never have the advantage of having a cast or impression of the stricture.—J. S.

the fit of an ague, high irritability of the urethra, hæmorrhagy from the urethra, swelled testicle, affection of the stomach with giddiness, and plugging up of the urethra by the slough.

I believe this is equivalent to saying, that the caustic must never be used in confirmed stricture without a pressing necessity for it, and that it is to be used with the greatest precaution *; and having said this, I am at liberty to add, that it is a remedy which cannot be too much prized.

I have been particular in describing the manner of ascertaining the exact place, direction, and extent of the stricture; because I am too well assured that it is in this, that the general practice is deficient; surgeons, of all kinds and de-

* Chopart says the caustic ought not to be used, except in an extreme case. It is clear that he never made a fair trial of it. Desault's observations are very short upon the question of the caustic. He says, that the caustic, as recommended by Hunter, has always appeared to him to be very uncertain in its effects, and very dangerous in its consequences; and though Mr. Hunter has given cases of his success with the caustic, he, M. Desault, has never dared to use it. This account is taken from the edition of Desault's works, published by M. Roux, in 1813, and consequently long after the publication of Sir Everard Home's treatise. In Germany the surgeons have not had so much dread of the caustic. But it would appear that they do not use it to so great an extent as to produce sloughs; for Professor Græfe's words are, "The author judges very correctly of the effect of caustic, and he gives some good advice with regard to the injudicious and improper use of it."—J. S.

grees, venturing in the slightest and in the most desperate cases to try the caustic without sufficient discrimination.

For the removal of a confirmed stricture with a sharp filamentous edge, or for that of any kind of confirmed stricture, my experience teaches me that the alkaline caustic is quite ineffectual. I have made use of the kali purum, and in some cases I have found advantage from it, but it was only in the greater ease of introducing the bougie; and the removal of the stricture, in every case, I have learned to attribute to the mechanical action of the bougie.

The supposition that the kali purum abrades and takes off the surface of the stricture, appears to me to be without foundation; that soap which is formed, is by the union of the caustic with the secretion of the urethra. By this union, and the mixture with the oil in which the bougie is dipped, the caustic is made mild; and having the quality of lubricating the strictured part of the canal, it facilitates the introduction of the bougie.

The lunar caustic is peculiarly well adapted to destroy the firm and sharp stricture of small extent, which is the most common kind of obstruction. But there are strictures or diseased narrowings of the canal, extending to half an inch, or an inch in length, and irregular in their course. In these cases we must retain the use of the com-

mon bougie; to attempt boring with the armed bougie through the firm strictured part of the canal for so great a length, when the surrounding parts are comparatively loose, is in a high degree dangerous.

The common kind of permanent stricture, which I have described under the term simple stricture, is ascertained, in the living body, by the use of the soft bougie, and by the circumstance of the ball of the probe passing down uniformly, and without obstruction, till it reaches the stricture; there meeting with resistance; and at last passing with a jerk through the stricture, and then gliding smoothly onwards. This stricture may be safely treated by the operation of the lunar caustic. A full-sized armed bougie is to be passed down to it, so that the whole base of the stricture may be destroyed; after which the largest bougie may be carried freely into the bladder. It is the success attending the operation of caustic, in cases of this kind, that has brought this method of cure into such general use.

Let us observe what are the effects of lunar caustic on the urethra. When a part is touched by the caustic, it does not at once become loose; the dead slough remains attached to the remaining part; and the obstruction * for the time is

* The mechanical obstruction, not the spasmodic difficulty of passing the urine.

necessarily greater. The obstruction is greater, because it is sufficiently evident that the union of the caustic with the substance touched, produces a sponginess or expansion in it. It is by a change taking place in the living part that the dead comes off in a slough. This operation, the effect of an excited action of the living vessels, is necessarily slow. If the application of the caustic has been gentle, the dead matter comes away insensibly; or only some very small shreds or filaments are observed in the urine. If the application of the caustic has been more severe, a distinct pellet of slough will be pushed off with the urine about the fourth day.

As to the white matter which is attached to the lunar caustic on withdrawing the bougie, I know not what to think of a surgeon who can suppose this concrete to be a true slough. The matter discharged from the urethra in consequence of introducing the lunar caustic is of three kinds: 1. The coagulated secretion of the urethra which attaches to the end of the bougie: 2. Coagulable lymph; which is one effect of inflammation, and therefore an after process: 3. and lastly, The proper slough from the stricture or membrane of the urethra, which has been injured and disorganized by the operation of the caustic, and is thrown off by the living surface. Some authors have spoken of keeping the lunar caustic in the

urethra for a few minutes, as if a minute more or less was of little consequence! I kept the armed bougie, as it is termed, one minute introduced into the sheath, or prepuce, of a ram; on killing the animal on the fourth day, I found a deep slough, of double the diameter of the caustic employed, almost detached, and leaving a deep ulcer. I applied the caustic to the stricture of a young gentleman for a minute; on the fourth day his urethra was plugged, until the urine forced off a large membranous slough. It is the coagulated matter attached to the face of the caustic which prevents the entire destruction of the urethra, when the armed bougie is kept more than a minute in the canal.

Let my reader consider how it happens, that in certain cases on record, the caustic goes through the stricture even during its application as a caustic. Consider also the instances frequently mentioned, where the bougie is described as going into the bladder twenty-four hours after the application of the caustic. What can we understand to happen in such cases, but that the surgeon is deceived by the urethra permitting him to use more force than he could before the parts were deadened by the caustic?

In using the caustic bougie, we proceed in this manner: we take a bougie of the common kind, which we know to be adapted to the urethra; but

the extremity of which will not pass the stricture. We take a caustic bougie of the same size and form; we then give them the proper bend to answer to the place of the stricture; we then oil them, and lay them by us, for, if kept in the hand, they lose their firmness. Then taking the glans penis in the fingers, the simple bougie is introduced with a uniform motion, until it meets the stricture. Having ascertained that the point bears against the stricture, a mark is made with the nail on the bougie, that the depth of its insertion may be ascertained. It is now to be withdrawn. The simple and the armed bougie are now placed together, and a mark with the nail made on the armed bougie corresponding to the place of that on the simple bougie. The armed or caustic bougie is now introduced with a uniform motion of the wrist and fingers, until it is opposed by the stricture: it is gently pressed, and a steady gentle pressure is to be continued for the space of a minute.

In the application of the caustic bougie to an old and confirmed stricture, there is often no pain experienced; and the pain and heat in such a case are the effect of the liquefaction of the caustic. Where there is a small bridle stricture, the bougie, as commonly prepared, must permit the caustic to touch some part of the natural surface, and there

will be a burning sensation accompanying the application.

When the bougie is withdrawn, a soft white matter covers the surface of the caustic. This is not a slough, but is the effect of the caustic coagulating the natural secretion of the passage. This concreted matter sometimes remains in the passage until driven out by the urine. The patient is ever willing to believe this the slough of the stricture.

The proper slough generally comes away in small shreds with the urine. After a very severe application, at the distance of perhaps three days, the patient feels an unusual obstruction in the passage, and straining, he brings away the slough.

I have entirely given up that severity in the application of the caustic, which produces distinct slough and temporary obstruction to the urine; and I am now well convinced, that in the case adapted for the use of the caustic, a slight application, that is, a short continuance of the application, compared with the present prevailing practice, is quite sufficient for the entire destruction of the stricture.

When I meet with a case of bridle stricture, the filament of which cuts the wax bougie, I am in the habit of varying the manner of applying the caustic. The following is a very safe method:

Take a full-sized smooth wax bougie; oil it,

heat it, and give the due degree of curve to adapt it to the form of the urethra; introduce it down to the stricture, and continue to press it gently for some time. Withdraw it, without twisting the instrument, but, on the contrary, preserve its relation to the urethra, and take particular note of that relation; on examining the point, there is a deep cut upon it formed by the bridle stricture. Take now a small portion of the lunar caustic, and, opening the cut of the bougie which has been made by the filament of the stricture, place the portion of caustic in it. Again, introduce the bougie thus armed with the caustic, in the relation it formerly stood to the urethra; and now the filament of the stricture, falling into the notch it has formerly made, will be effectually operated on by the caustic, without any of the heat or inflammation usually produced in the urethra by the use of caustic: even although it does not disappear on the application of the caustic, yet it will after this operation yield rapidly to the use of the bougie.

Almost every case of stricture in the urethra is attended with peculiar circumstances *. Stric-

* In the Appendix the cases are related which are proper for the application of the caustic. For exact drawings of some of these preparations, the reader may consult Plate IV. V. VI. VII. and VIII. of the folio edition of the Morbid Anatomy of the Urethra.—J. S.

tures vary so much in situation, degree, or kind, that it requires more discrimination than is generally bestowed in the preliminary steps and inquiries, as well as in the adaptation of the methods of cure. As improvements and new suggestions are offered us, we require, in justice to the public, to be jealous of our individual partialities; and in no instance, perhaps, is prejudice so apt to arise in favour of a particular method, merely because it is our own, as in the cure of strictures.

In former editions of this work, I have shown considerable partiality for the use of the *kali purum* as a caustic in cases of stricture. I have used it a great deal. I have found it diminish the sensibility of the stricture. I have found it well adapted to lubricate the stricture, and facilitate the entry of the bougie. In short, I have found it assist the operation of the bougie in dilating the stricture, but I have not found it to be a caustic capable of destroying the sharp edge of a firm stricture, in any degree to be compared with the lunar caustic. I have therefore drawn my pen through all that I wrote in explanation of this method in any former edition.

But of the methods of subduing a callous firm stricture of the urethra, there are none superior in efficacy to the continued use of the catheter. Of course this requires that the canal be capable of admitting an instrument to be passed into the

bladder; and such an instrument as may serve to discharge the urine. In short, the passage must have been made good by some of the modes already described. But if two or more strictures occupy the canal, or even one so firm and unyielding as to withstand the operation of the bougie and the caustic, then recourse may be had to the catheter, by which all the strictures may be removed at the same time, and as it were by the same operation. The objection to this mode of operating, is its severity and the confinement it requires.

A smooth elastic gum catheter is to be passed into the bladder, the patient is to be put to bed, and all the usual means of obtaining relief from irritation may now be had recourse to: that is to say, he may have an opiate clyster; the bowels are to be kept gently in action; he is to live low, and drink of a mucilaginous decoction. But above all, perfect stillness and repose of the body will do much to lessen the irritation which arises from the presence of the catheter.

At first, the object should be merely to accustom the parts to the presence of the instrument. When this is accomplished, a catheter which will gently distend the stricture is to be left in the urethra. In a few days this will be found quite loose in the passage; so much so, that it will fall out, if not retained. Another, of a size larger, is to

be substituted; and thus every two or three days a change is to be made, and the catheter gradually enlarged, till it is of the full size, and the canal is dilatable in its natural degree.

We shall find, that in pursuing this process, a considerable discharge is excited in the urethra; and it may be necessary to withdraw the catheter occasionally and clean it, and also to allow the urine to flow naturally through the urethra for the purpose of clearing it of the accumulated mucus. From the expressions of the French authors we should be tempted to conclude that they retained the belief that the stricture was melted down, and, therefore, that this discharge was the proof of the success of the operation. But the stricture is destroyed by the parts accommodating themselves to their new position, and by the absorption of the matter which forms the stricture, not by the ulceration of the stricture.

It will also be of some consequence to withdraw the point of the catheter from the bladder, but still retaining it in the urethra; for it will often be found that the pain and irritation do not arise from the presence of the instrument in the urethra, but from the point resting in the neck of the bladder.

The instrument must be fixed to a bandage which is around the body; the suspensory bandage will serve; and precaution must be taken that

the catheter is not withdrawn by the nocturnal erections.

However, the cure is by no means accomplished when the largest catheter can be passed into the bladder, with whatever ease the introduction may be made; the disposition to form a stricture is not overcome, and if the instrument be finally withdrawn when thus much is effected, the patient will be subject to return of the stricture. When the catheter is laid aside, recourse must be had to the bougie. It must be passed every morning for some time; then every second morning; then twice a week—once a week—once a fortnight, and then gradually left off when the pain and inflammation of the canal are finally subdued.

OF FORCING THE STRICTURE.

A QUESTION will sometimes arise in the surgeon's mind—may not this stricture be broken through, and all these obstructions at once overcome? This is a most perilous subject to enter upon, full of difficulties; and especially, when I consider it to be so much the disposition of the younger part of the profession to do things by force, rather than by patience and art, I am fearful of affording a precedent. But the laborious investigations I have made into the state of the part, by dissection, will, I trust, enable me to come well out of this dilemma.

I shall suppose, that a patient has had a stricture, and has been under treatment a long time: at last, perhaps by some untoward awkward interference, there comes on unusual difficulty of making water, and then total suppression. The bladder is distended, accompanied with intolerable pain. The surgeon uses the catheter, he feels the opposition to the entrance of the instrument; but the case is desperate, and he thinks himself enjoined to attempt something bold. He forces on the catheter —he feels it tear up the texture—blood flows copiously, but no urine. It need not be said, that the

patient's condition is now infinitely worse; since such injury leaves us no hopes of seeing the urine restored to its natural channel. The catheter is here forced into the cellular or spongy texture of the bulb of the urethra, and may be felt through the coats of the rectum, by introducing the finger in ano; or, it has broken into the substance of the prostate gland, and has made its way under the coats of the neck and lower part of the bladder. In the evening after this attempt, the patient suffers a severe paroxysm of shivering, like a man seized with an ague, and to-morrow he is in a high fever: he begins to ramble, to be delirious, and is lost!

On the other hand, let us suppose that no such attempt is made. But let us take the case that, Heaven knows, is common enough; where nothing is done for relief; or that in which the bladder has been punctured, and the exhausted patient has sunk under the irritation and inflammation. On dissecting the stricture in the urethra, the source of all the evil is such as might have been broken down and destroyed by the end of the probe or bougie. This I have seen with the deepest regret. How, then, it may be asked, are we to proceed? Is it ever allowable to break down the stricture? What are the conditions that call for it, and how is it to be performed? I shall state a case before attempting to answer these queries.

I was called by a surgeon to a man labouring under total suppression of urine; I found a Frenchman, about fifty-five years of age. For two days he had not made a drop of urine: the bladder was already risen high in the belly. I learned that he had suffered much and long from a stricture in the urethra, but that he had not been touched with caustic, and had not had even a bougie introduced. I found that the gentlemen assembled had endeavoured to pass a bougie into the stricture, but the stricture was narrow, and none of the bougies were even marked by entering in any degree into it. I first attempted to take a mould of the form of the stricture by means of a large and soft bougie: directed by this, I attempted to pass the smallest. This I did with the hope of bringing back the stream of urine; but the bougie did not enter, and the operation failed of its desired effect. The patient sat like a statue; he seemed unmoved by the danger he was in, and the pain he must have suffered. The bladder was high in the belly, and as tense as a ball. Something it was necessary to do before leaving him; and such manly resolution as he showed, does not tend to diminish the desire of the surgeon to afford relief. Was the bladder to be punctured, or the stricture forced? After consulting with my friends, I resolved on the latter. I introduced a catheter

of a moderate size down to the stricture. The patient was supported in the erect posture. I put the fingers of my left hand upon the perineum: I grasped the urethra, and drew it forward on the end of the catheter, as if I intended rather to draw the urethra on to the catheter, than to push the catheter through the urethra. Yet I pushed the catheter steadily, and kept it full two minutes in the position. From time to time I made an effort to withdraw it; at last it stuck, it was grasped. I knew that the point had entered the stricture: that the stricture had in part given way. I used increasing force, and carefully marking the position of my patient's body, and hence calculating the axis of the pelvis, and the course of the urethra, I succeeded in carrying the instrument into the bladder, and drew off two quarts of urine.

The patient was inexpressibly relieved, and broke the silence, I may say, of his despair. He was put to bed with a large opiate. The catheter remained in his bladder for two days without being changed. It was then withdrawn and a larger one introduced. In a few days he was not only saved from his dangerous condition, but his stricture was entirely cured.

I was called into Hunter Street, late one evening, to a very old gentleman, in much the same condition with the patient just mentioned. His

stricture had been of long standing, and had considerably fatigued and injured his constitution; but he had relied little on the surgeon's aid; and, in fact, the stricture was in what I may call its natural state. The urine had at last been quite obstructed, and the bladder had risen far above the pubes. On considering all the circumstances, I did as I had done in the instance of the Frenchman—I forced the stricture.

But I am affording my reader a very imperfect view of this question; and were I to leave the matter thus, he would conclude that the whole surgery of the urethra resolved itself into this: that when formidable symptoms, at last, arise, the stricture is to be forced, and there is an end of it. I shall now present him with the notes drawn up for a consultation, in which I was engaged; and which brought the first surgeons in London to acknowledge the difficulty and danger of any mode of proceeding.

Note for Consultation.

I. The stricture being exceedingly narrow, so as not to admit a bougie to be passed into the bladder, and the occasional attacks of inflammation and spasm both frequent and very severe, it becomes us to consider the probable consequence of this stricture, and the practice which ought to

be resorted to in the event of symptoms becoming still more urgent.

II. It may be apprehended, that in some of these paroxysms a suppuration might take place in the perineum. If this were to form very slowly, and the urine in the mean while continue to pass by the urethra, until a fistula was established, it would be an occurrence by no means to be regretted.

III. But in the present condition of the stricture (being so very narrow), I should fear that a total obstruction might be the consequence of the *first stage of the abscess*, and the inflammation which must necessarily accompany it.

IV. In the event of a total obstruction taking place, what ought to be done? Should the stricture be forced with a small silver catheter? or, should the urethra be opened behind the stricture, and a canula introduced?

V. As to puncturing the bladder, I apprehend it would neither be safe nor effectual:—not safe, because the bladder is small and thickened; and not effectual, because the obstruction is not of a temporary nature.

VI. Is there not a danger of the irritability of the bladder increasing, and of inflammation and irritative fever with its consequences? Is not this more likely to occur than absolute obstruction? What is then to be done? are we to bleed and

palliate? or are we to relieve the bladder by an operation?

My advice in this case was, to proceed cautiously with the bougie, to dilate the stricture, and if the symptoms should become suddenly worse, to cut upon the stricture and introduce a canula into the bladder.

The difference in this last instance was, that the patient had suffered one hundred and five applications of the lunar caustic! Now the principle is clearly this: if caustic is not doing good, it must be doing harm; if it is operating on a stricture, it must be destroying it, or it must be causing inflammation and condensation of the part. If after so many applications as this gentleman suffered, no advantage had been derived, the canal must have been made worse; and my experience, by dissection, assures me, that it is in such cases that the strictured part of the urethra is found firm and almost cartilaginous, and the stricture is then the firmest part of the urethra: so that the membrane of the urethra will yield before the stricture itself can be forced *.

Whilst these papers were before me, and when recalling former cases to my recollection; a gentleman came to me, whose case exactly suited to

* The subject is continued in the Chapter on puncturing the Bladder and cutting the Stricture.

illustrate the subject. As soon as he said that he attributed all his sufferings to a surgeon forcing his stricture, I made him read the title of the bit of paper under my hand, and encouraged him to tell me all about it minutely. He said that he believed his surgeon got tired of him, and one day, instead of proceeding as he had done, forced a large silver catheter into his bladder—he fainted from the violence of the pain—he lost a great deal of blood from this operation, and in the evening was seized with a cold shivering, which was succeeded by fever and ague, which lasted many days. In this condition he used to pass a wine glass full of matter at once. On sending for Dr. Curry (whose death every one must regret, who knew him, and especially those who knew him for something better than his vituperative eloquence, for the unusual extent of his information, and the singular sallies of his genius), the Doctor made no difficulty in stating, in the strongest terms, the cruelty and stupidity of the surgeon's conduct; and after conducting him with some difficulty through an illness, with a constitution shattered by this violence, he sent him to the country. It was on his return to town, having lost his friend and physician, that he came to me. On examining the urethra, I found a very narrow stricture at the bulb; it cut a small bougie very deep. The urine came sometimes in a small stream, but generally in drops.

The stricture had returned in a much worse degree than before.

Here we have distinctly placed before us the immediate and remote consequence of violence committed on the stricture: the first is, the shaking and cold fit of an ague, followed by inflammation and fever: the last is, the return of the stricture worse than before, by a process of inflammation similar to what first formed it.

But certainly, if the violence done to the stricture had been no more than the constitution of the patient could have borne; if, after the stricture had been strained, and in some degree broken down, the use of the bougie had been persevered in, to prevent the canal closing again; it is possible that the patient might have profited by what he had suffered. Who then can say what the degree of violence shall be, which a surgeon may commit with impunity on a narrow stricture? It is not possible to convey this information: practice and much experience, and an acquaintance with the patient's constitution, can alone enable the surgeon to judge of the propriety of *forcing a stricture.* All that I find myself confident in concluding is, that where there is a stricture of the nature of a little filament (and such is the stricture most commonly found where there has been no previous violence committed), we may force it, if there be serious and pressing reasons for imme-

diate operation. But, on the contrary, where the stricture, by frequent returns of inflammation and much labour with the bougie and caustic, has become a dense body, the attempt to force the passage with the catheter will not succeed, and may be fatal *.

* It is well known that many surgeons, in this country, are in the daily habit of forcibly driving iron sounds into the urethra. They grasp the penis with their left hand, and with the sound resting on the palm of the right, they push the instrument forward with all the weight of the arm. It is very extraordinary that such practice should have prevailed; for, it must be evident to any one who examines an old stricture after the death of a patient, that the stricture is much firmer than the part of the canal anterior to it. It is frequently even cartilaginous; and consequently if the point of the conical catheter pass into such an obstruction, the stricture will not be broken up, but it will be torn from the membrane which supports it, and be carried forward on the point of the instrument.

The surgeons who follow this practice in London, are said to proceed on the authority of the continental writers, and particularly of the French, who have been, from some erroneous impression, supposed to have been very successful in curing strictures by violence.

To show how far this idea is correct, I have made extracts from all the cases where the stricture has been forced—not in the cases where there was fistula in perinæo, because in that state the circumstances of the patient are widely different from the case where there is complete retention, and no outlet except through a narrow stricture.

Desault, page 267, gives the following case: "The retention had at last become complete, and the patient had not passed a drop of urine for twenty-four hours. In this state he went to the Hotel Dieu. He was now fifty-six years of age; and

it was fifteen years since the origin of his complaint. He suffered excessive pain. The tumour of the bladder rose high above the pubes. It was necessary to evacuate the urine immediately." For this purpose Desault used a catheter, which passed easily through a third part of the urethra; but at that point he found a resistance which he overcame by a "forte pression." He experienced more difficulty in passing the stricture at the membranous part: however, by pressure, and using the instrument with a rotary motion, like a drill, he reached the bladder, and gave passage to more than three pounds of urine. The instrument was left in: the patient bore it pretty well, and on the fourth day it was changed. In five days afterwards the patient was able to walk about; and now, says Desault, suppuration was established in the canal, and the urethra became gradually larger by the wasting of the callosities.

The man continued in this state until the twenty-first day; but then, as Desault says, he became melancholy, and had nausea and fever. This Desault calls an "embarras des premières voies;" but on the evening of the same day a tumour appeared in the perineum, which, in a few days, broke, and discharged pus and urine; and a fistula, at last, was formed.

In this case we have an example of the manner in which the French surgeons suppose strictures to be cured—wasted by suppuration; and in many of their cases we shall find, that the progress of the cure is judged of by the quantity of matter that passes by the side of the instrument. In the "embarras des premières voies" we see an example of the fever consequent upon injury of the urethra.

In another case which was treated very nearly in the same manner, "the patient thus reached the twentieth day of his treatment; but at this time the hardness which was at the root of the penis had increased. In a few hours there was a tumour at the same part, and an inflammatory swelling of the scrotum." This accident, says Desault, could not be attributed to the retention of urine in the bladder, nor to the passage of it

by the side of the instrument; but the patient had at this moment the beginning of an "embarras dans les premières voies." Here again we find Desault mistaking the fever which is a consequeuce of the urinary abscess. The tumour increased, it was opened, and gave escape to matter mixed with urine; and we are told that on the 118th day the fistulous opening was smaller.

Chopart says, at page 568, that strictures of the urethra, so small as to prevent the introduction of a bougie or small sound, are so rare that we have very few examples of the use of sharp sounds, or "sondes à dard," or trocars, in piercing these obstructions. He gives one case, where M. Montagnon, a surgeon, at Nismes, passed a leaden sound through the stricture, and the patient got well; but he does not give any particulars of the case. He relates another, where Desault attempting to perform the same operation, drove it into an abscess of the prostate. After having related the case of Astruc, the famous physician, of Paris, who was relieved by Lafaye forcing a sonde à dard through the prostate, he warns young surgeons against the use of this instrument, and says, that even to force on the catheter is preferable; but this he does not recommend. It is impossible to withhold praise from Chopart. The whole of his writings show him to have been a great surgeon, and his honesty in relating cases is most praiseworthy. He says, "How many miserable cases of false passages could we relate! I have most commonly found the instrument pass between the anterior part of the rectum and the prostate. I have seen the sound pierce the lateral parts of the urethra, and appear under the integuments of the pubes." In one of his own cases, while pushing on the instrument, he candidly tells us, that he felt it from the rectum between the prostate and the intestine. In another, where, in the attempt to push on the instrument, he bent it, the patient died of infiltration of urine into the pelvis and perineum. Nothing can be stronger than the opinion Chopart expresses at page 636. After describing the manner of re-

lieving the bladder by this operation, he says, that those who are not thoroughly versed in the use of the catheter, ought to puncture the bladder, in preference to forcing the stricture. Of all the facts which he could collect regarding this operation, he says, there is only one patient who survived the perforation of the obstruction, and during the few years which he lived, he was subject to difficulty in making water, and to incontinence of urine. All the other patients died a few days after the operation, excepting one man, who lived about a month after it.

Richerand does not give any examples, but what he says is sufficient to make us dread the practice: "When an obstruction prevents the entry of the instrument, it is necessary to use a certain degree of force; and in forcing the obstacle the sensation is as if we were driving the sound into the parenchymatous matter of the liver or spleen!!" This feeling should give the surgeon a good idea of the mischief he is doing, but Mr. Richerand treats it very coolly; for, says he, "if in the effort we make a false passage, pierce the prostate, or penetrate into the bladder by any other than the natural orifice, the case is still not so bad as where the bladder has been punctured!!"

There are some cases related by my friend Mr. Cross, in his Medical Sketches of Paris, which he saw under the care of M. Roux. In the first case, which was the most successful, the patient, on the fourth day after the forcing in of the conical sound, had swelling of the testicle, scrotum, and perineum. At the end of six weeks this patient was still in bed. In the next case, "the *sonde conique* had been employed by a surgeon five days before the patient came into the hospital; a gum catheter was introduced on his admission, but before a week the patient took it out, believing he could make water well enough without it. On the next day it was found, that effusion of urine into the scrotum had taken place, and which was evacuated freely by two long incisions. The elastic catheter could not be introduced again—the urine distilled from the urethra. The

free incisions into the scrotum prevented sloughing; but the patient, who was very weak and in bad health, died in a few days.

"M. Roux assured me, that he never saw any inflammation or irritation from this treatment, which was not readily managed and subdued. In his clinical lecture, however, he mentioned two fatal cases which he witnessed, and had made examination of, after death. In one of these, on taking out the *sonde conique d'argent*, the third or fourth day after its introduction, the surgeon could not introduce the gum catheter; in attempting to do which, another passage (M. Roux said) seemed to have been made; infiltration of urine succeeded, inflammation, sloughing of the parts, and death. The second case was somewhat similar. Peritoneal inflammation was the immediate cause of its fatal termination, the instrument having passed between the pubes and anterior part of the bladder."

The preceding cases are all the data upon which some surgeons in this country are, at present, proceeding; for, in the works of Chopart, Desault, Richerand, and Roux, I cannot find another case, nor any thing farther than general observations on the utility of the practice. None of these authors have made any distinction of cases, nor have they mentioned the fact which so frequently occurs in bad cases of stricture—enlargement of the ducts posterior to the stricture, into which their sound is necessarily in danger of passing. I hope that this picture of French practice, and the observations which Mr. Bell has made, will place this question in the proper light. There will be found in the Appendix, the description of a preparation taken from a patient who died in consequence of the attempt to relieve the retention, by forcing the stricture.—J. S.

OF PUNCTURING THE BLADDER.

If my reader has accompanied me through the preceding part of this work, with that attention and interest which the subjects demand, he must have foreseen the singular importance of this question—the time and mode of puncturing the bladder?

The necessity of puncturing the bladder, will not depend so much on the state of the bladder and urethra, as on the general condition of the patient. For example: if we are called to a patient with the bladder tense and full, and rising above the pubes; if he is suffering under extreme pain, while the urine is either totally obstructed, or dropping insensibly through the urethra; if he has hiccough, an anxious countenance, rapid pulse, and urinous perspiration, no man can doubt of the immediate necessity of drawing off the urine; and if we find that the patient has had stricture, that fruitless attempts have been made to use the catheter, we ought not to lose an instant; and therefore we are not to recommence operations on the urethra, we must puncture the bladder. This operation will not add to his suffering or his danger; but, on the contrary, will, in the most expeditious way, and with the least possible violence or irritation, free

him from the accumulated urine. I have supposed a case, which some may imagine an extreme one, but it is not: it is one of frequent occurrence, and especially among the poor, who are brought into an hospital.

It is, however, impossible to give a correct and safe rule for deciding this momentous question, without entering upon a minute inquiry into the distinction of cases. I shall, therefore, present my readers with the whole of a former hospital report on this subject, after which we shall return to the consideration of the rule of practice.

CASE REQUIRING THE BLADDER OF URINE TO BE PUNCTURED.

22d May.—Williams, aged 77. He was brought into the hospital under great suffering from obstruction of urine. He reminds me of his being under my care two years ago, and states the circumstances very distinctly. He has had strictures for many years, and has suffered a great deal from temporary obstructions. On the occasion alluded to, the belly was much distended, and he thought he must have died, not being able to make a drop of urine. He states that I introduced a small bougie, not into the bladder, but into the stricture, that he was then made to strain, and at the same time the bougie was withdrawn, and a little urine

flowed; that after this he was put into a warm bath, and got an opiate, and that by little and little he had more perfect relief. Since that time he has been very careful, and has had no severe attack till the present.

He thinks the present difficulty has proceeded from cold, and not from excess of any kind. The obstruction came on gradually; he came to make water in smaller and smaller quantity, and with increasing pain and difficulty, until now, that for forty-four hours not a drop has passed.

He is in a situation of great danger. He has been bled and put into the warm bath, and has had opiate clysters. An attempt has been made to pass a small wax bougie into the stricture; it has failed: neither has the attempt with a smooth cat-gut bougie succeeded. He has been in great agony, and is now exhausted with continual suffering, and although distinct, when roused, he is fast falling into a lethargic state. The bladder is very much distended and tense, and rises to the umbilicus. It is not only to be felt, but is distinctly visible, and the form is an irregular cone.

At two o'clock the operation of puncturing the bladder, through the rectum, was performed, and the reasons given to the pupils were these:—

1. The distention of the bladder is so great, that we may expect a rupture, and the discharge of urine into the cavity of the abdomen.

2. The patient is in the state that will soon be succeeded by delirium.

3. Were he now to be relieved by the discharge of a few ounces of urine, it would not be effectual; nothing will save him but so free a passage as will remove all irritation, and all occasion for painful exertion.

4. He is now nearly exhausted; further attempts, or a protracted operation, would only hasten on still more unfavourable symptoms; the puncture of the bladder, through the rectum, offers the hope of immediate relief, without a possibility of increasing the danger. Unless he has twelve hours' rest, and cessation of irritation, he will be inevitably lost.

The bladder was punctured through the rectum, and four pints of urine were drawn off, to the inexpressible relief of the patient.

23d. The house-surgeon having neglected to retain the elastic gum catheter in the canula, the canula is found to have slipped from the orifice in the bladder, while the patient was at stool. It has been withdrawn from the rectum.

24th. He continues better. He passes the urine by the urethra. There is blood in the urine, as if from the dissolving of a coagulum in the bladder.

25th. There is a considerable swelling round the lower part of the belly near the pubes. There is fulness in the perineum, and along the track of

the urethra; pulse 100 and full. The laxative to be continued until he has a full evacuation, after which the opiate and fomentation are to be resumed.

30th. The obstruction in the urethra has returned. The swelling in the perineum has subsided. The urine comes freely by the rectum.

1st June.—Pulse 100.—The patient quite sensible; the belly is soft; the urine comes by the urethra; he has hiccup. Urine still bloody,

2d. He has been convulsed in the night; he is now free from suffering, but low and cold, and his features shrunk.

Died the succeeding evening.

The friends did not permit the examination of the body, but the bladder was taken from the lower opening of the pelvis, and is in the Museum. The coats were thickened, and the inner surface was studded with white spots of coagulable lymph, like many of the specimens which are exhibited beside it, and which are a consequence of stricture, and independent of the operation. A bloody and ropy fluid was contained in the bladder. The prostate gland was surrounded with abscesses, from which thick white pus was forced out. The urethra was largely ulcerated, so as to be rendered quite irregular; and the ulcerations had a hardened base, indicating that they had been of some standing.

Observations.

There is always danger of a single case like this making too strong an impression. There is here, you may imagine, an authority for puncturing the bladder, when it is distended, and rises into the abdomen. Very much otherwise; you will see, in the course of the season, many younger men brought into the hospital with the bladder risen above the pubes, and relieved by bleeding, the warm bath and opiates, purges and anodyne clysters. But here there were peculiar circumstances, as the great age of the patient, his exhausted condition, the great and increasing distention of the bladder. For you will observe, that sometimes the bladder is distended, and there is a stillicidium urinæ, which delays the further distention, and allows time. But here there was total obstruction and increasing distention. The distention in this case had so entirely destroyed the power of contraction in the bladder, that, had we passed an instrument into the bladder, through the urethra, it must have remained to have been of service. Nor could it have so effectually relieved the distention, or remained in its place, with so little irritation as the canula.

The state of the bladder and urethra, and prostate gland, gives us the less reason to regret the slipping of the instrument from the bladder. It

is no apology that this accident has often happened. It is essential to the effect of this operation, that the canula, or bougie, be kept in the wound for two or three days. After which, when the parts have suffered some inflammation and condensation, the urine is freely discharged from the bladder into the rectum. Had this been accomplished here, even with all the marks of disease which the parts exhibited, I think the life of the patient might have been prolonged.

BURSTING OF THE URETHRA, AND SLOUGHING OF THE PERINEUM, WHERE IT WAS NECESSARY TO PUNCTURE THE BLADDER.

About the middle of last March, a gentleman of seventy years of age, called at my house, who complained of a small very hard tumour, attached to the lower part of the urethra, and attended with discharge from the urethra. His hair had been black, but was grizzled; his cheeks had each a spot of broken red, and the skin had a yellowish discolouration. I passed a bougie to ascertain how far the urethra was compressed by the swelling, and found it obstructed, although he could still make urine pretty freely. However, I assured him, that he would not continue to do so long, unless he was very guarded in his conduct

He was one of those men whom there is no danger of alarming too much. I made him promise to live very low, to rest on the sofa, to apply leeches to the part, and to bathe the parts frequently with tepid water. He returned to me five days after, very ill. The discharge from the urethra continued; the swelling had considerably increased; he made water with difficulty, and complained of spasms at the neck of his bladder. I ordered leeches to be applied to the verge of the anus; mucilaginous tepid drink; an anodyne with the liquor potassæ, and the starch clyster. These soothed him, and made him, as he said, quite comfortable; and so he allowed eight days more to pass without seeing me. The next time he came he was very ill; the tumour, or swelling, occupied the whole root of the penis, and the prepuce was œdematous. He had been attacked with shivering, and was very feverish and exhausted. I now peremptorily refused to prescribe for him, unless he would give me his address, let me visit him at home, and submit to what was necessary. I found that he had come five miles in a hackney coach in his present condition, and was willing to do so every morning. However, his sufferings prepared him for believing that what I had foretold would take place, and that he was in extreme danger.

Next day I visited him at his own house. The bladder had risen above the pubes; but the urine

was still passed, so as to deceive him. He believed that he emptied the bladder at each effort he made. I drew off the urine by a small catheter, ordered him a dose of calomel and opium, and a fomentation to the perineum.

When I saw him again, it was evident to me, that the inflammatory tumour and abscess which had formed by the side of the urethra, received the urine into it, and that the urine kept up the irritation and inflammation. I therefore opened the abscess behind the scrotum, and was again so fortunate as to draw off the urine. The passage admitted only the smallest flexible catheter.

Next day matters were worse, and the catheter was introduced with much difficulty. The succeeding day it was impossible; from the extensive inflammation around the original obstruction, and the irregularity of the opening by ulceration into the urethra. I therefore opened the abscess more freely, and was lucky enough, without much disturbance of the parts, to pass a gum catheter from the abscess in the perineum directly into the bladder, by which a great quantity of offensive urine was let off, and all danger of distention of the bladder, or infiltration of urine, was removed.

After this, there was an interval of some weeks, during which he went on improving under the care of the apothecary. Being again called to him, though he spoke cheerily of his condition, and of

his comparative ease and comfort; yet seeing him thinner, and much reduced, with a frequent pulse, dry tongue, and heat of skin, I permitted his attendant to withdraw the catheter. It appeared to me that the presence of the instrument was a cause of irritation, and kept up discharge, both from the bladder and prostate, and from the abscesses along the urethra. Instead of remaining constantly in the bladder, the catheter was introduced, morning and evening. About a fortnight elapsed before I was again called to him. By this time the passage had become narrow and intricate, so that sometimes the catheter could not be introduced. I introduced it once more from the perineum, and let it remain, with the intention of making the canal more pervious.

My patient's condition was not mending; he lost that great regard which he had entertained for his surgeon, in the early part of the attendance. He also lost all tenderness for a most attentive wife and daughter. That morbid state of mind, which sometimes attends disease of the bladder, was fast encroaching upon him. I found that he had written twenty letters to people he knew nothing of. It therefore became necessary to make some impression on him. I spoke to him very openly of his condition; I made him acknowledge that I had long forewarned him of all that had happened, and of his present sufferings. I took upon

me to say what would be the consequence, if he did not summon all his resolution, and take his kind friends into favour, and submit, without violence, to what was necessary and for his good. In short, I told him that he must consider himself no longer in a condition to dictate with passion. I informed him that his restlessness and violence of temper would else increase upon him, until it would be necessary to restrain him. This discourse alarmed him, and next day his poor wife, with tears, acknowledged his returning affection and better conduct.

The catheter was in the mean time used to draw off his urine, and sometimes it was continued in, when the passage became narrow and the introduction difficult. But in an irritable fit he did that which he had often done before with impunity. He drew out the catheter, and threw it to the end of the room. The apothecary could not introduce it again. The urine accumulated in the bladder, and in twenty-four hours they sent to me. This time I tried, in vain, to do what I had often done before. The suppuration by the side of the urethra, and its irregularity and ruggedness, prevented me from passing the catheter. Our unfortunate patient depending on me, had always made light of the difficulties he occasioned to his every day attendant, and now he was greatly alarmed.

The next day, having tried all means to pro-

cure a discharge of urine, and in vain, no drop coming either by the abscess in the perineum, or natural passage, I was under the necessity of puncturing the bladder.

I passed the trochar above the pubes, because we had already experience of the effects of a tube introduced by the perineum, and because the irritable, and I may say, turbulent state of the patient, did not admit of the attentions necessary to preserve the canula in its place, if I had performed the operation by the rectum. The bladder had risen nearly to the navel, and was very tense.

This operation gave him present ease, and a proper apparatus being adapted, they continued to manage very well without me. He turned himself to one side, and withdrew the cork, and emptied the bladder three times a day, and thus passed another fortnight. But the constitution had been suffering for a long time, and his strength became reduced more and more. And, although during my visit he made no complaint to me, I saw that there was an irritation preying upon a constitution originally bad. He lost flesh; his appetite failed, his tongue was brown, his pulse was very frequent, his urine became full of sediment, and very fetid. Gradually the powers of life were exhausted. He died on the 22d of June.

This gentleman had his own notions on many subjects. He had some respect for surgery, but

absolutely none for the physicians, and refused all assistance of medicine.

Observations.

Here my reader will see the distressing difficulties of practice, arising from the irritable machine we have to work upon; and he will readily conclude that where operations on the bladder are to be performed, old age and a debilitated constitution reverse those expectations, which would be natural and well-founded, were the patient youthful and in health. The operation of puncturing the bladder affords time for the powers to rally, since it gives a temporary relief from suffering; but where there are other permanent sources of fever, and disturbance, as here, viz. extensive abscesses in the perineum, inflamed scrotum, and disease of the prostate gland, besides the irritation from the presence of a tube in the bladder—these in an old man with a constitution nearly worn out, will, I believe, sufficiently account for the event. The operation prolonged the patient's existence, and relieved him from the pain of frequent and ineffectual attempts to expel the urine.

I shall present my readers with another instance of those unfortunate complications, in which, while it is necessary that the leading principle of practice be kept in view, and a certain

duty be performed to the patient, we are nevertheless unable to remove the accumulated causes of irritation.

ANOTHER COMPLICATED CASE, WHERE, INSTEAD OF PUNCTURING THE BLADDER, THE URETHRA WAS OPENED.

The account of the following case is drawn up by the surgeon in attendance. I shall state my own views, and the reasons for what I did in conclusion.

July 16th.—" ———, 46 years of age. He has had difficulty of passing his water for many years, and for the last seven years he has been liable to frequent and alarming attacks of retention of urine. For three years he has not made a stream of urine, but has had constant stillicidium urinæ.

" He has twice changed his surgeon before he came to me; under the first, he underwent several severe applications of the caustic, the consequences of which alarmed him exceedingly. He retains a more favourable opinion of his second surgeon, for, by his assistance, he can pass a large-sized bougie nine inches into the urethra; but still he does not pass his water better than he did before the instrument was passed thus far.

" On examining the position of this bougie,

when he introduces it, I find the point near the verge of the anus! On passing down a small bougie slightly curved, I find it obstructed six inches down; and on pressing it further, I find it wedged and held, proving that it is in a stricture, and not in a lacuna. I am satisfied that the passage of nine inches in depth is a false one.

" I proceeded very cautiously to dilate the stricture, by passing small bougies; occasionally I touched the stricture with the caustic bougie, and by thus persevering in a mild practice, and attending to his health, which was in a wretched state, in the course of two months he was wonderfully better. His bladder was able to contain a considerable quantity of urine; he had regained the power of throwing it out with a jerk. His greatest distress was a complaint in the lower part of his intestine, particularly in the rectum. Mr. Bell saw him at this time; he advised him to go into the country. But he had been twice dismissed to the country, and was now resolved to remain in town, and prosecute the cure. On the 9th of October, I gave him a touch with the caustic, such as I had often given before, and hitherto with uniform advantage; the bougie passed further than usual. In the night I was called to him; he now told me he had been out at dinner, and had taken wine — that in the evening he found

himself so well, that he had taken porter at his supper. The urine was obstructed. He would not suffer himself to be bled. I gave him anodyne clysters, and afterwards put him into the bath—here, after a very considerable time, some ropy mucus began to flow from the penis. This I assisted by introducing a bougie, and, upon the whole, he voided a considerable quantity of mucus and urine. He passed the next day in a very restless manner, but the urine flowed, and his spasms were relieved by repeated doses of an antimonial mixture.

"Saturday.—Mr. Bell visited him to-day at my request. The patient has passed a great quantity of urine mixed with mucus. His bowels are in a distressing state; his stools are white, he has pain and tenderness of the belly; he has had twelve leeches applied to the lower part of his belly, and is taking Hoffman's anodyne and laudanum in the camphor mixture. On Monday, Tuesday, and Wednesday, the symptoms continued more favourable. He passed his urine more freely, and his chief distress was tenesmus in passing glairy mucus from the rectum. On Thursday the irritation in his rectum was excessive; and on Friday, the retention of urine returned, with a fulness in the perineum. Leeches were applied, and he was afterwards put into the tepid bath. On Saturday morning it was found that

he had passed a very restless night. He complained of scalding when making water; his penis was slightly distended. I brought Mr. Bell to see him at eleven o'clock. He deferred the operation till after his lecture."

[I shall here introduce a passage from my own Note Book.]

In the morning of Saturday, I was about to open the perineum. But, I reflected, that although I could by this relieve him from the present urgent symptoms, I should not have it in my power to lay the foundation of a permanent cure. I therefore deferred the operation till I should have the proper instruments by me. I confess, too, that I wished to see the case a little more distinctly marked. The integuments were full, and the preputium quite distended; but this alone did not authorize the operation, since I have seen a crystalline state of the preputium nearly as large from inflammation. But this swelling of the penis coming after violent straining, where there was a stricture so narrow, that the patient had not made a tolerable stream of water for years, confirmed me in the propriety of doing an operation, since the dangers of delay were much greater than those of the operation.

At four o'clock he had further calls to make urine, without a drop escaping, and the penis was

more distended, and a slight fulness of the scrotum showed what would presently be the consequence of delay.

I introduced a catheter down to the stricture; I then made an incision into the perineum; no urine flowed. I pushed the point of the knife towards the extremity of the catheter, and when I had pierced the fascia of the perineum, a jet of pure urine followed, sufficiently demonstrating the necessity of the operation. Not satisfied with this, I cut into the urethra, near the point of the catheter, and then taking a common trochar, I pushed it slowly backwards, so as to pierce the stricture. In doing this, I introduced the finger of the left hand into the rectum, to be an additional guide. It was not my purpose to pierce the bladder, but only the stricture, and to lodge the canula in the urethra behind it. I therefore two or three times withdrew the stilette. When I saw the urine flow through the canula, I was satisfied, and let the canula remain. The result of the operation was a free exit for the extravasated urine, and a free discharge from the bladder.

[*The attending Surgeon's Journal resumed.*]—"Ten at night. He feels very well. Sunday. He is easy, but for his bowels, which continue to tease him. Monday. He proceeds well; the penis is inflamed; but the scrotum has regained its na-

tural appearance. He continues to pass a great quantity of mucus like jelly, by the anus. A large clyster of warm water has brought away fæces. The urine is discharged by the canula. He is taking small doses of rhubarb and opium with the chalk mixture. An abscess in the penis has been opened, and has discharged matter and slough.

"Thursday.—He continues to suffer from something wrong in the rectum, although the tenesmus be diminished.

"On Saturday and Sunday he was worse, and Dr. Southey and Mr. Bell were called to him. The canula was withdrawn, and a carrot poultice applied to the penis. As opiates seemed only to increase the irritation, he was ordered a pill of conium, hyoscyamus, and ipecacuhan, with the continuance of the emollient glysters. For some days he continued in this state, but declining. His tongue was red at the point, and black on the back part, his pulse weaker, and still he was passing glairy mucus. After the operation, the urine gave him no uneasiness. He was put on more nourishing diet, with bark and wine." [The report here is full of minute matters, which it is not necessary to give. He had hiccup on the Monday, and continued sinking.]

Dissection.

A small abscess had formed under the pubes. The appearance of the abdominal viscera was natural. The bladder was contracted and thickened.

On drawing up the bladder, an abscess burst, which was situated betwixt the bladder and the rectum. This abscess communicated with the rectum. The prostate gland had almost entirely disappeared, for nothing remained but its walls forming the sac of a large abscess. The inside of the bladder was not inflamed, but the inner coat had formed several pouches, which were full of ropy matter, like that which had come from the penis. The rectum was found to be extensively ulcerated; and about four inches up, the coats had a scirrhous hardness, and a large hole communicating with the abscesses before described. The kidney of the left side was enlarged, and full of pus.

Remarks.

In this instance I relieved the patient from the obstruction of urine in the manner I have often practised. The stricture is here the cause of the obstruction: why should it not be opened, and the bladder relieved? since it not only affords a passage to the confined urine, but lays a foundation

for a radical cure. This operation, when performed for a stricture of the urethra (not curable by other means), and where there is no complication nor destruction of parts by the extravasation of urine, is perfectly successful. I believe this manner of relieving the bladder would be more followed, if surgeons were aware, by as many proofs as I have before me, that the membranous part of the urethra is always dilated in stricture.

It has been said, "when the catheter is obstructed, and can by no means be forced into the bladder, what is the difficulty? Some stricture amounting almost to an obliteration of the membranous part of the urethra, or an induration of the prostate gland!" To this I answer, that it is quite a misconception: in upwards of a hundred cases of obstructed urethra, examined by dissection, I have not found one where the canal was obstructed further back than that part, naturally narrow, where the urethra is embraced by the ligament, and suspended to the os pubis, or where in tracing it backwards, it leaves the bulb of the spongy body; and uniformly, when there has been a narrow stricture in the urethra, that portion of the canal which is called the membranous part, and also that which is embraced by the prostate, have been found remarkably dilated. This is especially to be expected when there has been stillicidium urinæ.

Proceeding upon these grounds, I would say, if a man have a stricture in the urethra, and the surrounding parts be indurated, so that there is no immediate hope of removing it by the caustic or the bougie, if with this there have occurred a sudden obstruction, and the bladder has risen high in the abdomen and has lost its action, and there remains no expectation of spontaneous relief, or of ease from lesser remedies, then, I apprehend, it is better to open the urethra in the perineum behind the stricture.

The question whether the operation of cutting through the stricture should be performed, to relieve a patient, not from the immediate danger of distended bladder, but to prevent the fatal consequences which so often follow the narrow and firm stricture, has been already stated in the *Notes for Consultation* in the Chapter on Forcing the Stricture.

This operation may be performed by passing a catheter down to the stricture, by cutting through the stricture, and then carrying the instrument into the bladder. But it must not be done where the patient is at the moment suffering great irritation and fever, in consequence of long confinement of the urine, and rude attempts, perhaps, to relieve him. This operation requires time and care; whereas the condition of the patient requires certain and immediate relief, without increasing

the source of irritation. Now, an extensive wound does, in effect, increase the source of irritation; and, therefore, as I have said above, in this condition of the patient we must puncture the bladder.

This last consideration gives rise to another question of the greatest consequence in this department of practice, and one on which there is not any thing written, as far as I have observed. It is a very common occurrence, that the patient, who has a confirmed and obstinate stricture, shall have in consequence a harassing obstruction wearing him out, even although the retention be not in the last degree. The bladder is not in this case distended, but, on the contrary, the urine is sent off as quickly as it descends from the kidney. But this incessant stimulus and irritation is attended with fever and exhaustion, with such oontinued torture, and such incessant call to pass urine day and night, that the fever terminates in delirium, in effusion on his brain, or inflammation of his lungs: nay, without any particular determination, he is exhausted, and dies. This is the manner of death of by far the greater number of those who have died from disease of the urethra. Often, very often, the catastrophe is accelerated by improper interference, without restoring a free evacuation.

In this case it is difficult, if not impossible, to puncture the bladder from the rectum; it is im-

possible to do it above the pubes, for the bladder is not full; it does not, perhaps, contain an ounce of water! In such a case, I hold myself authorized to cut directly upon the stricture, and to open a passage into the urethra behind it. By relieving the bladder from the necessity of violent and frequent action, the cause of the thickened coats is removed, they relax, and permit the accumulation of urine. Whether we are to attempt the further destruction of the stricture, and the restoration of the natural course of urine, just at this time, will depend on the strength and resolution of the patient.

Somewhat connected with this statement is the fate of a patient, on whose case I was very lately consulted. He had an old and obstinate stricture; then came an absolute retention of urine with shivering, which made him believe that he had got cold. The catheter was repeatedly attempted to be passed, and, as it afterwards appeared, much violence was done. When I first saw him he was in an agony of suffering, with the bladder risen above the umbilicus. I advised that the bladder should be punctured immediately; conceiving that nothing else could save him from the impending danger. Circumstances prevented me from meeting the attending surgeons, and they did not perform the operation. Next day, when we met, matters were in a very

different condition: the bladder was no longer distended: a full pint of urine had flowed by the penis into the urinal; it continued to drop freely into it. In my mind, the fate of the patient was determined; and I could neither urge the operation of puncturing the bladder, when it was no longer to be felt, nor the incision into the perineum, in the condition in which I now saw the patient. His countenance was natural in colour, rather a little flushed; it had in it, the expression of great anxiety: he breathed high and irregularly; when you approached him, he lifted up his eyes heavily, as if rousing himself from sleep; he moaned, and spoke often, but not intelligibly. I thought him dying, but he lived four days in this condition; presenting the most painful struggle of a powerful man, in the prime of life, oppressed and dying of an inflamed bladder. His features at last shrunk —his eyes were fixed in distortion—the angles of his mouth were drawn down, as I believe, by the continued agony—his countenance was of a cadaverous and yellow hue, and his teeth were covered with sordes; he breathed, at this time, twenty-eight times in the minute; yet two days after I saw him in this condition, he still breathed. This painful picture I present to my reader, to prove to him the importance of an early and free evacuation of the bladder. He died of obstruction with his bladder empty!

It was discovered that the surgeon who was

first consulted, had driven the catheter through the urethra, just anterior to the stricture, that it had passed betwixt the bladder and the rectum, making a false passage nearly four inches in length, and parallel to the course of the urinary canal. The stricture was the extent of half an inch, hard as cartilage, very narrow, and quite choked up with lymph. There was an ulcerated passage behind the stricture, communicating with that which the catheter had made; and by this circuitous route, the urine had drained off during the last two days he lived. The bladder was in the highest state of inflammation I have ever seen it. The outer coat had a high vermilion colour; the colour was suffused, and no distinct vessels were visible. The substance of the bladder was full half an inch in thickness, and, when cut, felt like cartilage under the scissars; and when the section was completed, the bladder remained open. The inner surface was coated with a thick crust of a coagulable lymph, which extended from the fundus of the bladder to the stricture. Coagulable lymph was even deposited in the urethra anterior to the stricture, though not in the same degree. A remarkable occurrence took place here, which I have hinted at in a former part of the volume: the crust of coagulable lymph had been formed so rapidly, that it covered the opening of the ducts of the vesiculæ seminales with so thick a coat, that their secretion

was retained: at least, I cannot otherwise account for the most remarkable distention of those receptacles that I have ever witnessed.

After these cases, it will not be difficult to describe that condition which will require an immediate operation to empty the bladder. When the bladder has risen above the pubes, and is felt tense and full, occupying the lower part of the abdomen; when bleeding, laxatives, the tepid bath, the catheter, the bougie, have been tried without procuring relief; when there is no other resource, nor any hope of a spontaneous discharge of urine, the operation ought not to be delayed. If there be retching and hiccup, there is no time to be lost; the patient is in imminent danger *.

* The following note is made by Chopart: " M. Desault pense qu'il n'y a presque point de cas où un chirurgien exercé à sonder ne puisse pénétrer avec l'algalie jusque dans la vessie. Depuis 8 ans qu'il est chirurgien en chef de l'Hotel Dieu de Paris, il n'a pratiqué qu'une seul fois la ponction de la vessie, c'étoit peu de temps après son entrée dans cet hopital, et il avoue que s'il eut eu alors l'expérience et l'habitude de sonder qu'il a aujourdhui, il auroit peut-être epargné cette opération."

The same opinion is given by the editor of Desault's works; but a late French author draws a truer picture of the effects of this rule of practice: " Il avait acquis par une longue expérience une telle habitude de sonder qu'il était tenté de proscrire entièrement ces opérations douloureuses que les chirurgiens pratiquent lorsqu'un obstacle insurmontable s'oppose à l'écoulement des urines. Plusieurs de ces elèves assurent qu'il se confiait trop dans sa méthode, et que s'opiniatrant à vouloir

If we do not now relieve the bladder, the inclination to make urine will gradually subside. There

faire pénétrer la sonde dans la vessie, il eut plusieurs fois le malheur de pratiquer des fausses routes." Of the truth of this we can have little doubt, when we examine the stricture by dissection in cases where the bladder ought to have been punctured.

It is very clear, from the manner in which the different methods of puncturing the bladder are described in the work of Desault, that he had seldom performed it; for, in none of the several methods are the points of interest noticed. There is one case given by the editor, of puncture, above the pubes, which is an example of the little distinction that was made, by the French surgeons, of the proper cases. In this case the surgeon says, that from the first day he noticed a tumour in the perineum, which in eight days became gangrenous, and the parts sloughed, leaving the testicles bare. This shows that there must have been an urinary abscess, which, of all cases, requires the urethra to be opened in the perineum.

Chopart prefers the operation of puncture above the pubes; but his opinion, in this matter, is not of much value, as he does not state the proper case; nor is our respect for his judgment in such cases much heightened, when he tells us, that inflammation of the prostate, requiring puncture of the bladder, is the case in which we are to expect most advantage from our operation, as it is the nature of inflammation to subside in a few days; so that then the canal will probably become free.—See p. 413.

The question of puncture of the bladder has not been fairly stated, either by the English or French authors, who say, that they have seldom or ever had occasion to perform it; because, in the cases which they have seen, the urine has either dribbled away, or it has been possible to introduce a catheter. The question should be stated thus:—How many patients have died in consequence of an attempt to force a catheter into the bladder?

will be less pain. There may be stillicidium urinæ, so that the mattress may be wetted through, and make the attendants believe the patient is getting better. But still the belly is hard as a ball; the bladder is still felt above the pubes, the pulse is rapid, he has an urinous perspiration, his mouth and lips are parched, and his breathing is quick; the patient now falls, either into a comatose state, or into a state of frenzy, which I have known to be mistaken for madness, and a family made more miserable, by a physician of a lunatic hospital being called into consultation.

Perhaps the coats of the bladder may ulcerate, and allow the urine to escape into the abdomen; but more frequently the patient dies before this takes place. If the patient be sensible when the bladder gives way, he suffers during the flowing of the water into the cavity of the peritoneum extreme pain and anguish. Now, when this happens, instead of the hard and regular tumour of the bladder, the belly becomes softer and more gene-

or how many patients have sunk while they were passing even a pint of water daily? Why is the puncture of the bladder now so much dreaded? Is it not because the great surgeons who have written on this subject, have had so much aversion to the operation, that rather than do it they have tried every other means, and consequently have protracted so much, that before the puncture of the bladder was made, the patient has been at the point of death?—J. S.

rally swelled. The pain subsides, but in its place there is more anguish and inexpressible uneasiness, which ends in delirium. The operation is, of course, now out of the question; and here I am forced to remark, that the operation of puncturing the bladder has a bad character; from the same cause that the operation for hernia, or for obstruction in the larynx, have, viz. imprudent delay.

If all the means of relief mentioned above have failed, we have then to decide upon the place and manner of operating; and this must be determined by the nature of the obstruction.

If the occasion of our performing this operation arise from a kick in the perineum, or an injury from falling upon the perineum, or an obstinate narrow stricture aggravated by caustic, we have little to determine, further than whether the swelling, which, upon introducing the finger into the rectum, we feel, pressing down the upper part of the gut, be the distended bladder, and contain urine: of this we must be well assured. We press it, and we feel that it contains fluid, and may feel the undulation communicated from a smart tap upon the belly *.

In such a case we should perform the opera-

* Where the prostate is not enlarged, it will be hardly possible to distinguish it; for the coats of the bladder will generally have become as thick as that part of the prostate which is below the urethra.

tion either by the rectum or in the perineum; but if the case were such as that related at page 164, where there was great disease of the parts in the perineum complicated with diseased prostate, then we should prefer the high operation.

The Operation of puncturing the Bladder from the Rectum.

The patient's knees are raised, and he is presented nearly in the position for lithotomy. The surgeon having oiled the fore and mid fingers of the left hand, they are introduced into the rectum, and bending them upward, the bladder is felt.

Then having the long trochar, proper for this operation, in the right hand (the sharp point of the stilette being drawn within the end of the canula), it is introduced betwixt the fingers which are in the rectum; the canula pressing against the bladder, and lying betwixt the fore and middle finger. The sharp stilette is now pushed out from the canula, and the point of the stilette is carried into the bladder, in the direction of the axis of the pelvis, the handle of the instrument being at the same time carried backward, that is, towards the os coccygis. The stilette being withdrawn, and the urine flowing, an elastic catheter is introduced through the canula; the canula and gum catheter are to be carefully retained by a proper bandage, until the wound may be supposed to

have inflamed, and the cellular membrane betwixt the rectum and bladder consolidated. If the canula should be forced out, the urine will continue to be discharged through the catheter. The chief inconvenience of retaining the canula in its place, is from the injury its extremity does to the coats of the bladder. On dissection, I have seen the surface of the bladder, opposed to the extremity of the instrument, inflamed. I conceive, therefore, that this must keep up the distress of an irritable bladder. To avoid this, in a certain degree, the soft and elastic catheter of gum is introduced, and it is contrived so that it may project a little from the end of the canula, and defend the inner coat of the bladder. If both canula and catheter should be displaced after the second day, the urine will, notwithstanding, flow by the rectum.

Although I have hitherto performed this operation of puncturing the bladder from the rectum, in the manner I have here described, yet I have determined, if it shall be necessary on any future occasion to perform the operation in a young man, to change the mode of operating. My reasons are these:—On dissecting the parts, after death, I have found the canula introduced betwixt the vasa deferentia so critically as to touch them both! On dissecting the parts in the natural state, we must observe, that it can only be by a happy chance that the prostate, the

vesiculæ seminales, and vasa deferentia escape in this operation; and, in fact, I possess a preparation where the bladder was four times punctured, and each time some of these parts were wounded. A very little variation in the manner of operating will avoid these dangers. When the finger is introduced in ano, and a proper distinction made betwixt the membranous part of the urethra, the prostate, and the body of the bladder, let the trochar be introduced, not exactly in the centre and behind the prostate, but to one side of the prostate. If the bladder be struck behind, and a little to one side of the prostate gland, the vasa deferentia would be then distant from the wound. The vesiculæ seminales would also be avoided; and we have this further motive, that if they were touched, the wound of them could be attended with no serious effect, while the division of the vas deferens would be equal to castration.

Of the Operation above the Pubes.

The bladder may be punctured above the pubes; because, when it is greatly distended and has risen into the abdomen, it carries the peritoneum with it, so that the reflection of that membrane from the os pubis to the fore part of the bladder is shifted upwards, and a space is left betwixt the bone and the reflected membrane, where the trochar may pierce into the bladder

without entering the sac of the peritoneum. Unless where the bladder is distended very much, it would be improper to perform the operation here. The patient is to be placed reclining backwards, having pillows under his loins, both to throw forward the belly and to keep him from shrinking; an incision of two inches in extent, commencing immediately above the pubes, must be made through the integuments in the line of the linea alba. The linea alba is to be divided as far as the incision of the integuments. The surgeon then introducing his finger feels the tense bladder; into this, he thrusts the trochar and canula, taking care that the point be directed downwards and backwards in the line of the axis of the pelvis. The stilette of the trochar being withdrawn, the urine flows at first with force. But before the urine be entirely evacuated, I think it advisable to introduce a flexible gum catheter through the canula. This will prevent all possibility of the bladder slipping off the instrument, which, in operating on a gross fat man, or with a short instrument, is possible. When the urine is evacuated, the canula may be withdrawn over the catheter, and the latter left; but I recommend that the canula as well as the flexible catheter be preserved in its place until the parts have consolidated by inflammation; for the fulness of the distention of the wound by the canula will prevent

that infiltration of urine among the cellular membrane, which is otherwise apt to happen. Thus, in Mr. Hunter's operation, only the flexible catheter being left in the wound, "the urine came principally and freely by the side of the instrument *."

The consequence most to be apprehended in this operation is the escape of the urine into the cellular membrane under the peritoneum; and the difficulty, I may say the impossibility, of the urine escaping by the wound, if it gets into that situation, makes me decidedly prefer the operation by the rectum.

If the urine escapes from the bladder without passing the lips of the wound, a swelling with inflammation appears on the lower part of the belly, and the cellular membrane is seen dead and sloughy in the wound. It will be happy for the patient if by this time the passage of the urethra has been made good, and a flexible catheter introduced; for, now it will be necessary to give vent to the matter of this abscess, and withdraw the instrument from above the pubes.

From both these operations peritoneal inflammation is to be dreaded, and the symptoms of its approach, viz. pain in the abdomen, soreness when pressed, heat, thirst, and restlessness, will be

* Sir Everard Home's paper, l. c.

anxiously looked for and dreaded; to remove which, we bleed by cupping or leeches, foment the belly, administer mild purgatives with diaphoretics and anodyne clysters; or with those we use the warm bath, and apply large blisters on the abdomen. In all cases of irritation upon the urinary passages, demulcent mucilaginous fluids ought to be taken freely.

Of piercing the Stricture of the Urethra after puncturing the Bladder above the Pubes.

There is an argument in favour of puncturing the bladder above the pubes, which I have omitted to state: I mean the opportunity it affords us of piercing the callous portion of the urethra.

When the operation has been performed, the dangerous symptoms removed, and the canula still remains in the bladder, it is possible to introduce a catheter through the wound into the bladder, and then from the bladder into the urethra. By carrying the point of the instrument in a direction the reverse of the common method, and by pressing it up to the back of the stricture in the urethra, it would facilitate any operation we may choose to perform on the fore part of the urethra.

Although I object to the cutting or piercing of a stricture in common circumstances, with an instrument passed into the urethra; yet, were I to be so happy as to have an instrument at the back

of the stricture, I should have no hesitation in passing a catheter, with a stilette, into the urethra, for the purpose of piercing the stricture. I would proceed thus: having carried down the catheter to the stricture, I would push out the stilette, and lodge it in the extremity of the catheter which had been passed from the bladder; and thus covered and protected, and directed by the upper instrument, I would pass it into the bladder. This operation is again considered in the description of the operation for fistula in perineo.

We have in these cases exemplified three different modes of relieving the bladder, viz. by puncture from the rectum, by puncture above the pubes, and by opening the urethra behind the stricture. Of the method formerly recommended of puncturing by the perineum, I have no experience; but I shall here transcribe a passage from an author, for the purpose, in the first place, of correcting it, and, in the next, of showing how the surgeon may penetrate the urethra behind the stricture, even without intending it, so capacious is the passage there.

"An old man, who for the last twelve or fourteen years of his life was subject to occasional difficulty, was at last affected with entire suppression; so that for five days preceding the operation, he had not passed one drop of urine. All

attempts to introduce the catheter, or give relief by passing bougies, were in vain; the tumid bladder was felt above the navel; he had continual straining to void his urine, with sickness, thirst, and a feverish pulse. A young surgeon performed the operation of puncture in the perineum by all the usually prescribed rules. After dissecting into the hollow of the pelvis, he struck his trochar deep; but, upon withdrawing the stilette, no urine flowed; it was only when he was withdrawing the canula also, that a little urine ran out: nothing intimidated by this ill success, he struck his trochar once more: now the urine flowed freely. The canula was left in its place, the urine continued to be discharged, but the abdomen inflamed, and the man died. An operation, essentially bad, was performed in a manner so rude and barbarous, that a coroner's inquest might have taken cognizance of the affair. This culpable homicide," &c.

The operator was a young man of singular modesty and intelligence; he died early, much lamented. The patient's death was a consequence of the accumulation of urine for five days, and the rising of the bladder above the pubes. How long will the simple matter of fact be neglected, that a distended bladder, a bladder long irritated, is, of itself, sufficient to destroy life? I have a perfect recollection of this operation; the incision

was made in the left side of the perineum, and the trochar struck upwards: no urine flowed on withdrawing the stilette; but in drawing the canula, the urine began to flow before the instrument was half withdrawn from the deep wound; the operator, therefore, wisely, instead of drawing out the canula altogether, thrust it inward, and was much comforted in seeing the urine flow in full stream from it.

On dissection, I saw the canula projecting into the cavity of the bladder; but on withdrawing the instrument altogether, no hole was to be discovered in the bladder, but only the natural opening of the urethra. The operator had transfixed the enlarged urethra with the trochar, so that on withdrawing the stilette, no urine could flow; but, in the act of withdrawing the canula, as soon as the extremity of it was disengaged from the opposite side of the urethra, the urine flowed into it; and when, on this, the canula was again pushed home, it passed along the urethra into the bladder. Here then was the operation of opening the posterior part of the urethra, done by chance, when the surgeon intended to have punctured the body of the bladder. These things could not have happened, unless the urethra had been as I have described it, large enough to admit the thumb behind the stricture, which is always the case when the obstruction has been of long standing *.

* See Cases in the Appendix.

ON THE BURSTING OF THE URETHRA.

The subject we are now entering upon, is very properly considered as belonging to the higher department of surgery; that is to say, it treats of cases which require the most perfect acquaintance with the principles of the art, and a dexterous and practised hand—one not partial to operations, yet not hesitating to do what appears bold, when the occasion calls for it. An undecided conduct, vacillation, and half measures, have lost many patients in the case of ruptured urethra; and I am the better entitled to call my reader's attention to this necessary decision of practice in the present instance, since on former subjects I have, I hope, taught him to rely on gentle measures and perseverance. But this boldness is a seducing word, and may very well be allied with ignorance. To make this boldness decision, he must be perfectly acquainted with the principle which is to guide the surgeon, on this very trying occasion.

Symptoms which are to be dreaded, as indicating a Bursting of the Urethra.

When the patient has had a stricture attended with much irritation in the perineum and neck of the bladder—when he has to strain and force to

pass a few drops of urine—when the urine feels scalding hot — when the patient, on closing his legs, has a sensation of a tumour betwixt his thighs, though there be no such tumour there; then he is in danger of an extravasation of urine.

If a patient with an irritable stricture has the bougie introduced in such a manner as to produce inflammation, and bring on strangury; when after this operation he is seized with cold shiverings, and then the hot stage of a fever—when with this, there is a sensation of great tenderness with heat and swelling in the perineum; and when there are violent and forcing pains to make water, there is danger that the membrane of the urethra will give way, and let the urine escape into the cellular texture of the scrotum and penis.

The patient after such symptoms, and straining hard to make water, feels that at last it is flowing; but it does not appear outwardly: although the bladder is relaxed, it flows into the scrotum; and by and by, the scrotum to the horror of the patient, is distended to half the size of his head. Presently he is seized with shivering, and all the effects of a violence done to the urethra. If the swelling be not immediately relieved by incision, the integuments of the penis are distended, the urine then extends to the integuments of the pubes, of the abdomen, and even the loins.

The consequence of this is very terrible: a dark

inflammation affects the skin then undermined with urine. The skin sloughs; the cellular membrane is sloughy; the whole scrotum separates, and leaves the testicles exposed; and sometimes we have to draw rags of the cellular membrane from under the integument of the belly.

In the mean time the patient has ceased to suffer under the violence of fever; his pulse is quick and feeble; his countenance is changed; there is no longer a flush; the features are shrunk and pinched; the stomach exhibits the influence of the mortification on the constitution; it sympathizes; and he is sick and has hiccup, and will sink if not supported.

Such are the effects detailed in the following cases.

To what is all this mischief owing? The stricture impeding the urine has caused a push upon the part of the urethra behind it. This portion has inflamed, it has ulcerated; but before the process of ulceration has gone through the membrane of the urethra, the bladder having become powerful by long excitement, and still urged to act powerfully, the urine breaks through the membrane of the urethra, where it is weakened by ulceration. It is directed by the fascia of the perineum forward upon the scrotum, and it passes freely from cell to cell, until it has distended the scrotum to a very large size, and then it flows on

ward by the communication of the cellular membrane to the other parts.

I shall defer stating what is necessary to be done in such a case, until the reader has a full view of the subject, by the detail of cases.

BURSTING OF THE URETHRA, AND SLOUGHING OF THE SCROTUM.—THE PATIENT SAVED.

Robert Cole, twenty-eight years of age, Sept. 6th. Clayton's Ward.—This patient has long been subject to stricture in the urethra. He says that he never had an instrument passed, except on one occasion, a bougie. The disease has made this progress without his attaching blame to any body. He has no idea that he has fallen into his present condition from obstruction to his urine; he attributes all his sufferings to cold and ague.

About three weeks ago he was seized with this ague and fever, as he describes it. "He dropt down for dead, and when he recovered his senses, he was shivering violently;" for this his friends recommended warm brandy and bark, and he believes they induced him to drink a full pint. And he adds, "there was the mischief; for, after the shivering, I was in a flaming fire." The hot fit lasted for about three hours, then for some hours he had an interval of ease, after which the shivering recommenced.

During all this time he could not pass a drop of urine, and the obstruction continued until he was on his way to town in the Ramsgate hoy, and this was all together for a period of six days. While in the boat, he felt as if he could make water, but he saw none come away; and after this, the parts became enormously swelled, so that his scrotum was as large as his head, and much inflamed. It was when on the river, that the scrotum became black, after which the urine dribbled away continually. He got a hackney-coach, and came directly to the Hospital.

The scrotum is much distended; from the flaccidity of the skin, it would appear that it must have been still more swelled, and that it has somewhat subsided. It is quite black, and must all slough away. At the lower part of the scrotum, the black slough already shows a disposition to separate. On the point of the right hip there is an abscess, which gives him more pain than the scrotum; it is pointing. The urine comes in drops through the natural passage.

The countenance is hagard, and he looks much older than he says he is. There is an anxiety, with something of wildness in his countenance. Yet he is perfectly collected, and gives me the account of his sufferings rationally. His pulse is frequent and weak, conveying a creeping wiry sensation to the finger.

A sharp bistoury has been introduced into the lower part of the scrotum, so as to cut the slough and cellular texture; urine issued. A fomentation cloth is applied after being dipped in decoction of poppies, and sprinkled with camphorated spirits. An enema with starch and laudanum has been given.

10th. The process of sloughing is going forward; a large portion of dead cellular membrane has been cut away to give free vent to the urine and matter. The abscess of the hip has been lanced; no urine escaped from that abscess. He is very low, and fears are entertained that his constitution will not stand the shock and the continued irritation.

℞. Cinchon. Pulv. ʒvj.
Rad. Serpent. Virg. ʒ vj.
Coque in aq. fontis oct. j ad ʒ xij.
Liquoris colati ʒ x. Tinct. Cinchonæ comp. ʒ ij. et adde Tincturæ Opii gutt. x. F. h.; et repetatur ter in die.

15th. This man's countenance is better; his pulse is firmer, the oppressive feelings at his breast have left him. The right testicle is uncovered; a mass of slough still encumbers the left; the lower part of the penis is bare, and the integuments of the pubes are undermined. Much sloughy cellular membrane has been withdrawn from under them. The penis is inflamed and tumid.

25th. The scrotum has entirely sloughed away, and left both testicles bare. They preserve their vaginal coats.

26th. The right testicle is more retired, and consequently more covered. A spongy tumour of the tunica vaginalis already shows itself, which is destined to form the regenerated scrotum. The patient bears up well, with the assistance of wine and decoction of bark.

27th. He is not so well to-day; he says, he feels faint and giddy; the pulse is weaker, the surface is cold, and his bowels are relaxed. This derangement was owing to an accumulation in his bowels, and was removed.

After this, the case book is defective. When the parts had put on a disposition to granulate and heal, and no irritability of parts or of constitution remained, the attention was more particularly directed to remove the obstruction of the urethra. The testicles granulated and covered themselves; the wound contracted from day to day, and the patient was discharged well.

BURSTING OF THE URETHRA WHERE REPEATED PUNCTURES WERE MADE, BUT INEFFECTUALLY, FROM BEING TOO SMALL AND SUPERFICIAL *.

In the following case I was occasionally consulted. H. H. aged 60. He acknowledges that in the early part of his life he was often affected with gonorrhœa, and that on one occasion it continued for nine months. In 1783, he first experienced difficulty of making water, and he had a strangury for eighteen hours; at that time ineffectual attempts were made to introduce bougies into the bladder. Since that time he has been subject to have bloody urine, and when he has found the urine suddenly stop he could by squeezing the penis force out a small calculus.

* Upon this question the remarks of the Italian Editor are sufficiently strong: he says, "Notwithstanding the authority of this rule, it is not long since an assistant surgeon in a public hospital, after having made one small incision in a similar case, said, with a scandalous degree of impudence, before many students, that this was the practice always to be followed in such a case." The Professor continues, "True it is that pride and ignorance are always combined."

"Malgrado l'evidenza di questo precetto non e gran pezza che un chirurgo ajutante di un pubblico spedale dopo aver fatta una sola piccola incisione in un ascesso urinoso, oso al cospetto di molti allievi con iscandolosa impudenza sostenere, essere questa la prattica da seguirsi in simili casi. Ed é pur vero, che, secondo l'antichissimo detto, l'orgoglio non va mai dall' ignoranza disgiunto."

On Sunday last the 24th (three days ago), the difficulty of passing urine increased; it came dribbling away in small quantities with much straining.

On Monday and Tuesday, the difficulty continued; during the afternoon of Tuesday, while straining very much, he felt, as it were, a yielding to his effort, attended with great but indescribable uneasiness. The penis and scrotum were suddenly distended, and he became greatly alarmed.

On Wednesday 27th, in the afternoon, the scrotum was punctured near the rapha, and fomentation cloths were applied. In the evening the swelling of the scrotum on that side appeared to be diminished; at this time vesications were observed on the penis. These were opened, and the scrotum again punctured in several places. At the same time the integuments of the belly appeared distended.

On Thursday 28th. The scrotum was reduced in size, but the penis was black. The integuments of the penis were this day laid open, which gave freer vent to the urine. At this time, when the patient attempted to make water, he was sensible of the urine passing through the incisions. In the evening of this day his pulse was full, and he had frequent hiccough. The penis was diminished in size, but blacker.

Friday 29th. The gangrene was complete in

all the scrotum and penis; the tongue is brown and dry; pulse 80, not so full: skin cool. He says he is drowsy. The hiccough has ceased.

During the 30th and 31st, he was becoming worse, and complained of a heavy dull pain in his loins, and the lower part of his abdomen. He could make urine through the opening on the penis, yet, from the fulness of the abdomen, the bladder seemed distended.

On the 1st of the month, the pulse became fuller, and 88. The numbness of the loins and belly was increased; the belly distended, apparently with flatus; and there was an appearance of more effusion under the skin.

On the 2d, the tension diminished, and a slough hung out from the wound. The next day the countenance altered, the pulse fell to 77, and feeble; the urine passed off continually.

On the 4th, he rallied; pulse 83, and skin cool: he felt himself better.

On the 6th, he fell very low, and the extremities became cold, attended with hiccough. He was convulsed during the night. The convulsions continued at intervals until the morning of the 8th, when he died.

In this case, as in the others, it was very difficult to get the patient to take any nourishment. On the appearance of mortification, the camphorated spirit was applied under the fomentation

cloths. Afterwards it was dressed with slips of lint dipt in the sp. terebinthinæ, and the sour poultice over the dressing. He had decoction of bark with wine three times a day, and afterwards the wine was changed for brandy in his gruel: his bowels were moved by the ol. ricini, and he had occasionally an anodyne.

It was not permitted to open the body, but the bladder was drawn out from the perineum. The bladder was dark-coloured and loaded with blood, as after inflammation. The muscular fibres were uncommonly strong, and the muscles of the ureters very large and distinct. The prostate gland was of a natural size; but the ducts or follicules of the gland were much enlarged, and small abscesses had formed on the outside of the gland in communication with these ducts. The urethra, from within four inches of the bladder, was dilated; but there the probe passed out of the canal into the sloughy integuments. Immediately anterior to this hole there was a stricture of small extent, but firm as cartilage; and to appearance the canal at this part was actually stopped: the pelvis of each kidney was distended.

COMMON CASE OF RUPTURE OF THE URETHRA.

A very big man, apparently between forty and fifty years of age, was brought into the Hospital

with urine extravasated into the scrotum and penis and lower part of the belly. This case served to show, among other things, the insidious course of these diseases of the urethra; for, notwithstanding the urine had burst out thus extensively, and though no instrument could be passed into his bladder, yet the patient had all along been ignorant that he had a stricture. There is only the following record on the case book at this time:

"August 16th. This man has had an escape; the decided incision into the lower part of the scrotum has effectually drained the scrotum and the integuments of the belly, so that very little slough has formed. There is a suppuration under the integuments of the pubes, but the cellular substance has separated, and a good discharge is established. The integuments of the scrotum, although undermined, remain, and suppuration has taken place. Urine comes by the lower opening and by the urethra. The pulse is now good; he has recovered his natural looks, and there is nothing to prevent us from beginning the treatment to remove the stricture of the urethra."

This man was made an out-patient on the 26th of September. The Report states, that a singular change has taken place; for, when first brought in, his pulse being low and intermitting, and his features shrunk and hagard, he appeared above fifty, now he is in his natural character, of

a great good-natured fellow of thirty, that would run his round black head into any kind of mischief to show his gratitude *.

BURSTING OF THE URETHRA AND EXTRAVASATION OF URINE.—FATAL.

In the early part of last winter I was requested to see a gentleman, who had unexpectedly observed his scrotum enormously distended, after an attack of strangury. I found an old acquaintance, who had been three years before, under my care for stricture in the urethra, and who had left me abruptly. He had a very narrow and irritable stricture, and I thought he had, tired of my slow mode of proceeding, gone to some more adventurous surgeon; but he had only got impatient to be married. I found him now a man upwards

* It very seldom happens, where there has been a sudden effusion of urine, that an opening takes place, so as to give such a free exit to the urine as to prevent sloughing. The following is a rare example given by Barovero.

While Professor Balarini, in his office of surgeon in chief, was visiting the Military Hospitals, he saw a young soldier with stricture, who while straining to pass his urine, had burst his urethra. The penis and scrotum were swelled to a monstrous size, and every thing denoted approaching gangrene. But a spontaneous opening took place between the prepuce and the glans, by which the urine dribbled off, and the parts gradually regained their natural state.—J. S.

of fifty, corpulent, with a young wife, and an infant.

He received me with a smiling face, and acknowledged how much he had disregarded my former advice. But his animation was artificial; he appeared like one struck with death. He was too active, and too hurried in his speech. The scrotum was distended to the utmost, the penis was sunk in it, and a tumour presented in the perineum. I did not attempt the introduction of an instrument, but only opened the back part of the scrotum with the sharp-pointed bistoury, carrying the point towards the place of stricture, and dividing the fascia of the perineum. I ordered tepid anodyne fomentations to the perineum, the bowels to be opened with infusion of senna and salts, and an enema of starch and laudanum. I saw him two days after my first visit. The scrotum had not diminished in size, it was of a dark red colour, and the incision was sloughy. He was dozing, and had lost his recollection of me. The next day when Mr. Shaw saw him, the parts had sloughed extensively, and he was sinking.

After death a stricture was found at the bulb of the urethra. Anterior to the stricture, the canal had many irregular bands. Posterior to the stricture, the canal was dilated, and immediately behind the stricture there was found an ulcerated

hole of an inch in diameter. What was remarkable, was an abscess, formed no doubt by irritation, in the cavernous body of the penis: and from the same cause an abscess had formed upon the outer covering of the prostate gland.

BURSTING OF THE URETHRA, WITH EXTRAVASATION OF URINE, WHERE THE SLOUGHING OF THE SCROTUM WAS PREVENTED.

I was requested to visit a domestic of a family of distinction. I found a man of fifty years of age and corpulent, under great apprehension from an obstruction of urine. He was cook, and had prepared a great dinner; had been much exposed to the fire, and had exerted himself to the utmost.

In this state of heat and excitement he had gone to make water, but found himself unable; and as he exerted himself to force the urine, he felt a burning sensation, but no urine came. He had been subject to obstruction of urine from an old stricture; but preceding this sudden difficulty, the stream of water was of a tolerable size.

On examining the back part of the scrotum, I found it filling with urine; but the tumour had not advanced generally into the loose texture of the scrotum. I sounded the urethra with a soft bougie, and ascertained the extent of the stricture. I judged it possible to introduce a small silver ca-

theter into the bladder. I succeeded in this, and drew off some ounces of urine, and let the catheter remain, and thought it sufficient to open his bowels by a dose of castor oil. Next day I had reason to regret, that I had not punctured the scrotum; it was necessary to open it largely towards the perineum, for the swelling was diffusing itself.

This patient did well at that time, and no sloughing took place; after the pressing danger was over, I used the bougie to enlarge the stricture, and the wound of the perineum gradually closed. But having a similar attack, as I understood, some time after while in the country, he died.

EXTRAVASATION OF URINE INTO THE CAVERNOUS BODY.—FATAL.

There is still a more formidable rupture than that of the urine into the common cellular membrane, as the following example shows:

The body of a man about fifty, was brought into the dissecting-room. The penis was enormously distended, and black with gangrene; but no breach of surface had taken place. On dissecting the parts, a stricture was discovered in the urethra, and a breach in the canal which led into the cavernous substance of the penis. The urine, instead of infiltrating into the common cellular

membrane, had got a passage into the cells of the penis. Distention from this cause had taken place, and was followed by gangrene. The preparation and the model taken from the appearance which first presented itself, are described in the Appendix.

STRANGE MISAPPREHENSION IN A CASE OF RUPTURE OF THE URETHRA.

Thursday, 26th Sept.—I had a view of a case this morning, which, from the reflection it gave rise to, I think fit to be recorded.

About eleven o'clock, a tradesman came to entreat my assistance to one of his lodgers: I said I should come to him at one o'clock; to which he replied, shaking his head, that it would be all over by that time. When I asked him what was the matter, he answered, by relaxing his knees a little, and holding his hands betwixt his thighs, as if he grasped a large body, "his privates," he said, "had suddenly enlarged to an extraordinary size!"

I went to the gentleman with all speed, but I found him speechless, with his eyes fixed, and his features working in convulsions; he could no longer swallow; he was irrecoverably lost. Perhaps, I should have left the house. On turning down the bed-clothes, however, I saw the scrotum enormously distended. When did this appear? I

asked; and an intelligent friend of the patient said, it had not been so last night. They added, that last night he had been surprisingly well, and walking about. This, I confess, astonished me; for I had conjectured, that he must have been brought to his present condition, by effusion on the brain, in consequence of long-continued irritation; it was new to me, to find a patient, with this complaint, well at night, and insensible and speechless in the morning.

On seeing that the bladder had risen above the pubes, that the scrotum was full of urine, and that there was a hard tumour in the perineum, I had just time, from other avocations, to use my lancet freely upon the tumour, in the back of the scrotum.

On returning, three hours after, I heard more of the case. This gentleman was thirty-six years of age: he had been long troubled with a stricture in the urethra, near the bladder. On Saturday night he had been unable to make water, and had gone to a surgeon, who had attempted to use the catheter, but failed; and my informant added, he had ruptured the urethra. Other surgeons had been called in; and as they saw the water coming through the penis, they did not think it necessary to puncture the bladder.

The usual attendant being sent for, I heard opinions, and saw practice, which I could not have

believed to have prevailed in the alleys of London, though well aware that they are as distant from science and the schools, as if they were placed in the Antipodes. He informed me, that he had introduced the catheter, and had by inhalation discovered that there was no urine in the bladder: "On the contrary," said he, "I drew only oil into my mouth." This latter expression gave me to understand that he had sucked the bladder. The swelling of the scrotum he called inflammation; and putting his hand upon the belly, he bade us observe, that the bladder was as hard and as much inflamed as the scrotum. I had only one thing to do. I put my finger into the rectum, proposing to puncture the bladder if it were prominent. It was not to be felt, and I had nothing farther to offer.

On dissection, there was a firm stricture of the urethra found, which did not admit a probe. The urethra was ruptured anterior to the stricture by the attempts to introduce the catheter, and it was ulcerated behind it. The bladder was still distended; the coats were very thick.

STRICTURE WITH ABSCESS IN THE PERINEUM.—THE PATIENT IN THE FIRST INSTANCE SAVED; BUT ON A RETURN WORN OUT WITH IRRITATION.

—— Pool, a servant of Sir J. St. A. aged 50, has been taken into the Hospital. I attended him formerly in the following circumstances.

He had been subject to strictures in the urethra for many years, and by the kindness of his master he had been placed under the care of more than one surgeon: the caustic had been applied several times. The occasion of my seeing him was this. In coming up from Brighton he was exposed to fatigue and cold, and hence came a frequent call to make water and a great difficulty in passing it, which was followed by a complete strangury. He told me he had been subject to ague, and that this attack had been preceded by cold shivering.

One o'clock. There is a tumour in the perineum, and a little oozing of matter from the urethra; his pulse is full and strong, the belly is distended, and the bladder can be felt above the pubes. I introduced the smallest bougie into the stricture, but it did not reach the bladder; while I withdrew it, I urged him to try again to make water. He was enabled to pass eight ounces of urine. Leeches were then applied to the perineum, after which he was ordered into the hip-bath.

Eight o'clock in the evening. He is not only feverish, but is excessively anxious and perturbed in his mind, and his countenance declares his great suffering. It is a state which must not be long permitted to continue. He has been in much pain, and the bladder is felt above the pubes. He has not passed urine since my visit. He experiences a burning sensation in the tumour of the perineum,

and the scrotum is slightly swollen, I suspect with urine. A purging draught has had no effect on the bladder, and an opiate clyster has given him no relief. Contemplating these circumstances, there was but one thing to be done. I introduced a metallic bougie down to the stricture. I then took a sharp and narrow bistoury, and passing it into the base of the tumour, I directed its point toward the end of the bougie. I then drew the bistoury so as to lay open the tumour—a quantity of fetid pus burst out to some distance on introducing the bistoury, and by and by the urine dropt freely through the incision. This so effectually relieved the urethra of pressure, that the patient was in a short time able to pass a few ounces of urine by the natural passage*.

* The following case, given by Professor Barovero, is somewhat similar; it is a common case.

"A barber, aged 45, had for some years a tumour on the lower part of the urethra. It suddenly increased, the swelling extending over the whole penis and scrotum. While in this state he was visited by Professor Garneri; who seeing his danger, called in his colleague and me his assistant in the Hospital di Carita. The sudden increase of the tumour led us to suspect that the urethra had given way; or, rather, had been eroded (o per dir meglio di erosione). It was determined to send him immediately to the Hospital. Professor Garneri cut through the fascia, and gave free exit to the urine. The dangerous symptoms subsided; portions of slough came away. The urine continued to pass by the opening, which we did not endeavour to close; nor to dilate the urethra, on account of the hardness

On the succeeding day the belly was soft; the bladder was still to be felt; but the feverishness had diminished. I was prepared to puncture the bladder, if this amendment had not been evident. He escaped on this occasion; the swelling subsided; the urine became more free, and only a small fistulous opening remained in the perineum, from which two or three drops of urine came when he made water.

On examining this man's stricture, I found it to be of the most obstinate kind; admitting only the end of the smallest bougie; of a cartilaginous firmness, being continued some way along the canal, and very irregular. For the cure of this stricture he was under the care of a surgeon for twelve months, with some amendment. But the bougie was never passed into the bladder. He was subject to smart feverish attacks, with aggravation of pain, and difficulty of making water; and on these occasions he was also liable to an inflammation of his chest.

which remained. The patient was discharged sufficiently recovered to resume his trade. Some years afterwards there was a return of the tumours in the perineum; but for these, on account of their nature, we could only recommend palliatives."

The Italian surgeons appear in this case to have been rather too timid in the use of the bougie. There is not so much danger of a recurrence of retention, even though we should irritate the canal in the attempt to relieve the stricture, when there is already an opening in the urethra.—J. S.

This man being received into the Hospital, I find him much exhausted, as it were older by some years. He is now suffering under one of his attacks, which belongs, at the same time, to the urinary organs and the lungs. In receiving him, my object is to enlarge the fistulous opening in the perineum, and to get an instrument into the bladder from the perineum.

The attack being somewhat subdued by the warm bath, ipecacuanha joined with opiates and diluent mucilaginous drinks, I thought of gradually enlarging the opening in the perineum by introducing a bougie into it: by this I intended to give more vent to the urine, and thereby to relieve the continued excitement of the bladder. This attempt being continued for some days very gently, there came on alarming symptoms, with a crystalline tumefaction of the prepuce, and a hardness of the scrotum at its connexion with the side of the penis. I thought it necessary, however unwillingly, to touch this patient with the knife, to relieve the canal more effectually.

I introduced a grooved staff into the urethra down to the stricture. I then took a sharp and narrow bistoury, and introduced the point of it into the opening in the perineum; I carried it forward until it grated on the groove of the staff; then moving the handle of the instrument, while the

point rested on the staff, I effectually opened the urethra.

Next day the tumefaction was abated, and the patient passed urine freely, both by the wound and the urethra. For some time after this, I satisfied myself with giving him a saline mixture, with Dover's powder and the tepid bath, by which the fever and the dryness of his skin again abated. But I find in my note of the case, "Time slips away, and no amendment of this man's condition." So I endeavoured to make good the passage, and close the wound.

After the incision, the wound was dressed with a pledget of lint and a poultice, by which it was kept open, so that in my future operations I might have no further use for the knife. Having made him retain his urine, I prepared to pass an elastic catheter into the bladder. The stream had a direct issue from the bladder by the wound. I had little difficulty in introducing a gum catheter from the wound into the bladder. I gave him liberty to withdraw the instrument whenever it hurt him, or if the urine did not come freely: the urine came freely through it, but was offensive and dark-coloured.

The condition of this man induced me to wait for the favourable moment, and what I did was quickly performed, and without exposing him to suffer either much or long; but his situation did

not improve. He was subject to cold shivering, he had great pain in his right side, his breathing was much affected.

The report was still to the same purport—" He breathes with difficulty; he has pain in the right side, which cuts him in drawing his breath; his face is flushed; his pulse quick. There is at the same time a dullness and indifference about him, and he is inclined to doze."

After a consultation, he was bled, and a blister applied to his breast. Next day he was more oppressed; and although his friends, who visited him, said he had often been as ill, it was evident to me that he would die. " He passes his urine freely; and attention has been paid to allay any irritation which may be upon the bladder; but it is to no purpose; his breathing is quick, and his eye turbid." Died the morning after the report.

Inflammation was found in the right side of the chest, and the lower lobe of the lungs adhered to the diaphragm, by means of a layer of coagulable lymph, foul with purulency. The lungs were dark with inflammation. The liver and all the abdominal viscera were sound. The stricture in the urethra was very narrow. The passage from the bladder to the wound of the perineum was free. The inner surface of the bladder was rough, in consequence of repeated attacks of inflammation, and studded

with irregular projections, formed by coagulable lymph. See the description of the preparation in the Appendix.

A SIMILAR CASE TO THE LAST, ATTENDED WITH REMARKABLE DESTRUCTION OF THE URETHRA.

—— Maxwell, 55 years of age, Clayton Ward, 5th February 1815. — This man has been long subject to strictures in the urethra. He is deaf, and particularly stupid; but the appearances speak for themselves. There is an orifice in the scrotum discharging urine and pus; a discharge flows from the urethra. There is a large tense swelling in the perineum.

I introduced a sound into the urethra down to the stricture, which was near the bulb of the urethra. I then struck a double-edged scalpel into the prominence of the tumour, in a direction towards the point of the sound. Urine and pus started out with force from the puncture. I drew the knife backward, so as to make an incision, into which I could introduce my finger, and feel the end of the staff. I ordered him an enema of starch and laudanum. He passed the night in great comfort and free from pain.

6th. I now had a more intelligible account from the patient. Caustic had been applied to his stricture, and the bougie afterwards used. He was relieved, but not cured; and for some time made

water pretty freely, but always with a burning sensation in the urethra. The pain became more and more, attended with scalding, whenever the urine reached the part of the urethra where the caustic had been applied. The tumour rose very gradually, and was soft the day before it was opened.

9th. Passed a small silver catheter into the bladder.

10th. The catheter withdrawn in the night, because it gave him pain.

15th. Passing urine freely by the urethra, and some part by the wound.

21st. The dresser has been dilating the stricture by the use of the bougie. The passage is enlarged, and he is wonderfully contented.

March 7th. I find the passage narrower; the urine comes altogether by the wound, and a small bougie passes with difficulty through the stricture.

9th. I experienced great difficulty in attempting to pass a small silver catheter into the bladder, and desisted; taking then a large soft bougie, to ascertain the state of the canal, I found it, unexpectedly, and without using force, pass out at the wound.

11th. A catheter has been passed into the bladder.

25th. The catheter has been retained till this day; the urine came freely through it, and also

by the side of it. No urine has come by the wound, and the swelling and redness of the perineum is rapidly diminishing. A larger catheter introduced.

27th. The scrotum is large; but this arises from a swelling of the testicle, not from extravasation nor inflammation of the perineum.

April 10th. The passage was made perfectly free by the use of the silver catheter, for catheters successively of a larger size were introduced; but his health did not improve. His evening fever continued, his pulse was always quick, he had no appetite. He had a cough, with purulent expectoration. He was wasting. A natural question occurred—Could the presence of the instrument occasion or assist in keeping up the irritation? Accordingly, for some days, the catheter has been withdrawn, and only a soft bougie passed into the bladder, very gently, twice a week. But the symptoms have not mended.

20th. Every attention has been paid to sooth and cherish him. The urethra has not been touched. His hectic increases; his pulmonary complaints increase. He is much in the same state with the patient in the same ward, whose death is certain; but of whom it is difficult to say, whether he sinks from fistula in ano or phthisis. His voice is husky and low. He died on the 2d of May.

It was remarkable here, that there was a defi-

ciency of the urethra, there was a great vacuity from the orifice of the bladder, to within five inches of the glans. A process of ulceration and absorption had entirely carried away the urethra. From this and some other examples that have fallen under my notice, I have held out a caution to the pupils, against exciting or keeping up a degree of irritation, by the continuance of instruments in the urethra: for, in certain constitutions (I believe scrofulous), such an absorption of the canal may take place, as must render the cure quite impossible.

BURSTING OF THE URETHRA—SLOUGHING OF THE SCROTUM — EXTENSIVE SINUSES AROUND THE BELLY.—PATIENT SAVED.

Tuesday. — A professional gentleman called upon me, and expressed considerable uneasiness on account of an œdematous swelling of the foreskin and scrotum, which he had observed in one of his patients. On our way I inquired into the circumstances, and learned that the patient was fifty-five years of age, and had spent thirty years in India. On returning to London he had put himself under a surgeon of eminence, for the cure of strictures in the urethra, and afterwards submitted himself to this gentleman's care, who was at this time in course of dilating the stricture by the use of the

bougie. On Sunday he had used a bougie of a middle size, and had passed it without violence into the bladder. No blood followed this introduction of the bougie, but during the night there occurred a very considerable hæmorrhage from the urethra. Next morning a swelling appeared, which was supposed to be extravasated blood, and the following day I was requested to attend. I found the patient lying on his sofa in a state of fever and tremor. He said he had shiverings in the night, which the fever now upon him had succeeded. I observed that the urine came away with difficulty, and required him to strain a great deal. It now only came in drops, although before the attack the stream had been free. The swelling which had occasioned apprehension was indeed very like œdema; but on the right side and upper part of the scrotum there was a tumour which pitted and evidently contained fluid. I had therefore no doubt that the appearances were owing to extravasated urine. A moderate-sized gum catheter was passed into the bladder. The parts were fomented, and after the bowels were opened he had an opiate. I requested to be sent for, on the slightest change taking place.

Wednesday. I find a very serious change to have taken place. Having a sudden call to make urine, in his agitation and in drawing out the plug of the catheter, he withdrew the instrument itself,

and made water from the urethra. He expressed himself pleased with the large stream, but soon after, he found the swelling of the scrotum materially increased. The scrotum has become generally and greatly distended. I immediately opened the scrotum very freely with the abscess lancet; there came full eight ounces of blood, and watery fluid drained away, so as to occasion a very great reduction of the swelling even while I remained with him. A catheter was introduced, and particular injunctions were given. Dr. Babington being expected, I did not prescribe for him at that time.

Thursday. He is better; he has less heat, and the scrotum is diminished. A black spot is on the front of the scrotum. He has a draught with five drops of laudanum every two hours.

Friday. The scrotum is of a dark red colour; a blush of erysipelas extends to the bottom of the belly; the black spot is not larger, but a slough will take place there. The cellular membrane within the incision is white and dead; I have broken down the cellular membrane, to give free passage to the fluids. The pulse is calmer; there is not the same degree of tremor, nor is the tongue so dry. He is ordered a draught of decoction of bark with a few drops of laudanum and diluted sulphuric acid. The fomentation to be extended to the belly.

Saturday. No moisture on the skin; tongue

dry; pulse 90; more taciturn. Dr. Babington has approved of more support. A pint of port wine to be taken in small quantities in the course of the afternoon with soup and jellies.

Sunday. The slough is very extensive, and the testicles will be laid quite bare. I have dissected away a great quantity of the ragged cellular membrane with the forceps and scissars. The wound is dressed with pledgets of lint dipt in camphorated liniment, and the carrot poultice covering the scrotum. Fomentations are continued to the belly. His bowels are moved every morning by clysters.

January 3d, Wednesday. I have now no fear for my patient's life; p. 80; skin more moist; he has taken more nourishment, and the sloughs begin to separate from the edge of the suppurating skin. I fear the urethra may be included in the slough, and then the case will be lamentable.

5th. Friday. The putrid mass is very large. I dissected off a large portion to-day. The redness on the belly is gone; but a hardness and caking of the skin above the pubes and groin remain. A milky fluid exudes from the integuments. We have urged him to live better.

8th. Monday. The slough is separated and the testicles are entirely uncovered. Already granulations show themselves. The catheter has been twice withdrawn, and larger ones substituted. This has been an operation of some difficulty, from the

length and fulness of the foreskin. But now that the slough can no longer confine the urine, the catheter is withdrawn, and he makes urine through the urethra without moistening the dressings below. The case being much simplified, I have taken my leave.

12th. Friday. The surgeon in attendance has again requested my opinion; a swelling has taken place round the lower part of the belly. Above each groin there is an abscess with surrounding hardness. As it is thought possible that the urine may have again found its way into the cellular membrane, the catheter is introduced; the integuments of the penis are very much distended; the glans penis cannot be felt through them, and it is consequently difficult to introduce the catheter.—Pulse 115, skin dry; urine high-coloured; no appetite.

Friday, 19th. Since my last note a considerable change has taken place. The inflammation extends around the lower part of the belly, forming a band two hands' breadth in diameter. It has been kept low by cold applications; but a band of hardened integuments encircles the belly, passing from the pubes round both groins and over the alæ iliorum.

From this date to the 29th there is no note. The abscesses above the groin became soft and ulcerated, while the integuments around were caked

and hard. The fluid discharged, sunk through all the bed-clothes and mattress. I enlarged the opening, took away some sloughy cellular membrane, and gave vent to eight ounces of pus, thin and without smell. This I did several times; for, as the cellular substance was washed down to the opening by the flow of matter, it choked the passage and confined the matter.

After the sloughs were discharged, the sores were dressed simply, and the sinuses had compresses laid along them, and were supported by a flannel roller. The whole surfaces affected were fomented morning and evening, and every attention paid to support the patient's strength.

February 1. Another depot of matter has formed on the right side. The quantity of thin inodorous matter now flowing from under the integuments of the abdomen, is very great. He stood to-day while I examined him, and the matter poured in streams from the ulcers. I have great fears for his life. His pulse is quick, his hands are dry; he has great expectoration, and is very much reduced in strength. What is favourable, is that he has a resolute mind to obey his physician, and is not too much alarmed at parting with life; that he takes his wine and bark, submits to have the lower bowels emptied by clysters, and takes light nourishment.

10th. I called to-day, and finding the sinuses

sluggish, advised an injection of sulphate of zinc. The experiment to be made cautiously on one of the sinuses.

March 28th. One of the openings still discharges, and I find him still confined. The remaining integuments have drawn themselves about the testicles, so as greatly to conceal the ravages which have taken place. He must be sent out of town to regain strength of constitution for the filling up of the sinuses; they are become habitual.

April 20th. Being again called here, I find the sinuses still open, and running all round the belly to the loins. The matter has dropt down upon the scrotum on the right side, where there is redness and tumour. I have passed a seton from the opening on the left side of the belly to that above the left groin. I have opened the abscess on the right side of the scrotum, and have given a depending orifice to all the sinuses and ulcers around the right haunch. The sinuses were injected with solution of zinc, and a more perfect apparatus of compression used: he takes the Icelandic moss, and milk diet.

23d. All the sinuses of the right side amended. The seton on the left side has caused some inflammation, and a purulent discharge with fœtor. I have withdrawn it, and bound down compresses on the track of the sinus.

From this time the patient made rapid amend-

ment. The sinuses closed, and he regained his wonted health *.

REMARKS ON THE PRECEDING CASE.

The gentleman who attended this patient was naturally inquisitive to know how far all this mischief was to be attributed to the use of the bougie. I think the cause of this extravasation of blood and urine was not occasioned by the introduction of the bougie, but by erection in a certain state of stricture of the urethra. The occurrence is not singular. A young gentleman, who had a stricture torn after painful priapism, found the blood flowing from the urethra next morning; from the swelling of the parts he thought he must have an aneurism of the penis; it was the urine which, escaping from the urethra into the cellular tex-

* The following is an extraordinary example of the extent of the suppurations which take place in such cases.

A case occurred to Professors Balarini and Garneri, where the gangrene extended not only all over the integuments of the penis and scrotum, but upwards to the cellular texture of the loins and abdomen as far as the umbilicus and down to the knee. The patient recovered, having a good constitution, and being well supported; and at the same time proper counter-openings were made, from which the gangrenous cellular membrane came out in flakes. All the openings closed except that opposite to the rupture of the urethra.—J. S.

ture, distended the integuments of the penis and scrotum.

I am now satisfied that there was no second occurrence of the extravasation of urine in this case, as suspected (on the 12th of January). The urine on first escaping had produced an erysipelatous blush over the integuments of the lower part of the belly. This subsided: but the injurious effect of this urine upon the cellular membrane could not be remedied; it slowly inflamed and sloughed; and on the rising of this second inflammation, the swelling assumed the appearance of further infiltration of urine.

Having mentioned this sudden bursting of the urethra, it may occur to my readers to inquire how it is that the urine does not get into the cellular texture, when the urethra is torn by the use of the bougie. The difference is, that in the one case the membrane of the urethra is torn anterior to the stricture. The urine therefore comes upon it with a diminished stream, after passing through the stricture, and where it has a free passage forward. In the other case of rupture by erection the breach is behind the stricture (for there is ever the weakest part of the canal), and the urine flows direct into the breach of the membrane, while the stricture is impeding its progress forward.

OBSERVATIONS ON THE CASES OF BURST URETHRA.

It may be necessary to draw the attention of my younger readers to the chief circumstances of these cases.

1. It appears that punctures of the scrotum are insufficient even to empty the cellular texture of the extravasated urine, and quite unfit for preventing the urine taking the same course a second time. If the lancet be used, the shoulder must be moved, while the point is kept at rest, so as to make a large opening in the skin.

2. For the most part, the urine bursts into the perineum, and is carried by the fascia of the perineum forward into the looser scrotum. In this case the opening into the scrotum must be at the back part, and the point of the instrument directed backwards, so as to cut freely through the fascia, and give issue to the urine as it escapes from the perineum.

3. But it will be seen here, that the extravasation takes place sometimes more anteriorly, and the *œdema* of the preputium is the first sign of the approaching danger. In all cases, therefore, it is proper to sound the urethra with a bougie (and this should be done in the gentlest manner), to ascertain the place of stricture, that the puncture

may be directed with reference to the spot from whence the urine issues from the urethra, and which is always behind the stricture.

4. The urine has a deadening effect on the cellular membrane, when it is permitted to fill the integuments*. When in a smaller quantity, and with diminished force, it produces a blush of erysipelas, which subsides and rises again in the form of more phlegmonous inflammation. This was particularly the case in two instances, and the fever and

* The Italian Editor remarks, "I had an opportunity some years ago of observing this terrible truth, in consultation with my colleagues Garneri, Geri, and Tartra, upon the case of a patient, who had been given over to us by his physician in a most deplorable plight.

"He had an enormous distention of the penis and scrotum, in consequence of violent efforts to make water. The distention was such, that gangrene threatened to take place. A deep incision was made into the perineum; but one of the consultants observed, that as swelling had already commenced in the penis, the incision would not prevent gangrene. He was correct, for in a few hours vesicles (flittene) appeared. The patient died in great agony."

Upon this case Professor Barovero makes the following remarks:—"From the remarks of the author, and from our own observation, we may deduce the rule, that the surgeon, immediately on discovering a urinous abscess, ought to make a free incision into it, carrying it, if possible, to the point of rupture of the urethra; and, if the urine be much diffused, to endeavour to find out the point at which the swelling commenced, and make the incision upon that part."—J. S.

the hard swelling of the skin required cold and sedative applications.

5. In most of these cases, the yielding of the urethra was preceded by a state of much excitement and irritation. An ulceration of the urethra is a consequence of this irritation, and the membrane is thereby weakened. The push of urine bursts through this tender part, before there is consolidation of the surrounding parts, or before the cells of the common texture are glued together by the process of inflammation. Hence there is no limit to the flow of urine, and hence the dangerous nature of the accident: for the general powers of the system quickly sympathize with the death of the part, and fall low; and there is a just apprehension of the patient sinking.

6. * The circumstance of irritation preceding

* The opinions of the Italian Editor are very much in unison with those of Mr. Bell: he says, "Before terminating the account of the treatment of strictures of the urethra, I must give this advice to the young surgeon, that the urethra must be managed with the greatest care (che l'uretra vuol essere mannegiata con somma circospezione), because, as soon as it is irritated by the bougie, or any other foreign body, the whole system is affected, and there is an attack of fever more or less severe according to the sensibility of the patient. In order to avoid this, it is necessary at first to proceed very gently, to allow the bougie to remain only a short time in the urethra, and to increase the size of the instrument very gradually." He recommends also the use of various medicines to sooth the constitution.—J. S.

the rupture, teaches us to be particularly cautious either of exciting the urethra by interference with instruments, or of permitting a fever to be raised by imprudence on the part of the patient, in a certain state of stricture with irritation. I need not here repeat what may be the dreadful consequences. These cases make it too apparent.

This view of the subject enjoins another precaution, that, when the accident of bursting does take place, after giving free passage to the urine, it must be one of our principal objects to allay the irritation *.

* Chopart gives an admirable description of the case of burst urethra; but he is not sufficiently decided in his practice. "Ces depôts par infiltration s'annoncent par des signes qui trompent rarement. La retention d'urine qui a précédé, l'apparition subite de la tumeur urinaire, les progrès rapides de cette tumeur, l'espèce de crépitation ou de frémissement qu'on y sent et qui est semblable à celui qui a lieu dans l'emphyséme, la tension de la peau œdematiée et luisante comme dans la leucophlegmatie, la diminution des accidents dependans de la rétention. Tels sont les premiers symptomes qui se manifestent si l'infiltration est un peu considérable. Si le malade n'est promptement secouru et que les urines continuent de s'épancher et de s'infiltrer, la tumeur s'étend de plus en plus; la peau prend une couleur rouge ou violette. Il s'y forme des escarres gangréneuses dont la chute donne issue à un sanie très fetide et ou se distingue facilement l'odeur urineuse. Cette sanie entraine bientôt des lambeaux de tissu cellulaire pourri, l'ulcère s'aggrandit et l'appareil est mouillé continuellement par les urines." Chopart loses sight in some degree of the great and immediate

There is nothing more important throughout the whole of these subjects, than to make a due distinction of cases. It sometimes happens, after we have made a free passage for the urine, that the integuments of the penis are again puffed up; as if the urine had again been forced into the cellular texture: but this is an effusion of another kind; it is serous, and is a consequence of inflammation.

And the same thing will take place without any such severe accompaniment as extravasation of urine. When there is much inflammation in the fore part of the urethra, and that inflammation is further increased by the introduction of instruments, the prepuce and integument of the penis swell up rapidly, and exhibit a *crystalline* transparent tumour. It is best treated with cold applications if we see it rising, with tepid fomentations if we see it in a late and aggravated state. But if the nature of the swelling should be mistaken (and being often complicated with stricture, it is apt to be mistaken), and if a catheter be intro-

cause of danger to the patient's life. He attaches too much importance to the attempting the introduction of an instrument into the bladder; and here he criticises, rather unjustly, the operation recommended by the older surgeons, *la boutonière;* for a certain form of this operation is the one most likely to relieve the dangerous symptoms, being exactly similar to the operation recommended by Mr. Bell, of cutting freely and deeply into the perineum.—J. S.

duced into the bladder, under the idea of carrying off the urine, then the swelling will increase, and terminate in suppuration of the integuments of the penis, of which the two following cases are examples.

William Parker. Here is one of those cases which I have been desirous of showing to the pupils, where common inflammation of the penis assumes the appearance usually presented by extravasation of urine. When I first saw him, after his reception into the Hospital, there was some degree of swelling of the scrotum, with a very remarkable distention of the integuments of the penis, so that the prepuce formed a large tumour. It was natural to inquire whether he was subject to stricture and obstruction of urine. He said he had difficulty of making water; that he rose often at night to make water, and that the swelling came on whilst he was suffering from this difficulty. In these circumstances it appeared possible, that the urethra had given way. Under this idea a catheter was passed into the bladder. The urethra admitted a catheter of the middle size. It was worn during one night; but upon further consideration of the case, it appeared that this swelling was a mere effect of inflammation, and that it was more likely to be aggravated than relieved by the use of the catheter. It now appeared upon examination,

that there was a swelling and hardness upon the urethra anterior to the scrotum, and that there was contraction in the very mouth of the urethra, through the cicatrix of an old chancre.

These were enough to excuse the suspicion, entertained regarding the cause of this swelling. By fomentations to the penis, purging, and the anodyne clyster, the tumefaction diminished, but not until suppuration had taken place, and a very slight degree of sloughing in the integuments of the dorsum penis.

Observations on the Case of Charles Groves.

This patient exhibited a very remarkable instance of swelling and sloughing of the scrotum without extravasation of urine.

When I first saw him, the scrotum was enormously distended, and the integuments of the penis were also tumefied. The surface of the scrotum had a dark-coloured erysipelatous inflammation upon it, and vesications had already formed, so that it was obvious extensive sloughing would be the consequence. The integuments above the pubes had also a blush of redness upon them, and this blush extended above the ilium of the left side.

Nothing could represent more correctly the appearance presented in these parts by the extravasation of urine, and it was impossible altogether

to lay aside the suspicion that the swelling was occasioned by urine, as the patient acknowledged that he had something the matter with his urinary passage, and that he had risen frequently to make water at night, previous to the appearance of this swelling in the scrotum. Accordingly a catheter was passed into his bladder, and orders were given to draw off the urine regularly. It was found that a pretty large sized instrument passed into the bladder, and that without the instrument he could pass a full stream of urine. On the second day the tumefaction and the redness had increased, and the scrotum showed a disposition to slough. An incision was, therefore, made into the lower part. The cellular membrane was in a state of mortification, but no urine flowed. From this time forward the patient was treated as for a case of erysipelas and mortification.

The parts were fomented frequently, and a large emollient poultice was applied to the scrotum and pubes. He had at first diaphoretics and anodynes, and afterwards bark, wine, opium, and brandy. The scrotum separated in mortification, the testicles were left bare, the parts granulated and showed a disposition to close; but in the mean time suppuration and sloughing of the cellular membrane took place above the pubes, and then a large bag of suppuration formed upon the side and back. An opening was made at the groin to evacuate

matter; but by these successive abscesses, and especially in consequence of the extent of this last abscess covering almost the whole side of the trunk, the powers of life were exhausted, and he died.

There never appeared any urine, nor was there further reason for supposing, till the moment of his death, that any extravasation of urine had taken place.

CASES OF URINARY ABSCESS.

UNDER this head we consider all those abscesses which are occasioned, either by the irritation within the urethra, causing abscess external to it, or by the escape of urine through ulceration of the canal. For, it will be remembered by the surgical student, that the urine does not always escape at once abroad into the cellular membrane, as it does in the cases of *Burst Urethra*. It will now appear that sometimes it makes its way by a little at a time, and by the irritation of its presence produces abscess. While the surgeon is inattentive to the different ways in which the urinary abscess forms, he must be liable to produce them by his improper interference with the urethra; and I am inclined to think that many have produced such abscesses while innocent of the knowledge that they were themselves the cause.

ABSCESSES IN THE PERINEUM FROM STRICTURE OF THE URETHRA, WHERE NO BREACH OF THE CANAL TOOK PLACE.

Abscess in the Perineum, produced by the Operation of the Bougie.

Holden, 68 years of age.

1st Day. This old man is taken into the house,

because he is in a very miserable and helpless condition from stricture in the urethra. He rises many times in the night to make water; he passes it in small quantity, and in a small stream. The wax on the end of a soft bougie is moulded to a very narrow stricture, and is brought out exhibiting a sharp projecting point.

3d Day. A fine bougie has been passed into the bladder.

4th Day. Complains of shivering and fever, and that he is very ill.

5th Day. Was relieved by an enema of starch and laudanum, with a sudorific powder. Says he is much better, and passes his urine more freely.

7th Day. A bougie was passed into the bladder, and withdrawu after five minutes.

9th Day. Complains of irritation and burning in making water. There is a little hardness in the perineum. The bougie is not to be used again. He is ordered laxatives and tepid bathing of the hips, and an anodyne draught with the aqua kali.

11th Day. The tumour of the perineum is considerably enlarged and hard.

At this time our interest in this man's situation was considerably increased. He formerly had a hernia, and wore a truss. The hernia came down, and could not be reduced: it became strangulated in three days, and was operated upon. He was in extreme danger, for a small portion of intestine

came down under Poupart's ligament, and the delay of a night would have been fatal. The bleeding, the warm bath, the clysters, the continued vomiting, kept him sufficiently low to permit me to leave the abscess in the perineum and the stricture of the urethra to nature. The abscess broke, an extensive foul sloughy suppuration was established; a cataplasm was applied to the perineum, but nothing further was attempted. While the man was under discipline for the wound made in the operation for hernia, the abscess became clean, healthy, and closed, and not a drop of urine was discharged either at first or in the course of the cure.

When the wound had cicatrized, and the abscess had closed, I used the bougie again, but with great precaution; and this patient was dismissed perfectly well.

This case proves (and I wish it was more generally known) that a very little pressure of a bougie more than is right, into a narrow stricture, will bring on irritation in the canal; and that the effect of that irritation within the canal, will be a suppuration or abscess on the outside of it. The cellular membrane is so much more prone to fall into suppuration than the part primarily affected, that matter is collected external to the urethra, and without any direct communication with that tube.

It will no doubt also be observed, that the circumstances of the case required rest and forbearance, and that, the cause of irritation being removed, the abscess closed. If the bougie had been persevered in, urine would soon have appeared in the abscess; that is, the urethra would have become ulcerated, and then a fistula would have formed.

Another Example.—Stricture of the Orifice of the Urethra, producing Abscess of the Pubes.

There is no kind of stricture which is attended with more distress and spasm, and consequent irritation, than the very narrow stricture situated immediately within the orifice of the urethra. The fourth specimen of stricture of the urethra preserved in that division of my collection which contains the morbid appearances of the urinary organs, is of one just within the orifice of the urethra, and which with difficulty admits a bristle. In this case the effect of irritation in the canal was to form a succession of abscesses around the root of the penis. There was no communication betwixt the urethra and these abscesses.

A third Example.—Of Abscess from the Use of the Bougie.

At the breaking out of the war with the United States, I had under my care an American gentle-

man, who, in his desire to get home, used the bougie too frequently, and without allowing the excitement of the parts after the introduction of the instrument to subside, before he passed it again. In consequence of this, I found him complaining of heat, throbbing and swelling, in the perineum; and on examination, a hardness was perceptible in the perineum. This hardness increased, and was prolonged towards the anus. The skin caked; I could not resolve the swelling; it became red, and suppurated. But the canal being sufficiently pervious, by making him live very low and quietly, by soothing the part, and by giving mucilaginous drinks, and deferring the use of the bougie, it closed and healed*. I might give many other instances of the same occurrence, were it not against the plan of this work to refer to cases of which I have no longer any record, either in notes or in anatomical preparations.

* There is a case similar to this given by Louis. The patient had a gonorrhœa, for the cure of which, he used the bougies of Daran. One morning he felt an obstruction to the entry of the instrument, which he endeavoured to force: from that day he suffered great irritation, and a tumour gradually formed in the perineum. Chopart remarks upon this case, that it would have been cured quickly by the use of the elastic catheter; but as it got well by Mr. Louis using only the simple bougie, it is probable that it was one of those cases where there is abscess of the perineum without an opening in the canal. Chopart was not ignorant that such cases take place, for he mentions them at page 515.—J. S.

A suppuration will take place at the inner corner of the eye, bearing the same relation to the lacrymal duct that these have to the urinary passage, and without any communication with the duct itself, but proceeding from irritation there. If such an abscess be neglected, it may become true fistula lacrymalis; and then, like the fistula in perineo, it will, by the increasing excitement, support itself.

ABSCESS AROUND COWPER'S GLAND.

I must express my surprise that the affections of Cowper's gland should have met with so little attention, seeing that they are so intimately connected with disease of the urethra. I had traced affections of the urethra to this gland: I had become sensible of its importance, and set about an investigation of its ducts. All which was very useless, since I might have found a very full account of it in the works of William Cowper (in the small quarto edition of his tracts). It is seated immediately behind the bulb, and very near to the membranous portion of the urethra; it has two lateral lobes united by a sort of isthmus. It has two ducts of an inch in length, and they pass forward betwixt the fine membrane and the spongy body of the urethra. It is a mucous gland, and pours its secretion into the sinus of the urethra.

It is not surprising, such being the seat and use of the gland, that it should be sometimes inflamed by propagation from the inflamed surface of the urethra. In truth it is so, and gives rise to very painful and distressing symptoms, of which this is the short history: The patient has had a gonorrhœa, and there remains a lurking and low degree of inflammation deep in the urethra: or there is a stricture, with attendant inflammation, which has been roused into more violence by the use of instruments. In these circumstances, the patient is sensible of a fulness and uneasiness deep in the perineum: as he descends the stairs, the shock affects him at every step; if he walks and steps out, he feels that the exertion hurts him. He directs the surgeon's finger to the seat of the pain, just under the arch of the pubes and by the side of the bulb of the urethra. The surgeon feels there a body like a pea, hard and prominent, yet somewhat obscure from the depth of its situation. Then begins the mischief. And before I state the further progress, I shall direct my reader's attention to the instance of a simple bubo, from irritation, or as it is somewhat incorrectly called, sympathetic bubo. The lymphatics being inflamed, the cells of the lymphatic gland soon partake of the inflammation. But the gland does not suppurate; the matter of the bubo is in the cellular membrane which is around the gland. In the same manner, when

Cowper's gland becomes inflamed, it produces inflammation and suppuration in the surrounding cellular membrane. Hence it is, that the cause continuing, and the inflammation being unchecked, a suppuration takes place in the perineum; and this, if it be allowed to proceed, will in all probability become an urinary abscess *; for, the inflammation of the gland continuing, a communication will be opened by ulceration betwixt the urethra and the abscess, and then the usual consequence will ensue; the sides of the abscess will be more excited and inflamed; and other abscesses, and other sinuses, will be in a manner propagated from the first, and the whole perineum may fall into the condition already described.

It is obvious that all that is peculiar in this sort of abscess is its origin, and the only difference in its treatment, is in the still greater necessity for soothing and allaying the inflammation in the first stage; but if the irritation be allowed to go on, the case may become similar to the following.

* Small tumours are occasionally found attached to the lower part of the urethra, which sometimes continue for a long time dormant. Chopart is of opinion, that although they may continue for a certain time innocuous, they generally increase and suppurate, so as to produce urinary abscess. Such tumours are most probably in consequence of inflammation of the lacunæ. Chopart does not describe any cases of this disease of Cowper's gland.—J. S.

ABSCESS OF THE PERINEUM, COMMUNICATING WITH THE URETHRA.

L. B. was proceeding with bougies to enlarge a stricture in the urethra at the bulb, and had succeeded so far that he could pass a bougie of the size of a writing quill, instead of the smallest with which he began. He was about to leave town when he had an attack of shivering and feverishness; and at the same time he felt a hard and painful spot deep in the perineum. When he explained his situation to me, I advised him not to undertake his journey, but to remain very quiet and to live low; to apply leeches to the perineum, to foment the perineum, and to take a dose of salts.

He returned to me with the swelling hard and prominent, complaining of a burning sensation when he made urine, and that after making it there was spasm and a drawing of the part attended with great pain. This he said subsided until called again to make water, when the symptoms returned.

I had no doubt that the urine had got from the urethra into the abscess, and that it was exciting it to unusual inflammation *. I therefore

* Professor Barovero notices, in the translation of the chapter on Urinary Abscess, that sometimes, on the first opening of an urinary abscess, no urine flows. He accounts for it thus; that a few drops of urine may have passed from the ulcer of the urethra, the irritation of which will be sufficient to produce abscess; that the inflammation around the ulcer at first would be

introduced the gum catheter, and let it remain in the bladder: by this the urine was drawn off without falling into the abscess, and he was easy for two or three days.

On visiting him at the end of this time I found him complaining, as formerly, of pains and contractions, and a burning sensation when the urine flowed. This was explained by discovering that the urine passed by the side of the catheter as well as through it. Upon withdrawing this catheter, and introducing one a size larger, this symptom disappeared. The swelling subsided, the inflammation and pain in the perineum were removed, and he appeared quite well, having the additional satisfaction of seeing an unusually large instrument pass easily into his bladder.

so great as to prevent the flow of the urine through it; but the inflammation breaking on the third or fourth day (ma scemando detta flogosi al terzo, o al quarto giorno), the urine escapes by the ulcer. It will continue to flow by the opening until the stricture of the urethra is cured. Sometimes, he says, the abscess heals spontaneously, because the stricture itself being no longer excited by the push of urine from behind (che manteneva la lenta e cronica flogosi; flogosi che constituiva ella stessa lo stringimento), gradually disappears; and thus there being a free opening by the natural passage, the abscess will of itself heal.

I suspect the Professor has mistaken the case here, for abscess takes place frequently without there being any breach in the canal; but the abscess having formed, may produce an ulcer in the urethra, and then there will be a fistula produced. It must be in such cases that the spontaneous cure happens, if it ever takes place.—J. S.

About three weeks after this, having made preparations for his journey, and having dined with a friend in a coffee-room to be ready for the mail, he rose to make water, and suddenly he felt his old symptom, an acute burning pain in the perineum. He was aware of what had taken place, returned to his lodgings, and sent for me.

We repeated the means formerly employed, but without all the same good effect: an abscess formed, which burst, and discharged a few drops of urine, and became a fistula. By the use of the gum catheter, and afterwards by the occasional introduction of the bougie, this fistulous abscess diminished and closed; and at length the patient returned into the country perfectly cured, and has continued well for some years.

It is impossible to say what were the symptoms in the commencement of the following case. The consequences were such as may occasionally happen when the simple urinous abscess has been mistaken.

URINARY ABSCESS CONFOUNDED WITH HERNIA, AND THE PATIENT LOST BY DELAY.

Tuesday, February 21st. A professional gentleman called upon me to beg that I would take under my care, a man whom he had just carried to the Hospital, and whom he described as being in imminent danger from strangulated hernia.

I found the man so ill as to be nearly incapable of giving me any information. I took this note. He has a scrotal hernia on the right side: the integuments of the scrotum are much tumefied, and have a blush of redness. There is a swelling on the left side of the pubes, the nature of which would be doubtful, from its being in the seat of inguinal hernia, were I not able to trace it downwards to a connexion with a swelling in the perineum. Behind the scrotum there is a tumour which has burst, and in the hole there is a ragged slough of cellular membrane. I got a tolerable answer to questions put to a man whose eye was dead, whose features were sunk, and who was in a sort of drowsy apathy. He had not been troubled with complaint of the bowels, he had had regular evacuations, and there was no fulness of the belly. He said that he had had no obstruction of urine; but not trusting him in this, I used a bougie. I found a stricture very near the orifice; forcing that, I could pass a middle-sized bougie into the bladder.

I introduced my bistoury, and enlarged the opening in the perineum; fomentations were put to the scrotum and perineum, and an anodyne enema was given.

Wednesday, 22d. This man is with difficulty roused. His breathing is affected, and nothing can save him. He has had a stool, but the nurse cannot assure me that he has passed urine. Eight

ounces of urine have been drawn off by the catheter: the urine is purulent and very fetid.— Let him have a few spoonfuls of brandy and water. A blister is to be applied to the back of his head and neck. The fomentations to be continued, and the opiate enema repeated.

Evening of the same day—He is less sensible. There is subsultus; pulse 120, not intermitting. His manner of breathing indicates that he is dying. He is dying of irritation, from which the old man in the opposite bed was saved by timely incision.

While a wound in the perineum ought to be an incision, and not a puncture with the lancet, care must be taken not to touch the substance of the penis, or the larger branches of arteries. This patient lost eight ounces of blood, which certainly tended to weaken him. The hernia gave a fine example of the anatomy of the sac and ring. There had been no mischief there. The cause of death was the shock and irritation from the obstruction in the urinary canal, and the sloughing of the cellular membrane. The stricture is not narrow, the canal seems rather as if it had been compressed by the abscess. The abscess extends round the urethra, and betwixt the spongy body of the urethra and the cavernous body. It also passes far forward upon the penis, and backward towards the anus. It does not appear that the abscess communicates with the urethra.

OPERATION FOR FISTULA IN PERINEO.

This is altogether a very important subject. It would be in vain to describe the operation without attending to the principle which is to direct the surgeon; and to arrive at this, I shall once more detail the progress of the case as it commonly occurs.

Behind a stricture, is the most sensible part of the urethra, and there the push of urine being made, the distention of the canal is greatest; and, consequently, the urethra is most likely to give way at that place. This has been already sufficiently proved by the preceding cases; I have even brought this to demonstration *; for, on injecting wax into the diseased urethra, I have invariably found that it burst out behind the stricture. We can therefore readily understand how it happens in the cases mentioned above, that by violent straining where there is a considerable increase of the strength of the bladder, the urine suddenly escapes.

Generally, however, the ulceration of the urethra proceeds more gradually, and the parts inflaming, there is not an extensive infiltration of

* See Engravings from Specimens of Morbid Parts in my Collection.

urine into the cellular membrane; but an abscess is formed, which, pointing in the perineum, is discharged, so that afterwards the urine flows partly through this fistulous opening, and partly by the urethra. Successive inflammations arise, the urine passes with more difficulty, and new abscesses are formed. The whole integuments of the perineum and scrotum are inflamed, swelled, and full of irregular hardness.

In most cases, the removal of the cause by destroying the stricture, cures the disease; for it is the difficulty of passing the urine by the urethra which necessarily directs it into the irregular sinuses, by the side of the natural passage; and it is this which keeps up the irritation and the disease. If the stricture is entirely removed, and there is no great destruction of the canal, the inflammation and hardness soon subside, and the ulcers close. But when the fistulous opening is of long standing, and the urethra is callous, and closed almost entirely for a considerable extent, then the urine is driven amongst the cellular membrane of the perineum, and tubes of condensed cellular membrane are formed *; these are sometimes not confined to the perineum, but extend forward into the scrotum, or even backward to the neck of the bladder, or the extremity of the gut.

* See the plan of Fistula in Perineo, in Plate III.

This state of the parts requires a more formidable operation.

Operation.

Instruments. A variety of silver catheters and probes, flexible catheters and bougies, a syringe, sponge, lint, &c. and the common pocket case, will be required for this operation.

The patient is placed in the same position as for lithotomy. A straight catheter or sound is introduced into the urethra, down to the obstruction. Then a probe is introduced into the fistulous opening in the perineum. Often the straight probe will not follow the obliquities of the canal; it must be bent, and made if possible to hit upon the extremity of the catheter or sound. It cannot be made to touch the catheter; that is to say, the soft parts must intervene, because the catheter is within the urethra, and above the stricture.

The diseased integuments of the perineum are now to be laid open down to the track of the urethra. If there is one sinus leading towards the stricture, it is to be followed; but if there are several, and they run deeply backward, it is impossible to follow them towards the neck of the bladder, and improper to attempt it. In this part of the operation, a decided incision, and a fair wound, are to be desired. A diffident groping and cutting, without any precise view, keeping the patient for

an hour on the table, may be (and I know have been) followed with inflammation, which, in this exhausted and irritable state of the patient, will prove fatal.

The most difficult part of the operation is to find the urethra behind the stricture. The bulb and spongy body of the urethra in the disordered state of the parts cannot be easily distinguished. The parts are massed together by inflammation, and new divisions are formed by fistulous tubes and sinuses. The urethra is not like an artery, gaping and open when cut. On the contrary, I have seen the operator cut it in all directions, both in this and in other operations, without being able to discover its cavity.

The best way is to cut upon the stricture, and expose the point of the staff; then search with the probe for the continuation of the canal backwards, and having found it, the operation is finished*; for all that remains, is to pass a large flexible gum catheter into the bladder from the wound. Experience has taught me, that it is better to delay passing the catheter through the penis, for a few days.

The relief from the free discharge of urine by

* It will be of great advantage in this operation to have the patient's bladder as full as possible; for, if he can make a stream during this part of the operation, it will facilitate the discovery of the posterior part of the urethra.

the catheter is immediate. When the catheter is introduced from the penis into the bladder, the wound is to be kept open until it granulates from the bottom. Then the parts consolidate and heal over the catheter.

In a few days, when the granulations shall have covered the catheter, and the track in which it lies is consolidated, the catheter may be withdrawn, and a common bougie occasionally introduced. The urine will not make its way into the perineum again, as long as the urethra is free.

If the case be neglected, and the catheter be allowed to hang bearing down the penis, it will stretch the parts, so that the lips of the wound will contract behind the catheter, and the part becoming callous, the catheter will be left bare, and a cicatrix will be formed behind it, so that there will be an opening into the urethra.

The following case will illustrate many of the points of difficulty which may be expected in such an operation.

CASE OF FISTULA IN PERINEO, OF TWENTY YEARS' STANDING, WITH REMARKABLE DISORDER IN THE PERINEUM.

William Huggens, a sailor, aged 45. Clayton's Ward. Oct. 22d.—It appears that he has had gonorrhœa several times in his life; that about

twenty years ago, he had discharge from the urethra, attended with phymosis, so troublesome, that it was necessary to divide the foreskin. For some years after this, he describes himself to have been in health, but he was at sea, and lived a sailor's life for four years. About this time he became subject to obstruction in the urethra; and the difficulty was so great, that he would continue to make ineffectual efforts for twenty-four hours together, before he could pass a drop of urine. For four years he was subject to this distress. It was at this time that he fell from the ship's side, and received a violent contusion of his loins, on account of which he was carried to the hospital-ship at Sheerness. Here, experiencing some of his old symptoms, with obstruction of urine, the surgeon attending was led to examine his urethra with a bougie. But he never succeeded in passing the instrument into the bladder. Notwithstanding this, the patient experienced considerable relief, and made water more freely. He was dismissed from the hospital-ship, but ever after attributed the discharge from the urethra to the operations he underwent while there.

About ten years ago he was taken prisoner, and remained in Valenciennes until the peace. Three years after his confinement he experienced an increasing difficulty in making water, and had more frequent calls. He was attacked with fever,

ushered in with cold shivering, and followed by inflammation and swelling in the perineum. Hence came still more obstruction to the flow of urine, and a severe scalding pain as it passed. This was attended with a thick discharge from the urethra. A hard tumour now formed in the perineum, which the surgeon attempted to bring to suppuration by poulticing; but no opening was formed at that time: the pain, irritation, and inflammation subsided, but the tumour in the perineum continued.

Two years after, he experienced another attack. It was ushered in as formerly by rigors and fever; and now an abscess formed more forward in the perineum than the last. It opened and discharged matter. After this he passed his urine, in part through the urethra, in part by this fistulous opening in the perineum.

It was three years after the formation of this fistula that another formed. There were again the cold shivering and fever, unusual difficulty of making water, and burning in the passage, followed by a new suppurating tumour, which burst in the perineum. On examining the parts, with a view to understand these successive abscesses, this last appears to have formed in the scrotum.

He remained in this distressing state for several years, passing urine at the same time through the penis, scrotum, and perineum. While in prison in

France, little had been attempted for his relief. At one time he was attended by an English surgeon, from whom he expected a cure; but a misunderstanding arose betwixt the French and English surgeon, by which he was deprived of the latter's assistance. Last June he returned home.

This is his present condition. Five inches from the extremity of the penis there is a firm stricture in the urethra. The scrotum is large and irregular, from successive inflammations. There is a fistulous opening on the lower part of the scrotum, through which the urine drops. The perineum exhibits a singular appearance; it is irregular and tuberculated, and as firm as a board. One tumour more considerable in size hangs pendulous; it is of the form of a pear, and hard as stone. The whole space is undermined with fistulous communications. The hole through which he has long discharged the greater part of his urine is at present closed.

This patient was kept three weeks under repeated attempts to pass the finest bougie into the stricture in the urethra: the common bougie, the catgut bougie, and the silver sound were ineffectually tried to make a lodgment in the contracted urethra. But the canal of the part had partaken of the hardness and irregularity of the perineum; and successive extravasations of urine, and the consequent inflammation, had consolidated the sur-

rounding parts to such a degree, that there was not a probability of introducing an instrument. From the extent of the solid portion of the urethra, and its irregularity, the use of the caustic was, in my opinion, out of the question. Accordingly, after three weeks' experience of the patient's constitution, and a full examination of the great extent of parts destroyed, I planned the following

Operation.

The urine to be retained. If possible, ascertain the situation of the testicles in the mass of diseased scrotum, and make an assistant push them up to the groin, out of the way of the knife. Pass a sound down to the stricture, and let it be held steady by the same assistant. Pass the common probe into the sinuses in the perineum.

Begin the operation by following the principal sinus with the scalpel. Dissect back the mass of parts so as to expose the spongy body of the urethra. Next open the urethra so as to expose the end of the sound, which is in the urethra. Having opened the urethra anterior to the stricture, endeavour to find the passage backward, through the stricture, with a fine probe: cut upon the probe so as to make way for the point of the catheter, that it may be passed into the bladder, and there retained.

Nov. 12th. Such were my anticipations of the

operation, as stated to the pupils; very different was the operation in effect.

1. As to dissecting the bulb of the urethra, it was impossible; it could not be distinguished. The mass cut into was firm and dense as a scirrhous tumour; and thus what actually fell under the edge of a sharp knife was cut, but there was no possibility of using the knife as in dissection, to lay bare the surface.

2. In cutting into the urethra, anterior to the scrotum, I found myself much incommoded by the great size and firmness of the scrotum. Although it was possible to arrive at the catheter, and expose it, by digging into the firm substance of the scrotum, yet when I came to use the probe and to point it backwards into the stricture, it was impossible to give it the direction. Though the probe could be directed forwards to the penis, it could not be directed backwards to the bladder, because the large unyielding scrotum overhung the opening.

3. Knowing the bad consequences of keeping a patient too long upon the table, who is worn down by much suffering, and that peculiar influence which disease in those parts has upon the constitution, I found it necessary to be decisive. I therefore cut out a portion of the callous urethra, and opened the sinuses which ran backwards.

4. Having now cleared the parts, I wished the patient to make water; but I found he had been

told to strain hard, to pass every drop of urine before coming into the theatre. This was a disappointment, in so far as it became necessary to finish the operation by introducing a portion of bougie into that hole which appeared most like the urethra, and to send him to bed.

In the evening of the same day, I took off the dressing, and made him pass his urine; it came in full stream from under the pubes, and without any difficulty or delay I passed a full-sized hollow bougie into his bladder. I drew off a great quantity of urine, and such a sight the patient declared he had not seen for ten years. I now passed the silver catheter into the extremity of the urethra, and brought it out of the wound. I then directed it into the hole from whence the urine had been discharged, and passed it home into the bladder.

After-Treatment.

The appearance of the wound in the perineum was not promising; it was of great extent, and very irregular; so that six days after the operation, I found it necessary to cut across a firm band of condensed cellular membrane to admit the catheter to lie deep enough. The patient, in the mean time, did well, was of good heart, and very much pleased to see his stream of urine come at a call. The wound was dressed simply with slips of lint dipped in oil, and a poultice over them. He

was kept on very low diet; had an opiate at night, and decoction of althea for drink.

December 1st. The house surgeon, finding that the silver catheter produced pain, and did not give free passage to the urine, withdrew it. The holes of the instrument were filled up with mucus, so that it required the patient to strain, in order to pass the urine: this, with the presence of the instrument in the bladder, irritated the bladder, and occasioned a mucous sediment in the urine. An elastic gum catheter was introduced.

3d. He makes water so freely through the elastic gum catheter, and the wound has closed to such a degree, and so hides the instrument, that I am inclined to let it remain.

5th. He has been in pain from the wound being dressed with blistering ointment. Return to the simple dressings, and the cold application to the scrotum until the tumefaction and redness shall have subsided.

10th. The tumour, which was pendulous from the perineum, contracts; the irregularity and hardness of the integuments diminish. He retains his urine sufficiently long, and voids it freely. But the wound diminishes very slowly, and an unkindly exudation covers the surface of the granulations. More generous diet allowed.

12th. To-day a large silver catheter was substituted for the gum catheter. The gum was much

dissolved by the urine, a shell of concretion had formed on the end of the catheter, and the tube was much stuffed with mucus.

16th. The tumefaction of the scrotum has subsided. The pendulous tumour has wasted almost entirely, and the depth of the wound is remarkably diminished. The surface of the sore is red and healthy. I can still touch the catheter with the probe, although it is hid in the granulations.

19th. The instrument being in the bladder, produces some irritation; but every thing is favourable.

26th. The catheter withdrawn; it is black, but has no crust upon it: it is cleaned and replaced.

January 10th. I can touch the catheter with the probe: the wound is dressed with the blistering ointment, and a warm poultice over it. It wants activity.

20th. The sore contracts, but the granulations are not inclined to close. Lime-water and tincture of cantharides injected; the sore dressed with the digestive ointment, mixed with red precipitate.

February 10th. Let all irritating means be omitted. Foment at night, and use the bread poultice to the perineum.

March 5th. The catheter to be withdrawn, and only the bougie passed every morning. This was done from the conviction, that the presence of the

instrument excited the discharge, and that this discharge kept open the wound. It is hoped, that the passage being clear, and no source of irritation remaining, the small hole may close. To-day I had an opportunity of seeing him make water, which he does in full stream, but a considerable portion comes by the perineum.

From this time forward various attempts were made to close a small hole which remained in the perineum, but without success. The gum catheter was left for some weeks without a change being effected; the largest sized silver catheter was left in for a very long time. The occasional use of the catheter was tried, by which the urine was drawn off twice a day. Hot and stimulating dressings with poultice were employed: mild dressings and poultices were in vain substituted: stimulating injections of tincture of cantharides and solutions of sulphate of zinc, were thrown in: hot oil of turpentine was used to touch the fistulous opening: the edges were touched with a red-hot wire. A seton was drawn across the opening. By these means, and many more contrivances, the opening was not diminished from that diameter which it had spontaneously assumed. It was remarkable, that I had at this time under my care three other cases of fistula in perineo, in one of which, there had been loss of substance; in the two others, there had been much disease, but no

loss of substance. In the case where there had been loss of substance, I experienced the same difficulty as in this case of Huggens; in the others, the fistulous opening and sinuses closed by merely keeping the urethra pervious.

For some time this man had been more diverted than interested in attempts to perfect the cure. He was quite well. He had recovered his health, and was no longer subject to cold fits or fever. He did not suffer the least irritation of the bladder, and it had so entirely recovered its dilatability and right tone, that he was never disturbed at night. The perineum had become soft and natural, in a degree not to be expected by those who had seen it a few months before, irregular with knobs, and pendulous tumours of long standing, and of a stony hardness: by placing his little finger on the perineum he could make a full stream of urine by the natural passage, without a drop coming by the small hole which remained. In this state he was dismissed.

This case will illustrate many points important in practice; but I confess that it left on my mind this reflection: that in no instance is it necessary or proper to cut the smallest portion out of the urethra or perineum; and that the difficulty of closing the breach of the canal is principally to be attributed to the portion cut out in the operation.

This man, after visiting his friends, was to have returned: but he enjoyed health and comfort for some years after he left the Hospital, and died lately of a disease unconnected with his former complaints.

OF CLOSING THE ULCERATED OPENING INTO THE URETHRA. — OF FORMING A NEW URETHRA, WHEN PART OF THE CANAL HAS BEEN DESTROYED BY ULCERATION.

This is one of the most curious and difficult operations of surgery. When an ulcer has eaten into the canal, either in the perineum or anterior to the scrotum, we must endeavour to close the hole. This will be difficult in proportion to the loss of substance. If there has been no great portion of the urethra removed by the phagedenic ulcer, we may proceed thus:

Pass the elastic gum catheter of a full size into the bladder; then scarify the edges of the wound, without taking any part away; for now every particle is important. It is not practicable to bring the parts together by the pin, as we would a hair lip: the want of substance, but, more than that, the nocturnal erections, will baffle this scheme. We must proceed by exciting fresh granulations; touching the surface with caustic, then dressing

with the unguentum lyttæ, and cherishing the wound with warm poultices.

The knife may be used with great advantage sometimes, by taking up a portion of neighbouring skin, so as to draw it towards the sore, and then force it into the cicatrix. The perverse manner in which the scalp will sometimes adhere after the operation of trephine, the adhesions which take place in burns and scalds, contrary to our best schemes, will show what may be done by bringing the integuments into contact, when in a state prepared for adhesion. A portion of the scrotum may be dissected off and brought to the wound, so as to supply what is deficient of the natural integument.

After getting the chasm filled up, and the hole reduced to the smallest dimensions, still there is a difficulty in absolutely closing it. To effect which, the best method is to take a wire, and, heating it, lay it in different directions on the skin, pointing to the orifice by which the skin will be drawn, and pursed more and more into a contracted orifice; and now, if the lips of the orifice be preserved raw, they will unite.

If, by disease, the anterior part of the urethra is closed, and an opening formed on the lower part of the penis; it is practicable to make a canal, by passing a needle with a skein of thread from

the opening of the canal upwards through the glans. This is to be allowed to remain until suppuration is established; after which a bougie may be used, and the treatment followed as in the last case.

In the case of malformation, when the urethra opens before the scrotum, it is possible to make a passage through the substance of the penis forwards, and afterwards to establish the communication betwixt the anterior part of the urethra, and the new canal.

OF STONES IN THE URETHRA.

Calculi formed in the kidnies or bladder, and descending so as to be arrested in the urethra, give rise to very distressing and alarming symptoms. When a calculus shoots from its place of formation in the pelvis of the kidney into the ureter, the patient feels a sudden pain and sickness, and generally he can trace it in its descent into the bladder, and know also the moment of its release from the narrow extremity of the ureter and its falling into the bladder. There is pain in the loins with a certain sickening sensation, and sometimes by sympathy a retraction of the scrotum, with pain in the testicle, and fore part of the thigh. During this state of suffering, the patient should submit to be bled; he ought to take the warm bath, and opiates, and mucilaginous drinks copiously. When the calculus is arrived in the bladder, the patient ought to stoop forward while making water, and thus endeavour to facilitate its dropping into the urethra, that it may be discharged.

Something may be done to prevent the increase of calculi, which lodge in the bladder, or to prevent their formation in future; but I believe nothing can be done to dissolve them. In order to prevent their formation, a healthy process of digestion in the stomach will do much more, and cer-

tainly more safely, than medicines thrown into the stomach upon the nicest chemical principles, drawn from the analysis of the calculous concretions.

When a rough stone is passing along the urethra, it is apt to be grasped by the ejaculator seminis. If the rough stone injures the membrane of the urethra, it may be retained there, and lodge and make a bed for itself, and finally occasion a urinary abscess in the perineum.

The narrower parts of the urethra are apt to retain a stone. It may be prevented from coming forward by the ligamentous band which is around the urethra behind the bulb; it may lie in the sinus, and be prevented passing forward into the narrower part of the urethra; it is very often held in by the narrower orifice of the urethra, producing great irritation. But the worst case occurs when there is a stricture in the urethra, behind which the stone is lodged *. When a stone sticks in the urethra, we are to attempt its removal by distending the canal; and for this end the best and readiest means is the distention of the canal by the urine, if any urine still escapes by the side of the stone. To this end we must compress the urethra anterior to the place of the stone, and then induce the patient to make an effort to pass the urine: by this means the urethra is distended

* See Case 33 in the Appendix.

by the urine to the greatest degree before the stone, and a facility given to its progress forward *. Oil may be injected into the urethra for the same purpose, but pressure must be made behind the stone, that the force of the injection may not drive it back again, but, on the contrary, dilate the canal anterior to the stone, and facilitate the progress of that body forward. The caustic I consider too tedious an operation for the occasion, and that the bougie is more certain to be effectual, if an operation of this kind be required. To this end we must introduce a bougie, of a size to put the urethra fully on the stretch; and after that another of a larger size, and so on increasing until we can pass one equal in diameter to the stone that is retained: after which the stone comes forward by the force of the urine. There is a kind of forceps adapted to the extraction of calculi from the urethra. This instrument consists of two blades, each of which is a segment of a circle, and adapted to the size of the urethra: these blades are attached to a steel wire, and they separate by a spring. There is a tube or canula to which this instrument is adapted. The forceps being drawn within the tube, the instrument is passed down the urethra until it touches the stone;

* Chopart gives a case, where a servant, by sucking the urethra of a child four years old, extracted a stone, upon which the surgeon was about to cut.—J. S.

then the tube is withdrawn, while the forceps are pushed a little beyond the mouth of the tube: freed from the compression of this tube, they expand, and embrace the stone. When the blades are upon the sides of the stone, the canula is again pushed down so as to close the forceps and hold the stone embraced; then it may be forcibly withdrawn.

But it must be acknowledged this is a very awkward and difficult operation; in many cases impracticable *.

When there occurs a formidable obstruction to the stone coming forward, and the urine is obstructed, and there are pain and urgency to pass it, the stone must be cut upon and extracted. There is no difficulty in performing this operation. The incision ought to be large and free, that no infiltration of urine may take place after the stone is extracted. If a stricture has been the cause of the stone coming forward, attention must be paid to destroy the stricture; for, if there is a difficulty of the urine flowing forward, it will be more apt to come by the incision: indeed, if the stricture be considerable, a fistula will be formed.

We may occasionally be called upon to extract

* Sabatier succeeded in seizing a stone, of the size of a small nut, with the forceps, and withdrew it as far as the glans, but he was not able to draw it through the glans; so he was forced to cut upon it:—the patient was a boy twelve years old.—J. S.

various substances from the urethra. I have a pin of the length of five inches, which a gentleman said he found in the urethra, pricking him when he awoke in the morning. It was necessary to cut it out. It is possible that the instruments introduced into the urethra may slip from the operator's hands; and patients in the habit of introducing bougies become fool-hardy, and break them in the passage. Children will sometimes play tricks with themselves, and introduce pins and small bodies into the urethra. Men with stricture, in the agony of their suffering, will push straws or wires into their urethra, or almost any thing they can find to pass, although there be danger of its breaking in the passage *.

In making the attempt to extract the body with the forceps which have been already described, the first precaution ought to be to avoid the danger of driving it deeper. Therefore the finger is to be fixed upon that part of the urethra behind which the body lodges, so that, in introducing the in-

* There is a long catalogue of the cases in which bodies had been introduced into the urethra given by Chopart. In the greater number of them it was necessary to perform the operation of lithotomy, in consequence of the patient not requesting assistance, until the substance had got into the bladder. There are some of the cases very curious, but not more so than one in Mr. Bell's Museum, where a filbert forms the nucleus of a calculus.—J. S.

strument down to it, and in making the necessary pressure against it in order to grasp it, there may not be the possibility of its escaping farther into the urethra.

If a bougie or any instrument of the kind should slip into the urethra, the first care must be to fix it where it is, and prevent its passing farther. This it will be easy to do if the lower end of the instrument can still be felt in the urethra: if not, the finger must be oiled and passed into the rectum, and by turning up the finger behind the prostate gland, it will be possible to reach the further extremity of the instrument and press it backward; and now the instrument or body in the urethra being fixed, the penis is to be pressed back, and then the instrument being grasped through the penis, it may be drawn a little forward assisted by the finger behind; and by little and little this attempt being repeated, the instrument may be made to appear again at the orifice of the urethra.

When the substance in the urethra is soft, and will not bear this pushing out from behind; when it has a sharp point which has caught the membrane of the urethra, and therefore cannot be either pushed out from behind, or seized with the forceps, or when it is rough and sharp, and cuts the membrane, or tears it in making the attempt to extract it, it ought to be cut out.

1. In cutting upon a body which lodges in the

urethra, the first care must be to fix it, that it may not start back. 2. Let the incision be free in regard to the integuments, and let it be a fair perpendicular cut upon the body to be extracted. 3. The incision, if practicable, should be made before the scrotum: the place next to be preferred is in the perineum. There is no objection to the incision being made, first dragging the scrotum either backward or forward, in order to cut into the urethra further. But in that case it is particularly necessary to guard against the infiltration of the urine into the scrotum. 4. If the body has lain behind a stricture, if after the extraction of the body there is any narrowness of the urethra, it will be necessary to keep a catheter in the bladder while the wound is healing. But if the passage for the urine be perfectly free, this will not be necessary.

Stones very frequently form in the prostate gland; they are often found in those cases where there has been some affection of the urethra or bladder. It is very important to recollect them in sounding for stone; for the points of the small calculi sometimes project from the ducts of the gland so as to give the sensation, when the sound is entering the bladder, as if it struck upon a stone. It will be generally found, that on the first introduction of the instrument the *rub* is felt; but on withdrawing the sound and introducing it again, the

stone is not again felt. This is probably in consequence of the projecting point being pushed, by the first introduction of the instrument, back into the little sac which it occupies in the prostate.

When these calculi are very numerous they produce suppuration and a distinct form of urinary abscess, of which the following is a very extraordinary example:

Tumour in the perineum, and extravasation of urine, from stones obstructing the urethra.—This old man, sent in by Sir J. B. has for many years been subject to irritation in the urinary organs, and to stoppage of his water, and at different times he has passed small calculi, of a very irregular shape. His wife has shown us some of these: they are prostatic calculi.

When I first saw him, he was obviously in the utmost danger. He was asleep; and when I awoke him, I found his voice small, his features sharp, his hand cold, and his pulse very feeble.

On turning off the clothes, the scrotum and penis were found distended, and a considerable tumour of the perineum was evident. The tumefaction was not from inflammation, but from extravasation.

The flexible catheter was used; it did not enter the bladder; it was obstructed at the turn of the urethra. Notwithstanding the instrument did not enter the bladder, urine and pus came

pretty freely through it. This proved to me, that there was a sac, formed by suppuration, which contained urine. Another attempt was more fortunate; the catheter passed through the abscess, and reached the bladder, and a pint and a half of very fetid turbid urine was drawn off. In passing in the catheter, there was a sensation as if the instrument touched a stone. The belly had been much distended, now it was flaccid, and as if emptied, without recovering its usual tone, by the support of the abdominal muscles.

The abscess lancet was then used; first it was passed into the perineum, so as to open the fascia, and then turned with the point forward, into the scrotum. Two punctures were then made into the scrotum, one on each side of the septum. The fluid drained off copiously through these openings. Fomentation-cloths were applied, and an opiate enema was ordered.

Next day the mortification of the scrotum had begun, and the patient's strength was failing. There lay near him, a big Irish labourer, in the same condition, as to the parts; but this patient is old, and his constitution is exhausted. He died on the 4th morning after he was received into the Hospital. On examination, the scrotum had much putrid matter in it. On splitting it, and dissecting it back, there was seen in the perineum, a cavity of the size of an egg, which was crammed

with small stones. In the prostate gland were many of these calculi. The bladder was contracted, and the inner coat inflamed.

Remarks.

This patient had a stricture in the urethra, which of itself would not have pervented the enjoyment of life, but it was sufficient to impede the discharge of the prostatic calculi; these gathered behind the stricture, and lodged in the perineum. They had at length sunk from the canal into the surrounding cellular substance, and there forming a sac, they permitted the discharge of urine, until one calculus larger than the rest, fell against the stricture. This obstructed the passage, and then came the powerful efforts of the bladder, propelling the urine into the preternatural sac in the perineum; its insufficient walls gave way, and let the urine readily into the cellular substance of the scrotum. The age and the exhausted state of the patient will account for the conclusion.

CASES OF RUPTURE OF THE URETHRA BY VIOLENCE.

The following case is a common one, and is of course important. It will be seen that it differs very materially from the cases which have been already given, in not being accompanied with, or preceded by, a disease of the urethra itself, which consequently makes the after-treatment more simple.

RUPTURE OF THE URETHRA, FROM A FALL.

A young man, in pursuing a cat over the house-top, fell through a sky-light, and came astride upon the balustrade of the staircase. He has not been able to pass a drop of urine since. There is a swelling around the bulb of the urethra and crura penis.

On first seeing him, I enjoined the dresser not to use the catheter, but to apply nine leeches to the perineum, to give him a laxative, and afterwards place him in the tepid bath.

Next day, the bladder being distended, I attempted to introduce the catheter, but failed; and this owing, as I thought, to the distended and unyielding state of the perineum, from extravasation of blood. I therefore opened the swell-

ing in the perineum, and let loose a quantity of blood; and after the incision, I passed the catheter into the bladder.

It was perhaps fortunate that the urine did not flow until it was drawn off by the catheter; for, if it had, it would have passed through the ruptured urethra, and amongst the extravasated blood. When the catheter was introduced, it might be supposed that the difficulty was over: all serious apprehensions were indeed removed, but much attention was still necessary *.

The silver catheter being retained, the wound suppurated and closed; but broke out again, discharged matter and urine, and again it closed. Observing this to my pupils, I requested them to consult among themselves, and advise what should be done. They determined that it was owing to the rigid silver catheter that the opening was inclined to become fistulous, and that a pliable gum catheter would have a happier effect. I yielded to

* It occasionally happens, in such a case, that a clot of blood is formed in the bladder, though it is more frequently in consequence of the vessels at the neck of the bladder being torn by the forcible introduction of instruments; it may sometimes be a cause of obstruction to the passage of the urine. A catheter may be passed to break down the clot: if this be not effectual, warm water may be injected through the catheter so as to dissolve it. Chopart gives a case where it was necessary to do this.—J. S.

this suggestion, but the opening remained fistulous. It was now that my young consultants saw that the presence of the catheter produced a constant discharge. We determined that a large hollow bougie should be introduced, to draw off the urine, three times a day; and under this plan the young man got entirely well.

Remarks.

In reviewing this case, where the urethra was ruptured by a blow, my reader will observe a consequence of the injury which is kept out of view, I may say with singular pertinacity, viz. that the obstruction does not proceed directly from the extravasation, nor is it owing to pressure upon the canal. It is the injury which the wound inflicts, and the consequent disorder and loss of consent among the muscles of the perineum and neck of the bladder, which prevent the discharge of urine.

In regard to the propriety of opening those tumours of extravasation, there may be some doubt. Thus, it may be questioned, whether the effusion of blood really obstructed the bougie. But surely, when there is a tumour of blood in the perineum; and when, as here, the blood is flowing from the extremity of the urethra at the same time; when, therefore, there is reason to suppose that there is a breach of the urethra, we have a

very sufficient reason for opening the tumour. For, if the urine should escape from the urethra, and find no ready exit by the wound, it would produce all the consequences which we have witnessed in the former cases of extravasation *.

* There is a curious case given to the Academy of Surgery, by M. Verguin, surgeon of the Toulon hospital:

A sailor fell from the mast of a ship upon a yard-arm, so as to injure his perineum. A catheter was introduced, but it would not pass into the bladder. A cut was then made into the tumour in the perineum, and it was discovered that the prostatic part of the urethra was separated from the upper portion. Still no urine flowed; so it was necessary to puncture the bladder above the pubes. As soon as the patient recovered in some degree from the fall, the following operation, to re-establish the canal, was performed. An elastic catheter was introduced into the opening above the pubes, and was directed towards the orifice of the bladder, and pushed as far forward as possible. Another catheter was introduced by the glans, and carried down to the wound in the perineum. The point of it was then directed by the finger in the wound upon the back of that passed from the bladder, which was then carefully withdrawn, while the catheter, which was in the urethra, was at the same time gradually pushed after it, and was at last fairly lodged in the bladder.

The wound above the pubes healed in a very few days, and the parts in the perineum granulated and healed over the catheter; so that in three months the patient was discharged perfectly cured.

There is at present a boy in the Hospital, whose case is somewhat similar. He is a healthy boy, sixteen years of age. While assisting to unload a ship in June last, he fell from the height of six feet among some chests of tea; he fell upon his right side, the greatest injury being to the right thigh. He was able to get up; but on rising he felt great pain in the perineum,

WOUND IN THE PERINEUM.

Henry Sanson, aged 34.—Has a bruise and deep wound in the perineum. It appears, that in

and in less than ten minutes, there was a swelling nearly the size of his two fists between his legs. He was able to walk home, which was only about fifty yards from the ship; but he was obliged to straddle as he walked, for he could not bring his thighs together in consequence of the tumour. When he got home he tried to make water, but could not, and on looking to his shirt he found it covered with blood, which had come from the penis. Finding that he made no water, his mother sent for a surgeon, who applied fomentations, and introduced a bougie several times; but without success; the boy continued at home until the third day, and having made no water during the whole of this time, he was carried to an hospital. According to the boy's account, there was no catheter attempted to be introduced into the urethra, but the tumour was immediately cut upon, and as no water came from the perineum, the bladder was punctured above the pubes; and seven half pints of urine were drawn off.

The next day a catheter was introduced by the natural passage. This was kept in for a week, no water in the mean time passing by the perineum. He remained in the Hospital a fortnight longer. When he was discharged, he made water by the wound in the perineum, which had not closed: that above the pubes had united in four days. After this operation, he continued at home for six weeks; he then went into another Hospital, and at this time he passed his water principally by the perineum. The surgeon used to introduce iron sounds, which gave great pain; they were sometimes forced in as far as the hilt. This treatment was continued for six weeks; for the last three months he has had nothing done for the fistula, which is now quite open. At four inches from the glans there is a very narrow stricture.

It

leaping out of his cart, to stop his horse, he fell upon his face, and the wheel went over the top of the left thigh and haunch bone. He says, that he bled a great deal from the fundament, while they conveyed him from Edgeware, where the accident happened, and since that, his fæces have

It is to be regretted that the excellent plan of treatment, which was adopted in the first instance, was not persevered in; for it is probable, if the catheter had been kept longer in, that the wound in the perineum would have closed.

The attempt to force the stricture by the iron sound ought not to be imitated. It resembles too much, the plan followed by Desault in the case mentioned by Chopart, where a firm stricture was formed in the urethra of a boy in consequence of a fall. Desault forced in a small catheter several times in the course of six months; and it is quite evident, from the relation of the case, that Desault formed a new passage for his instrument each time; but it is needless to say more on this question, as it has been already fully considered in the chapter on Forcing the Stricture.—J. S.

In the following case we have a proof that the lacerated urethra will sometimes close, even without the introduction of the catheter. It is taken from the new and splendid work to which all the medical men of the hospitals of Paris are contributors,—*the "Annuaire Medico-Chirurgicale."*

Mr. Hemcault was wounded by a musket-ball on the 18th of June 1815; it passed from one thigh to the other, traversing the back part of the scrotum, and upper part of the perineum. The urethra was cut by the ball. The urine continued for a considerable time to pass by the wound in the perineum; but at length between the fiftieth and sixtieth day after receiving the wound, the urine ceased to dribble by the perineum, and the canal became completely restored.—J. S.

passed from him involuntarily, accompanied with discharge of blood.

When received, he was bled, and had a dose of the laxative mixture of the house. The house surgeon reports that the catheter passes freely: but Mr. Bell, on attempting to introduce it into the bladder, failed; and it appeared, that when the instrument had been supposed to go home into the bladder, it passed out of the urethra into the wound, and by the side of the rectum. When the finger was introduced into the wound, it did not reach the bottom. It is an irregular torn wound; the ramus of the os ischii is either fractured, or there is a deep cut in it. On withdrawing the finger, blood and urine escaped; and from the smell, we suppose that the rectum must communicate with the wound. Pulse 100, and hard. *App. Hirudines octo ad imum Abdomen, et Capiat Misturæ Salinæ Cochlearia tria ampla, cum Tinct. Opii gtt. xv. ter in die.*

Aug. 10th. Fomentations and the tepid bath have been most agreeable to his feelings. The use of the catheter has been again attempted. This is not to be repeated, as the urine appears to drop from the wound in sufficient quantity to remove our apprehension of over-distention of the bladder.

12th. A consultation has been held on the

propriety of puncturing the bladder. The following were the circumstances to be considered.

1. There is a tumour, about as large as I can grasp with my hand and fingers, when they are spread on the belly. The tumour rises above the pubes, but not quite to the umbilicus. To-day it appears that the general swelling of the belly has increased, but the tumour of the bladder does not appear to have enlarged. A doubt is entertained whether this be the bladder which forms the distinct swelling in the lower part of the abdomen.

2. When the finger is passed into the anus, or when passed into the wound, which indeed is here the same thing, we cannot feel the bladder. Now, if the bladder be distended upwards, as high as the swelling would seem to indicate, so must it be distended towards the outlet of the pelvis; and in that case it would be felt by the finger in the wound.

3. There is another circumstance which, of itself, is decisive: the urine continues to drain off so freely, wetting through the sheeting and bedding, and dropping to the floor, that it is scarcely possible that the bladder can be much obstructed. What then is this circumscribed tender tumour above the pubes? Is it the bladder containing coagula of blood? Is it extravasation of blood betwixt the abdominal muscles and the peritoneum?

Can it be peritoneal inflammation? At any rate the operation is out of the question, although the patient be in the most imminent danger, and will surely die, for the pulse is weaker, the countenance dejected, and the skin has a yellow hue.

13th. He remains much in the same state as yesterday. The urine drops away freely, and sometimes comes in a gush through the wound. He thinks his belly is distended with flatus—and I should ascribe the tumour in the abdomen to flatus, if I could account for its being so accurately circumscribed. They are to endeavour to throw an enema past the rupture of the rectum. He is taking a pill of the extract of colocynth with calomel, and the saline mixture.

16th. This man lives, but is nearly exhausted; his countenance is deathlike; there is a yellow suffusion upon the skin, and the belly is very tender. Still there is a fulness and hardness over the pubes, so like the distended bladder, that it gives me great uneasiness, lest I shall hereafter find that I have allowed this aggravation of the other causes of his death.—Died on the 17th.

Dissection.

The bladder was moderately distended, and dark-coloured with inflamed vessels. The colon was much distended, forming three acute turns, one above the other, and attached to the bladder.

The body of the right os pubis was broken through, and also the ramus of the left os ischii.

The first rising of the inflammation, after so great an injury, destroyed him. My reader will now understand the object of my anxiety, during the patient's life, to have been caused by the turns of the colon which had attached themselves to the inflamed bladder, and which I mistook for the distended bladder. He should remember the possibility of a similar occurrence.

(Injury of another Kind.)

ABSCESS OF THE PERINEUM, FROM DIASTASIS OF THE OSSA PUBIS.

In the same ward with these men, lay one with abscesses in the perineum, and about the root of the penis. In the absence of my colleague, this patient fell to my charge for some time; and although now, unfortunately, I can understand the case, it puzzled me exceedingly at the time. To appearance, it was an abscess in the perineum from obstruction of urine; and when the urethra was found to have no stricture in it, it was still natural to suppose that inflammation and irritation of the canal had produced abscess in the cellular substance; but, on consideration, there did not seem ground to retain this opinion. Then it was

inquired, if he had hurt himself, or had got a blow upon the part? He had not suffered in that way exactly, but then came out the true story.

He was a powerful little man, and one day striding over a very heavy sack of tallow, and endeavouring to lift it, he felt something give way at the lower part of the belly. He became lame, and then the inflammation and suppuration followed. This man died of a dysenteric affection, on the 27th of January. The symphysis pubis was found destroyed, and the ossa pubis, near their union, carious and rough. Indeed, on each side, a portion of the bone was dead and exfoliating; a strong preternatural ligament connected the bones loosely at the upper part. There was an abscess behind the ossa pubis, and matter all around.

Remark.

This was an accident like what has taken place in women during delivery; when, by the impacting of the child's head in the pelvis, and the force of the labour pains, the anterior symphysis has given way, and the bones of the pubes have parted.

When this happens, there is probably some previous disease of the cartilages. The consequence is the motion and attrition of the bones, and hence a succession of abscesses, as in the present instance.

OF THE

DISEASES OF THE RECTUM.

OF THE DISEASES OF THE RECTUM.

The lower extremity of the intestinal canal is of very complex texture; it is both muscular and glandular; subject to spasms and to inflammations; and when diseased, there is a constant aggravation, from the nature of its function not permitting rest to the inflamed parts.

The following short treatise on the diseases of the Rectum, must be imperfect; for I shall describe no diseases but those with which I am familiar, and no operation which I have not repeatedly performed. My motive in writing these few observations, is that I believe I have noticed some circumstances, in the performance of the operations on this part, which if attended to will render them more safe, and not less certain in their beneficial effects. In this division of the work I have proceeded, as in the former, to draw my principles from the natural and morbid structure of the parts; a method which, although it may leave some subjects imperfect, is sure to be attended with improvement. And if it shall appear, that in writing this part of surgery, I have concealed nothing, but have disclosed all I think important, I shall have the same claim upon the members of my profession, which

I feel is due to those who have written candidly and explicitly on the subject.

Before entering on the following details, which are, perhaps, too little connected, and the mere notes drawn from practice, I may venture upon one leading observation. It regards the actions of the muscles of the lower part of the rectum, which are almost as little attended to, as those of the neck of the bladder.

The muscles of the perineum form a barrier across the lower opening of the pelvis. They support the viscera, and withstand the action of the abdominal muscles and diaphragm during all the common exertions of the body; they are, therefore, regulated by a very intimate consent, or sympathy, with the muscles of the abdomen. Among the muscles which close the outlet of the pelvis, the principal are the levator ani, and sphincter ani. But besides this common office, they have another, guarding the orifice of the rectum, relaxing or contracting as the state of excitement of the gut demands. To this double office, to these muscles being, as it were, amenable to distinct laws, the frequent derangement of their action must be owing.

Without a certain state of the rectum itself, these muscles will not relax. By the exertion of the will over the muscles of the abdomen and the diaphragm, the viscera are powerfully pressed

down; but the fæces are not expelled: the levator and sphincter retain their activity, just as they do during the common state of exertion of the muscles of the belly, as in crying, or speaking, when they remain forcibly contracted round the orifice of the rectum.

Nothing tends so effectually to disorder the connexion of the sphincter and levator muscles, in the act of expelling the fæces, as the absorption of the fluids of the rectum, and the lodgment of the hard fæces in the lower part of the intestine. Then it is, that the patient may strain ineffectually, for the rectum does not contract, the sphincter does not relax, the levator resists, and the only effect produced is the distention of the veins of the verge of the anus, and the forcing of the upper part of the rectum to descend into the lower and more capacious portion.

Some writers have very inaccurately described the sphincter and the levator ani as antagonist muscles. No surely; they act conjointly. What that action is, we see sufficiently demonstrated in the case of artificial anus, where there are no such muscles to sustain the extremity of the gut. When the intestine, after the operation of hernia, is made to open upon the groin, it is almost impossible to prevent the gut from being inverted and forced down several inches each time a motion takes place.

Obviously the levator and the two sphincters of the anus combine to prevent this prolapsus: the

one contracts around the extremity of the gut, and the other draws it up and sustains it. But if any peculiar irritation takes place within the rectum, by which the relaxation of these muscles is excited, they lose their guardian office, and let the inner membrane of the rectum descend, and permit the veins of the anus to be distended.

The same power that impedes the full action of the intestine, leaves the sphincter muscle in permanent contraction. Very lately I had a patient, who, in consequence of an injury to the spine, became paralytic in the lower part of the body and limbs, and she suffered excessively from distention of the intestine, so that the breathing was impeded. I ordered a clyster-pipe to be passed through the anus, so as to dilate the sphincter, and permit the air to pass: it had a very remarkable effect in diminishing the distention of the abdomen.

This further illustrates a very frequent disorder, produced, or perhaps we ought only to say accompanied, by an obstinate spasm of the anus. The complaint has consequences almost as unpleasant as the permanent stricture of the anus. The cure will be found in the correction of the general condition of the intestinal canal, and especially in the exhibition of such medicines as tend to restore the natural secretions to the internal surface of the intestines.

WARTS WITHIN THE VERGE OF THE ANUS.

There is a disease of the fine skin within the anus, which it is important to know, both because it is attended with very unpleasant symptoms, and because it so much resembles cancer. If it be mistaken for this disease, it leads either to neglect or to too severe practice; while the patient suffers imaginary evils. The complaint to which I allude, is warts within the verge of the anus. This is one of the consequences of irritation, attended with discharge from the anus.

The patient complains of continual irritation and discharge from the anus; of pain and difficulty during evacuation; the appearance of the stool is peculiar, inasmuch as it is ragged from passing through the irregular orifice.

Upon introducing the finger into the anus, it enters with difficulty, and draws blood; there is a certain degree of stricture or narrowness in the orifice; the surface is felt hard and rough, and on turning the finger, the roughness is found to be occasioned by warty excrescences.

The cure is to be effected by snipping off the warts with scissars (which ought to have blunt or probe points); by touching the remaining lesser warts with caustics; by washing the part by means of a small sponge attached to a probe, with the diluted acetic acid; by the use of the rectum bougie; or the tent soaked in an astringent solution.

This disease will be found, like most of the other affections of the anus, to have a connexion with deranged action of the bowels.

SMALL FISTULÆ ON THE MARGIN.

The extremity of the rectum is the seat of small fistulæ, which do not correspond with the description of the formidable disease described under the title of fistula in ano.

The openings of the fistulæ which I am now describing, are found among the irregularities on the verge of the anus: irregularities which we see in those who have suffered repeated attacks of irritation and piles. These fistulæ are sometimes too small for the common probe to enter; when they are complete, and the probe can enter, the end of the instrument will be found to come out upon the inner surface of the gut, betwixt the external and internal sphincter.

These small fistulæ do not belong to the class of suppurations in the cellular membrane by the side of the gut. I am inclined to believe, that they are the result of inflammation and irritation of the glands which lie under the fine skin of the anus.

It may be well imagined, that these small abscesses and fistulæ keep up irritation in the verge of the anus in a very unpleasant degree. They should be freely opened, the surface washed with

an astringent, and dressed with the ointment of galls. Frequent bathing with cold water, especially after exercise, will be found useful, by relieving the inflammation of the small glands, and preventing a return of the complaint.

STRICTURE OF THE ORIFICE OF THE RECTUM.

The stricture of the anus is a common complaint. It is known by the distress and pain on going to stool, by the occasional retention of the fæces, and disorder from accumulation in the bowels, and by the form of the fæces. On inspection it is ascertained by a distinct ring prominent around the orifice, and to be felt by the finger pressed against the perineum: by the difficulty of introducing the finger, and by the unusual pain which the attempt creates.

This stricture is occasioned by inflammation, repeatedly produced, though in a slight degree. Its cause, for the most part, is costiveness and straining, by which the fibres are strained and burst. Sometimes, I believe, it may come from tenesmus, and frequent excitement of the orifice by painful and ineffectual calls to evacuations *. I

* M. Dupuytren describes a case of stricture, in consequence of spasm of the sphincter muscle; and he alleges, that he has neither found inflammation nor fissure, to account for the great pain which the patient suffers. This spasmodic affec-

have found on the inside of the anus fine ligamentous cords attached only at their extremities, and running in a direction round the orifice.

STRICTURE OF THE ORIFICE WITH PILES.

This is a very frequent occurrence, and the following I believe to be the manner of the disease forming. When by any cause, the orifice of the rectum is excited, the inner coat, being soft and easily distended, becomes gorged with serum. The cellular and inner coat being full and swollen, the surrounding muscular fibres forming the sphincter, contract upon them, just as they would on matter lying within the gut. By this, two things follow: the almost constant teasing action of the orifice, and the protrusion of the inner coat. This state of the parts is in a short time attended with deposit of coagulable lymph, so that the tissue is consolidated, and the orifice prevented from dilating; and thus a stricture is formed.

The absorbents of the rectum are very active,

tion is much dwelt upon by some writers in this country, who describe this complaint as analogous to stricture of the urethra, which they suppose is a consequence of the contraction of muscular fibres. It is hoped that this has been already shown to be an erroneous idea, and that the explanation given why the muscles of the perineum should occasionally act spasmodically on the urethra, will suffice for the illustration of the cause of the spasmodic affection of the sphincter ani.—J. S.

and the consequence is often a consolidation and hardness of the contents. Thus, if a person is in the habit of having his bowels relieved at a certain hour in the morning, and the hurry or anxiety of business interferes, that motion which would have been natural and easy in the morning, becomes difficult and painful in the evening; what is passed, is hard and moulded to the rectum; and the propulsion is attended with straining, and pain, and perhaps blood. Let this continue, and stricture of the anus, with piles, is a sure consequence. I may once more remark, that through the whole length of the intestinal canal, there is a connexion betwixt the state of secretion from the inner surface, and the state of contraction of the muscular coat of the intestine.

The cure of the stricture of the anus is to be accomplished, 1. By leeching and fomentation, to subdue the existing inflammation; 2. By correcting that state of irregularity of the bowels, which has been the original cause; 3. By the use of clysters; 4. By the introduction of the rectum bougie.

Patients in this country, will object to the use of the *lavement*. Then let them attend to their diet, and study regularity in their evacuations: but if, by neglect of these matters, a disease of the rectum or anus comes on, there is nothing more conducive to ease and rapid recovery, than the proper use of clysters.

OF THE USE OF THE BOUGIE IN DISEASES OF THE RECTUM AND ANUS.

There are few diseases of this part which will not yield to the proper use of the rectum bougie. Bougies for this purpose are made like the wax urethra bougies, or of sponge coated with wax; or they are tubes of the elastic gum, stuffed; or they are of metal. For common cases I prefer the latter kind. Their form is in general conical; but where they are to be used for stricture within the gut, they will be found to lie with less irritation, by being narrower at that part which is embraced by the anus.

For a stricture of the rectum, some way within the orifice, and attended with spasm and pain, the common bougie will be found to produce distressing symptoms. Here we shall find more advantage by introducing a simple tent of rolled linen.

Take a piece of linen of square form, roll it up in the form of a bougie, then tie a cord or strong thread very firmly around one end of it. A probe is now to be passed up in the inside of the roll of linen, until its point is stopped by the tying. Where the cloth projects beyond the ligature, it is to be cut and rounded, so as to offer no obstruction when introduced into the rectum. The tent thus formed, is to be dipped in liniment or oil; and is

ready for use. The probe gives it stiffness, so as to enable us to pass it through the stricture; and the probe being withdrawn, the tent lies soft and pliant in the rectum.

I have used a method of distending the rectum, that I can recommend as quite safe, although somewhat more troublesome — the introduction of a gut, of six or eight inches in length, into the rectum; which gut is afterwards to be slowly distended with fluid by means of the syringe. The distended gut answers the purpose of a bougie; and is particularly useful when we are desirous of distending the rectum very fully, without distending the anus to the same extent.

The bougie should be used in the morning, while the patient is still in bed: that first used should be of a size gently to put the part on the stretch; and neither on this, nor any other occasion, should violence be done. If the patient can bear the instrument, it may be allowed to remain twenty minutes. Let it be remembered, however, that although the rectum bougie may be borne by the patient without much complaint, it may be doing mischief; it may be distending the stricture too rapidly. This will bring on shivering and sickness a few hours after. As the patient sees no connexion betwixt the operation and the shivering, sickness, and uncomfortable feeling, he may omit to speak of his suffering; the surgeon

must, therefore, inquire for this symptom, and be guided accordingly. It is possible to bring on inflammation of the peritoneum, and death, by this kind of violence.

I am much surprised to find operations like this recommended, without a precaution of the kind I now offer; and I am not without suspicion, that in some published cases, the author has described the death of his patient, without being aware how much his forcing the bougie into the rectum, had to do with that unfortunate event. But if the bougie be used with dexterity and care, it gives very little inconvenience, and is always attended with benefit. By this instrument we are stretching the parts mechanically; but we are stretching parts that are alive, which gradually yield, if gently treated, but which inflame if violently dilated. It was inflammation which originally did the mischief and produced the stricture; and unless we can operate without raising inflammation, there can be little hope of amendment.

Let the patient be placed on his knees in bed; the bougie is warmed and oiled, though a mild liniment or ointment is better. It is at first introduced perpendicular to the orifice; but when about an inch within the anus, it is to be directed upward, that is, towards the sacrum: if it be far introduced, the direction must be again varied, otherwise the point will hit the promontory of the

sacrum; and often this resistance of the bone has been mistaken for stricture.

Of sounding the Rectum.

Connected with this subject of bougies, is the operation of sounding the rectum. When an obstruction is suspected, beyond the reach of the finger, a soft bougie, or candle, is introduced to ascertain the place and nature of the obstruction. It may be a simple stricture, it may be hardened fæces which have caused the symptoms: it may be a falling down of a turn of the colon: it may be a tumour, as of the ovarium which presses on the rectum: it may be a retroversion of the uterus which causes the obstruction.

The bougie of wax, or a candle, is used for examining the rectum: the instrument is made soft and pliant by lying in warm water, it is then oiled and introduced; and by pressing against the obstruction, or by entering the stricture, an impression is obtained, and some estimate formed of the nature of the disease. But this, and I fear all other ways of examining the rectum, beyond the reach of the finger, are very unsatisfactory.

I was called to give my opinion of the condition of a lady, after she had been three years under the use of bougies. She was very ingenious, and with her pencil she explained every thing she felt, and all that she had been ordered to do. But I

urged the necessity of examination, and the possibility of there being some mistake; and, in fact, I found that the obstruction to the rectum arose from the fundus of the uterus having fallen into the hollow of the sacrum. Against this had the bougie been pushed regularly for years, and happily without further bad consequences, than the expensive attendance of a surgeon. She had been under the care of several gentlemen, both in town and country. Such examples show the necessity of attention to the narrative of the case before examining. We shall have at one time to trace the progress of a dysenteric disease; at another, a disease of the prostate; in the female the consequence of a labour, and the displacement or enlargement of the uterus; or the disease and enlargement of the ovarium.

The introduction of instruments into the rectum, requires a knowledge of the curve which the intestine takes, and of the axis of the pelvis *. If a stricture be high up, and it is necessary to introduce a bougie or tube beyond the reach of the finger; attention to the curve and form of the canal is particularly necessary: for, without it, the extremity of the instrument will be driven against the bladder, or against the sacrum.

* See the Essay on the Axis of the Pelvis in the Surgical Observations.

OF STRICTURE OF THE RECTUM.

The disease called stricture of the rectum is owing to a morbid change in the inner membrane of the intestine: not unfrequently the inner edge of the deeper sphincter ani being the seat of this stricture; and then the finger enters only to the depth of the second joint, when it is obstructed by a sort of membrane standing across the passage. Sometimes the stricture is more than two inches within the anus, and feels like a perforated septum, or what the hymen is described to be. If the stricture has been of long standing, it may become irregular; and, indeed, if a common stricture be subject to daily irritation and increase of inflammation, the surrounding part of the gut becomes hard and irregular. The symptoms of stricture in the rectum are sometimes very obscure, and especially to those who have not attended to cases of this nature. I had occasion to puncture the bladder by the rectum, and found my finger obstructed by a stricture: the patient did not know of its existence. I was about to perform the operation for fistula in ano, on a gentleman, and found a stricture so narrow, that the point of the little finger could not be made to enter; yet neither before nor since this discovery, has the patient permitted himself to believe, that his complaints proceed from this source.

Without any definite notion of the nature of the disease, the patient is, nevertheless, sensible that there is something wrong. He has spasms of the gut: he has pain of the loins, sometimes of the hips and thighs: he is distressed with flatulence and eructation: he is sensible of something obstructing the freedom of evacuation: he says his fæces are like those of a child, small and flattened, or irregularly figured. He strains much, and hence piles are often combined with stricture of the rectum, as with stricture of the urethra. The state of the bowels is altogether irregular; and not unfrequently there is purging alternating with constipation.

The purging is the passage of the fluid contents of the bowels, through the narrow stricture; it is done by straining, and comes in small quantities, yet not with tenesmus; and when the constipation occurs, it is attended with distention of the belly, and with croaking and rumbling of the intestines, like that of a hysterical woman.

But I acknowledge there is something more than this, in the condition of a patient with a narrow stricture, with which my reader should be acquainted. The stricture being narrow, and the fæces not sufficiently discharged, a gradual accumulation takes place in the bowels; more than usual flatus is disengaged, and hence remarkable prominence of the abdomen, and great distress. This forces the patient to have recourse to me-

dicine. There is, at last, a softening of the matter accumulated above the stricture. Then follow large and repeated evacuations; and the patient, after extreme debility, feels himself relieved, and continues well, until there occurs again, a gradual, but, at length, an enormous, accumulation in the intestines. The mind and body are again oppressed: there is faintness and lowness: the face is pale and characteristic of distress: the breathing is with some degree of labour: the flatus becomes distressing, the pulse is feeble, and sometimes intermits: there is hiccough with all the accompaniments of the iliac passion.

The disordered action of the rectum affects the muscles at the neck of the bladder, and the urine is retained. Some surgeons have been so mechanical in their notions, as to attribute the obstruction of the urine to the stuffing of the rectum with fæces. Such will be the consequence of a common stricture of the gut. Certainly we see it arising in the most aggravated degree from the scirrho-contracted rectum.

This kind of stricture, which we must call the simple stricture of the rectum, is a consequence of inflammation in the gut, excited by frequent ineffectual efforts to propel the fæces in a constipated state of the bowels. The sphincter in this condition does not relax, nor does the intestine itself act. The whole propelling power is in the

abdominal muscles. The rectum, urged down by the pressure from above, forms a fold of the inner coat, just above the inner sphincter. By repetition, inflammation and adhesion of the outer sides of the fold take place; and by these means losing its softness and yielding nature, it becomes a permanent septum, standing nearly across the gut. It will be removed with difficulty, in proportion to the time that has elapsed from its formation.

The means of cure are, proper laxatives regularly taken, the use of clysters, to prevent the lodgment of fæces above the stricture, and the daily introduction of the bougie, or the tent.

Some have recommended that the stricture of the gut should be divided with the knife. This ought not to be thought of until the more innocent means fail. Certainly it ought not to be performed, unless we can distinguish that the edge of the transverse membrane is very firm and unyielding. When the operation is done, it requires the use of the bougie to perfect the cure.

To cut the stricture, we take the probe-pointed bistoury, used for hernia, which has a cutting edge, of only about half an inch in length, near its extremity. Having introduced the tip of the finger into the stricture, so as to feel the firm edge distinctly, the knife is laid with its flat side upon the finger, and pushed along under its guidance, until the end enters the stricture. The cutting edge of

the knife is then to be turned round, so as to present the edge to the stricture; and it is to be urged against the stricture by the finger in ano. The cut being made on the edge of the stricture in one direction, it is better to turn the knife flat upon the finger, and then to move both the finger and knife round to some other part of the edge of the stricture, which stands most distinct and prominent; and thus to notch the membrane in several places. This will be more effectual, and attended with less hazard, than one deep cut.

OF THE SCIRRHO-CONTRACTED RECTUM.

The scirrhous contraction of the rectum is a chronic disease, originating in the glandular stricture of the gut. It is a very formidable malady; and if authors speak in other terms, it is owing to the aggravated stricture, with thickening and irregularity of the surrounding parts, having been by them mistaken for the true scirrhus. It is truly of a cancerous nature, and no means of cure are effectual to its removal.

The scirrhus of the rectum begins with a hard tumour, smooth towards the cavity of the gut or anus. A shooting pain occasionally, with almost constant uneasiness, and a difficulty of passing the fæces, call the patient's attention to the part. In a few weeks the tumour becomes irregular in

shape; it occupies one side of the gut; but in time extends all around it. The finger cannot now be introduced; the evacuations are much obstructed, and attended with burning pain. The patient cannot sit: he paces the room continually, and the spasmodic retraction of the anus, over which he has no control, gives him insufferable pain.

In this condition of the parts, if any thing indigestible passes down to the rectum, it is arrested above the diseased portion; and by lodging there occasions inflammation and abscess, and a temporary aggravation of the disease. But I must not carry this description further: the following case will present the disease in its worst form, and in detail.

A gentleman, of sixty years of age, who had resided for a great part of his life in India, called upon me one morning, to have my advice about a troublesome complaint, which he hoped was only a pile. A flat tumour occupied one side of the anus, not projecting however, not to be seen, but felt—and felt most acutely by the patient in sitting. The unusual sensation of the tumour, cakey, and yet not resembling the stool of an abscess, nor like the effect of inflammation, gave me considerable alarm. I ordered some mild laxatives, leeches to be applied to the verge of the anus, and an anodyne fomentation to be frequently repeated.

It was some weeks before I heard of him

again; he was a physician, and had submitted to what I had advised. He had experienced occasional relief, but the disease was progressive: the tumour was harder and more distinct, still perfectly well defined, and it had extended more round the anus. He suffered greatly, was continually on his feet, pacing the room and unable to sit. From this time my attendance upon him was regular. The following was my plan of treatment. By a variety of mild laxatives, I endeavoured to procure one sufficient evacuation in the day. After the motion an injection was thrown up, consisting of gruel; on the rejection of this, a very small quantity of starch with laudanum was thrown up to remain, and to relieve the troublesome spasms of the sphincter muscle. Leeches were applied three times a week to the anus, and the parts were fomented morning and evening with a decoction with extract of cicuta. By such means I hoped to give the parts as much rest as their necessary functions admitted of, at the same time that I expected to subdue inflammation. He also took a pill of the mas. pil. hydrargyri and extract of conium.

After some weeks, his torments being exceedingly great, though borne with exemplary patience and mildness, an additional source of trouble fell upon him, in the sympathy of the bladder.

He could not make water: I was obliged to draw it off daily with the catheter.

Some time after this, a new symptom appeared. I had given him hopes that the swelling would soften by suppuration. There arose most unexpectedly a swelling, with phlegmonous inflammation on the side of the hip, and near the anus; it came slowly forward, and at last burst, and discharged good pus. From this abscess there was one day discharged a minute scale of bone, which gave us some speculation; for it was thought it might come from the os pubis. Yet it did not accord with my recollection of the anatomy; and in a few days after this, there were discharged as many small bones of larks, as amounted to the skeletons of two of these birds. It was full six months before this, that he had eaten larks, while travelling in France.

And here I am reminded to state to my reader, that indigestible matters, as hard bones, may pass through the whole canal, until they are retained by the sphincter ani; and there they settle and fix, enter into the coats of the intestines, give extraordinary pain, cause difficult stools, and alarm both patient and surgeon with the notion of some formidable cancerous disease. It was very natural for some of the consultants, on this occasion, to say, that now the case was explained, and all the suffering and obstruction was occa-

sioned by this accidental lodgment of the bones. But I could not fall into this idea, remembering the hard glandular beginning of the disease, the constriction of the extremity of the gut, and the nature of the pain. I conjectured, that, on the contrary, the previous stricture had been the occasion of these bones lodging, and causing abscess and ulceration by the side of the gut, and that they had fallen down and formed an external abscess.

For some weeks more, the patient's suffering continued without much increase, but no abatement. But then he fell into a different condition: his belly swelled; his pulse became feeble and intermitting; his strength left him; his face was like that of a dying person; and he had hiccough, and nothing remained on his stomach. I was struck with the resemblance of the symptoms to those of a strangulated hernia. I conceived that all this mischief arose from accumulation in the intestines. The event proved it to be so: for, in part, by the mechanical obstruction of the passage; in part, by the excessive pain produced from the imperfect stools, there came a gradual, but immense collection of fæces in the bowels. He had all the appearance of a dying man, when I undertook to relieve him. I passed an elastic gum catheter through the diseased part of the rectum, and threw up some tepid water; it returned, bringing a

stream of feculent fluid, which very quickly filled a large hand-basin: a second was filled by continuing the process; and in the evening of the same day two basins were again filled by the evacuations. Next morning he appeared like a resurrection; his pulse rose; his countenance looked natural; and he took his food much better than he had done for a very long time.

After this, various contrivances of tubes were adopted. It was attempted to enlarge the passage by their use, but found utterly impracticable from the pain the trials produced. Yet this plan of introducing the tube, evening and morning, and afterwards every morning only, was attended with inexpressible relief. The fæces flowed off without occasioning the painful contractions of the orifice, without the acrid matters coming in contact with the ulcerated surface; and, therefore, without the excessive suffering the natural efforts had produced. Of this we had a proof in the amendment of the bladder; from the time the tube was used to draw off the fæces, there was no longer occasion to use the catheter to draw off the urine; the function of the bladder was completely restored.

But the disease was cancerous, and necessarily progressive: in about a month after this, he sunk from a fever of irritation, quite exhausted; although his pains never, in any degree, approached in severity those he had experienced from the

action of the rectum, before the tube was had recourse to.

In such a miserable condition as I have described, our duty is very obvious. When there is obstruction, if it be impossible to examine the gut by the finger, the gut should be sounded; for there may be a lodgment of fæces, or a bone, or a pin sticking above the sphincter. When the nature of the disease is ascertained, our hopes must rest on soothing the general irritability, and preserving the diseased parts in quiet. A gentle laxative may be joined with cicuta, or the castor oil in conjunction with laudanum, or the extract of hyoscyamus may be given with the cathartic extract; or such other combination of anodynes and laxatives administered, as may serve to preserve the motions easy; and after every motion a tepid clyster should be thrown up. It must be our care to keep the rectum free for the passage of the fæces by the occasional use of the tent. If there is excessive irritation, from the fæces coming in contact with the ulcerated surface of the gut, the elastic tube must be used to draw off the fæces; and through this too, the lower part of the intestines must be cleared from the fæces by frequent clysters; they can be given without pain through the tube. Leeches occasionally, and fomentations and opiate clysters, will be required; and when it can be borne, the opiate suppository.

OF RELAXATION OF THE INNER MEMBRANE OF THE RECTUM, AND OF PROLAPSUS ANI—OF TUMOURS WITHIN THE GUT, AND OF PILES.

The inner coat of the rectum is subject to relaxation, which is attended with very distressing symptoms. This disorder is accompanied by a continual sensation as of something within the gut to be discharged; and the consequent action of the gut, and the bearing down which accompanies it, aggravate the complaint. The folds of the gut are accumulated at the lower part, while the fæces are retained above. When an examination is obtained, the inner coat is felt loose and pendulous, and the enlarged folds feel like soft bags of fluid clustering all round. If permitted to continue long, this disease is followed by *prolapsus*.

The analogy betwixt this condition of the rectum, and the *introsusception* of the higher part of the intestine, cannot escape those who have seen both diseases. *Introsusceptio* is a consequence of irritation of a portion of the intestine, which is attended with infiltration of serum into the loose texture of the inner coat. This tumour of the coat being within the embrace of the muscular tunic, is compressed, and as it were swallowed or carried

downward, as if it were matter actually within the gut; and hence that singular displacement begins, which is, at length, attended with the invagination of one portion of the intestine within another. In the lower extremity of the canal, the same thing occurs: that is, an irritation continuing in the rectum, an infiltration takes place, and the folds of the inner coat are distended with fluid. They have the same effect in exciting the muscular coat and the sphincter, as if feculent matter were contained within the gut, and there is the same protrusion and bearing down.

I have recommended in such a case, 1. Attention to the *cause*, the excitement and irritation of the gut; 2. The correction of the dysenteric affection of the great intestines, and the dislodgment of *scybalæ;* 3. Cold astringent injections into the rectum; 4. The use of the gut instead of the bougie to distend the rectum.

When from this complaint there hang down into the anus two little flaps, or pendulous tumours, which excite continual irritation, they may be cut off.

SOFT TUMOUR PENDULOUS FROM THE RECTUM.

I have found a tumour distinct from the last, and distinct also from what is called internal piles, hanging pendulous from the inside of the rectum

near the anus. It was of the consistence and figure of a mulberry, soft, and bled on being rudely touched.

The patient was purged, and desired to live low and simply. He was ordered a clyster in the morning of the operation, and afterwards to sit over warm water, and strain till the tumour came down. When in this condition, the tumour was seized and transfixed with the needle, the thread was cut, and two ligatures were formed; first one half of the tumour was tied, and then the other; and the tumour, with the ligature attached, were thrust within the rectum. Both tumour and ligature were discharged with the stools, and the patient expressed himself entirely relieved from a continual irritation, that had plagued him for a very long time. I have only to give my reader a caution. This tumour was as soft as ripe fruit: had it been a firm tumour, I would not have ventured to use the ligature.

OF THE PROLAPSUS ANI.

The prolapsus ani is generally a consequence of irritation in the rectum, and not of relaxation. It is frequent with children, from the nestling of ascarides in the gut. The irritation of these worms produces a perpetual nisus in the gut, until it, at last, acts upon itself, and the inner membrane is

protruded; it swells, congestion takes place in the parts, and the intestine is pushed further and further out. Purging, with much irritation, will be attended with the same consequences in children. In adults, also, continued straining and tenesmus will produce prolapsus. When a considerable portion of the rectum is prolapsed, and permitted to remain exposed, the complaint is necessarily aggravated. While the gut is in its natural position, the lax inner membrane is restrained by the outer coat, and the whole gut is under considerable compression; but when the prolapsus takes place, and the lax inner membrane is everted, there is nothing to restrain the swelling; and as the veins are compressed by the sphincter, and the return of the blood thus made unusually difficult, an infiltration takes place in the cellular membrane beneath the villous coat; the folds are undone by the universal swelling; so that the tumour appears very formidable, being large, and partaking of a dark vinous red colour *.

To reduce the prolapsus, we must order fomentation to the protruded parts: after this we undertake a general and gradual compression of the protruded gut. When the bulk is diminished, we then attempt to reduce the gut, and place it within the anus. In children, it is difficult to

* See the description of Plate V.

reduce the last turns, if the finger is pushed through the orifice, for when it is again withdrawn, the gut slips down. We may, therefore, twist a piece of stiff paper into the form of a cone, soften the point by wetting it, and oil the surface of the paper: placing this upon the point of the finger, with it we may push the last portion of the gut within the anus: the cone will slip out easily, without bringing down the gut with it. Another manner of reducing the prolapsus is, by using a distended gut to push it up; and this distended gut may be pressed altogether within the rectum, so as effectually to replace it: and thus, on letting out the air from the distended gut, it is brought out without bringing down the prolapsus.

But the chief difficulty remains—to remove the cause, the irritation and tenesmus. If worms produce the activity of the gut, and its consequent descent, bitter infusions, or lime-water, used as injections, will remove them. If the irritability of the intestine proceeds from other causes, these must be attended to, and the cure will be assisted by injection of starch and laudanum; and by washing the parts with an infusion of galls and opium, when they are protruded. The child should not be permitted to strain, nor to take the usual position at stool. He should be kept in the erect posture, and the hips ought to be held together, so as to compress and support the gut.

CHRONIC PROLAPSUS IN THE ADULT.

There is a falling down, or rather a protrusion of the inner fold of the rectum, which some have called prolapsus, which is quite a different disease from what I have been here describing. It is a chronic disease, and consequent upon long-continued or habitual costiveness. To comprehend the nature of this disease, it is necessary to have felt the condition of the rectum, during the effort to expel, when there is nothing contained. For an inch and a half within the verge of the anus, the gut is surrounded with the internal sphincter which supports it, and gives a considerable degree of rigidity and firmness to this portion. But within the inner margin of the deep or internal sphincter, the rectum dilates into a capacious cell or sinus—a natural receptacle. This part of the rectum has the folds of the inner coat very loose. This is their condition when the patient strains ineffectually: the rectum is passive, and the force of the abdominal muscles pushes out the folds of the gut through the anus: this exertion is attended with a relaxation of the sphincter, which the more easily admits the protrusion.

When this consequence of torpor of the bowels has continued a long time, the protruded fold of the rectum is elongated, and assumes something of the character of tumour, when inflamed and

turgid, but of a shrivelled membrane when not swollen and inflamed.

When the chronic prolapsus is in ordinary condition, it presents two distinct membranous folds, one hanging from each side of the anus. As they occupy the anus, so they irritate the part, and tease the patient exceedingly with itching and pain; and often, by exciting the rectum, they add piles to the uncomfortable sensations they themselves occasion. It is now that we with propriety cut off these pendulous flaps of skin. I have done this operation by taking hold of one of the flaps with my finger and thumb, and passing the needle through it near its base, then cutting the ligature so as to make two: these being tied, one on each side of the flap, the projecting part is snipped off with the curved scissars. The ligature and remaining part of the flap are left to be withdrawn within the gut. A starch clyster with laudanum should be given in the evening, and the patient must keep to his bed or sofa for several days.

Mortification of the prolapsed Gut.

The consequence of prolapsus in the adult is not always exactly as I have stated above; for the protruded parts of the gut having escaped, to a considerable degree, from the support of the levator ani and the sphincter, they begin to swell, and there is a degree of strangulation. The sphincter

ani, which, in the natural condition of the rectum, sustained the extremity of the gut, is now external to the inverted and protruded gut, and encircles it; and now the effect of its action is changed by its new relation to the gut: it contracts upon the veins of the prolapsed portion. The extremities of these vessels are gorged with blood; the circulation of the parts is impeded. The distress is now very great; the local injury is also considerable; and the consent established through the whole extent of the canal is now producing a peritoneal inflammation, tenderness of the belly, and sickness. On examining the viscera, after the death of a patient, which I have lately had an opportunity of doing, there were marks of peritoneal inflammation; and in this instance there was pus found on the peritoneal surface in the pelvis. The rectum itself was inflamed upon its exterior surface, and patches of inflamed vessels were visible, irregularly dispersed in the length of the canal. The appearance on the whole was a good deal like the state of the abdomen, when the patient dies after the operation for hernia.

OF HÆMORRHOIDAL TUMOUR, OR TUMOURS OF THE VERGE OF THE ANUS CONNECTED WITH THE VEINS.

The veins of the extremity of the gut communicate with the lower branches of the hæmorrhoidal

vein, a division of the lower mesenteric vein. Therefore a direct communication may be traced betwixt the veins of the liver and the hæmorrhoidal tumour. But I very much doubt if ever these tumours have their origin directly in disease of the liver, although torpor of the function of the liver will be followed by that costive state of the alimentary canal, which is the most favourable to the formation of piles. It may be another question, when piles have continued long and have bled freely, and almost periodically, whether we ought all at once to stop this evacuation. This may have an injurious effect, although not by direct relation to the circulation of the liver.

Piles, or hæmorrhoidal tumours, properly so called, are produced by distention of the veins of the anus, and of the gut near the extremity. How this distention is produced, it is not difficult to comprehend. Purging, tenesmus, and the ineffectual efforts at expulsion, are all attendant with a relaxation of the *sphincter ani;* consequently the compression and support are taken off the extremities of the veins at the time when, by the action of the abdominal muscles, there is an impulse sent along the column of blood in the mesenteric veins. This impulse is unchecked, since there are no valves upon these veins *.

In a short time the distended veins are enve-

* See the description of a preparation in the Appendix.

loped with a fleshy covering. The distention of the vessels causes a thickening of their coats, and the injury being still continued, there is a deposit of coagulable lymph around them; besides, there is sometimes an extravasation of blood which becomes organized. Thus the hæmorrhoidal tumour becomes a firm fleshy excrescence, with the extremity of the vein concealed within. That vein, however, is burst from time to time, and discharges blood. For when, by the continuance of the costive state of the bowels, the patient is forced to strain at stool, the blood is spurted out to some distance by the bursting of the extremity of the vein.

This spurting of the blood against the water-closet in a fine stream, is proof sufficient of the pressure sustained by the abdominal veins, during the act of expelling the fæces. Yet the vein does not appear always to burst in the act of forcing, but sometimes in the act of drawing in the anus: for, when once the tumour is formed beyond the stricture of the sphincter ani, and the veins are fully distended, if the levator and the sphincter act together (as they always do), the distended tumour is so compressed that the vein bursts, and sends the blood from the small orifice to some distance. When this spasmodic retraction does not burst the vein, it nevertheless distends it, and the pain excites more inflammation, and causes an increase of the tumour. *Internal piles* are not

attended with the degree of pain that accompanies the true pile; they are formed by the pressure on the mesenteric veins causing a distention and varicose state of the extremities of the veins which lie upon the inner surface of the gut. When the mesenteric veins are injected, these tumours may be seen on the inside of the rectum; and if the fine inner membrane be dissected up, they will be found to consist of convoluted veins. But the true pile is formed on the verge of the anus, and unfortunately engages some part of the external integument in the tumour, and consequently partakes of the sensibility of the inflamed and distended skin. Hence the pain which attends their inflamed state coming in violent pulses, and so severe as to resemble a pile struck up the gut. The fever and irritation which sometimes attend these swellings are so great, that the patient feels torture even if a heavy foot traverses the room where he lies. Upon examining the part, it will be found that the swelling is not one continued tumour, but that there are several piles. It will also be generally observed that there is one of the tumours more hard and tense, and that when touched the patient declares that to be the source of all his distress. The fact is, that piles form in succession, and that the last formed is the most painful, being in an acute state of inflammation.

It must be also noticed that these hæmorrhoidal tumours appear very differently as they are examined during their progress and inflammation, or in their chronic and more relaxed state; for, in the first case, they are firm, tense, and painful; in the latter, shrivelled and comparatively insensible: in their treatment these two conditions must be carefully remarked, or we shall do great mischief, and aggravate instead of remove the disease.

In treating this complaint, the first object is to diminish the inflammation and pain of the acute stage. That is accomplished by mild laxatives, by leeches applied to the verge of the anus *, and warm anodyne fomentations to the parts; and by clysters of starch and laudanum †. It will sometimes be beneficial to enter the point of the lancet

* The French authors object to the application of leeches immediately on the tumour, as they increase the irritation: they advise them to be applied a short distance from the verge of the anus.—J. S.

† The French talk in the highest terms of the forcible application of cold water by a syringe to the anus while the patient is suffering great pain. An English water-closet is highly praised as very convenient for this purpose.

"Ce malade avait dans son cabinet des lieux d'aisance dit à l'Anglaise, dont le reservoir était très elévé et d'une grande capacité. Il imagina d'exposer la partie souffrante à l'action ascendante d'un jet d'eau très froide qui s'elevait à deux pieds environ; les douleurs insupportables qu'il eprouvait furent d'abord soulagées d'une façon qu'il appelle délicieuse."—J. S.

into the most prominent and painful pile, and to encourage the bleeding by fomentations. When the pain and inflammation are somewhat subdued, we must endeavour, by a slow and cautious pressure, to deliver the tumours into the compression and support of the sphincter: for, if they be permitted to remain without the gut, the sphincter acts so as in a manner to strangulate the protruded part, and to cause more distention of the extremity of the vein and effusion of blood or serum into the tumour. If we cannot reduce the tumours, we must nevertheless support them by a soft compress dipt in anodyne lotion and retained by the T bandage *.

Much mischief results from authors treating of the operation on piles, without distinguishing the cases. To talk of tying piles is to lead the young practitioner into the most painful state of alarm, and his patient into great danger. That operation may be done on the relaxed and shrivelled pile, in its chronic state; but is not to be thought of, when there is a tense and painful tumour occupying the margin of the anus. And

* Many patients are wont to sit upon a cushion with a hollow in its centre; but the author of the article Hemorroides, in the Dictionnaire des Sciences Medicales, very properly objects to this, and advises that the patient should sit on a cushion, so formed as to produce a degree of pressure on the verge of the anus. This will prevent the piles from descending.—J. S.

I am well convinced that the obscurity of authors on this subject alone has lost many lives.

When the acute stage of hæmorrhoidal tumours is subdued, we have to study how to remove them altogether. Without removing the cause, nothing is to be expected. Now, the cause has been irregularity of the action of the intestines, sometimes costiveness, sometimes purging, and the irritation occasioned by ill-directed medicines. To bring the bowels into a natural state, and a state of habitual easy action, the patient must be made to study what best agrees with him in diet. The surgeon must see that there is no defect of secretion in the liver; and regularity in evacuation must be insisted on. Laxatives must be had recourse to, which not only act mildly, but the operation of which does not soon cease; and if it be suspected that the great intestines are torpid, and permit the fæces to remain in their cells, I would advise ipecacuhana to be joined with the laxatives.

Then, if there be not a call to stool after breakfast, it should be excited by clysters of water with soap and oil; the patient should never urge the evacuation, but have recourse to the clysters whenever the laxatives do not act fully, so as to relieve the rectum. Having by such means accomplished the relief so far, the cure may certainly be completed by the proper use of the rectum bougie.

When my reader performs the operation of

tying the hæmorrhoidal tumours, let me recommend some precautions to him. 1. Never to include the fine skin at the margin of the anus in his ligature. 2. Never to leave the tumour strangulated by the ligature, and liable by more distention to draw in the surrounding skin. 3. When he has drawn his ligature, let him cut off all the convexity of the tumour with scissars. 4. Above all, let him avoid performing this operation on a tumour which is broad and tense at its base.

This is the manner in which I recommend the operation upon the hæmorrhoidal tumour to be performed: The patient resting on his knees, the assistant holds aside the nates. The surgeon taking hold of the tumour betwixt his finger and thumb draws it down so as to expose the base of it. Now let him pass the hair-lip pin across the base of the tumour; take off the steel point from the silver pin. Over the pin, and consequently fully over the tumour, he is now to throw his ligature. He is to draw it as much as the patient can bear without excessive pain. With one motion of the long curved scissars he is to remove the tumour, which is thus included in the ligature.

The object of the first part of this operation is to restrain the bleeding, and to keep the membranes in contact, that they may adhere and be consolidated. The advantage of the method is the ease with which it is done, and that the pin

may be withdrawn on the first rising of pain and tension. In the succeeding morning, or in the evening of the same day in which the operation is performed, the pin may be withdrawn if there come pain and tension on the part, for its purpose is served. But this will not in general be necessary: the pin and the ligature may be permitted to remain until the parts go through the whole process of inflammation. The effect of the operation with the knife, or scissars, thus performed, is the adhesion and consolidation of the loose membrane, and the obliteration of the vein which bleeds *.

* There are books published to recommend the cutting of piles in every case, and others to inculcate the necessity of destroying them by the ligature, to avoid the dangerous bleeding. But the cases are not distinguished, and in no book is this method of operating recommended. By cutting off the portion of the pile, the danger of bad effects from the ligature is removed; so is the fear of hæmorrhage, which, if not dangerous, is sufficiently teasing both to the surgeon and patient.—J. S.

OF FISTULA IN ANO.

The fistula in ano is a consequence of inflammation and suppuration by the side of the lower part of the rectum. Abscesses by the side of the gut arise from several causes, and these it is very necessary to distinguish with a view to practice. They may be fairly arranged under those which arise from the state of the intestine, and those which have a different source.

1. There is a superficial phlegmonous boil which forms in the skin by the side of the anus, in consequence of cutaneous irritation.

2. The cellular membrane by the side of the anus being very loose, apparently from this circumstance alone, there arises an abscess in bad constitutions. It is ushered in by fever and restlessness, and then exhibits a dusky red inflammation, or, perhaps, a purplish colour without much phlegmonous swelling: a bad suppuration follows this, and the cellular membrane soon becomes sloughy.

3. There is a complaint similar to the last; but which I know not how better to characterize, than by saying it is like a carbuncle, and affects men advanced in age, who have lived fully, but whose constitutions are broken.

4. The true chronic abscess sometimes appears by the side of the anus, having a remote source. It appears, and is prominent without pain, or tension, or inflammation in the part, and is a mere consequence of the infiltration and gravitation of pus, from a disease high in the spine, perhaps of the nature of psoas abscess.

5. In consumptive and scrofulous habits, abscesses form by the side of the anus upon very slight local irritation, and they become in the end, if they be not from their commencement, constitutional.

We come now to the abscess formed by the side of the rectum, or anus, and connected with disease in the passage. I do not find it distinctly stated that inflammation within any of the natural tubes, or passages, will produce abscess externally. Yet we have abscess external to the fauces, from inflammation of the membrane of the throat; we have suppuration around the cartilages of the larynx from inflammation of the inner membrane. So have we abscess by the side of the lacrymal duct, and by the side of the urethra in the perineum, from irritation and inflammation existing within these tubes. These are so many analogies with the suppurations which arise about the anus from irritation within. We must consider that the cellular membrane is many degrees more disposed to the formation of abscess

than any other texture; and that as an inflamed gland, itself free from suppurative action, will yet produce pus in the surrounding cellular membrane, so the extremity of the rectum, without being properly the seat of suppuration, will yet cause it in the loose texture which is around it.

This view points distinctly to the line of practice in the case of suppurations by the side of the rectum; that, besides the usual remedies for bringing a suppuration successfully to a termination, we must keep our attention on the state of the gut. If there be piles, warts, and stricture, tenesmus, irritation, and discharge; these must be removed, for they have produced the abscess, and will cause its continuance.

We perceive also, how an abscess, thus produced by irritation in the extremity of the gut, degenerates into a sinus, and finally a fistula. For, although the abscess maturates, points, and discharges pus, and has all the appearance of a common phlegmonous abscess, yet, after bursting, it does not diminish and subside in a kindly manner. But the cause remaining in the affection of the gut, the abscess is like a wound with foreign matter in it. It becomes a sinus, its sides are consolidated, it discharges a thin fluid, and has no disposition to heal; at last the gut ulcerates, feculent matter gets into the sinus, and the true fistula is completed.

Having perused these observations, my reader will have drawn this conclusion: that, besides the true fistula, there are many other complaints seated here, the origin of which is in the constitution, or in the peculiar nature of the parts, or in these conjointly; and that, consequently, the treatment of these must be under the guidance of a different principle.

I conceive the state of the bowels favouring the formation of fistula may be thus described. There is a slowness and irregularity in the function of the whole canal; and accompanying the torpor which is general through the abdominal viscera, there is a dryness and want of secretion in the rectum; a deficient action in the rectum is consequent on this, and an unusual resistance of the sphincter ani during the expulsion of the fæces. Then follow fulness in the veins at the extremity of the gut, and inflammation and thickening of the verge of the anus; so that the extremity of the gut is in a state nearly approaching to that of stricture.

This state continuing, there is an irritation and inflammation excited in the rectum, and a suppuration on the outside of the coats of the gut, for we know that suppuration is very easily produced in the loose cellular membrane: the matter of the abscess descends by the verge of the anus, and sinuses are formed in the loose texture of this part; in time ulceration makes a communica-

tion betwixt the rectum and the abscess; the abscess opens on the surface, and the fistula in ano is complete.

When the fistula is formed by communication with the rectum, and before the opening is formed in the integuments, it has been called an internal or blind fistula, of which these are the marks: when a hardened stool is passed with difficulty, and the fæces are streaked with matter, on examining the margin of the anus, a hardness is felt, and, on pressure, matter passes from the extremity of the gut. When the finger is introduced into the anus, the gut is felt to pit on the diseased side, and the matter being pressed out, the membrane of the gut falls in upon the abscess. The disease is accompanied with pain and tumefaction in the extremity of the gut, which subsides after going to stool, the abscess being evacuated into the rectum.

No sooner has the surgeon introduced his finger through the anus, in the complete fistula in ano, and felt the constriction of the orifice,—or probed the depth of the sinus opening by the side of the anus, and found it running by the side of the thin coat of the rectum, than he perceives the impossibility of laying open the diseased parts to the bottom, by any other form of incision than cutting across the sphincter muscle. By this ope-

ration he relieves the constriction, and makes the sinus and lower part of the gut one surface *.

* There is a disease of the rectum which has been much spoken of by late French authors—*fissure*. From the description which is given by these authors, we should be hardly inclined to describe the *fissure* as a distinct disease, but rather as a symptom very frequently combined with stricture or piles: indeed, Montegre, the author of the article *Hemorhoides* in the Dictionnaire des Sciences Medicales, describes the *fissures*, *rhagades*, or *crevasses*, as a consequence of piles or stricture. The same author says they are not always visible, but may be discovered by passing a piece of lint into the rectum: the portion opposite to the *fissure* will be smeared with matter.

Professor Barovero, in his notes upon the former edition of Mr. Bell's Observations, describes the disease thus:

"The origin of this disease *(fessura)* is in consequence of a chronic inflammation of the intestine, a little above the sphincter ani. This produces a stricture, and then, by the efforts of the patient to pass the fæces, a fissure is formed. This form of the disease is attended with excessive pain, particularly after the voiding of the feculent matter. The pain is increased in proportion to the time the disease has existed, and to the hardness of the fæces. At first the pain does not last for more than half an hour; but when the disease has continued for some time, if the patient has occasion to go to stool more than once during the twenty-four hours, he has hardly an interval of ease." It is seldom possible to see the fissure, but it may be suspected by the streaks of blood and matter on the fæces. Professor Barovero describes the method of cure as nearly that which Mr. Bell has given for the cure of stricture. When we dissect the rectum of a patient who has had severe piles or stricture, we always find more or less of this fissure, which authorizes us still to consider it only as an attendant upon stricture.—J. S.

Operation.

1. Let the bowels be emptied and brought to an easy state previous to the operation; immediately preceding the operation, the lower gut may be cleared by a clyster.

2. The patient is placed with his back to the light, and then made to stoop very low, and to rest his head on a low bed or seat.

3. We have, in the first place, to examine the course and extent of the sinus, by introducing the probe bent, so as to pursue every labyrinth, should extensive sinuses occur.

4. Having made ourselves so far acquainted with the sinus or abscess, with a little oil on the fore-finger of the disengaged hand we introduce it into the gut. Now, by moving the point of the probe over that surface of the abscess which is next to the gut, it is felt by the finger, and will be made to slip into the communication betwixt the gut and cavity of the abscess. We have now to examine whether the disease does not extend further up by the side of the gut than this hole of communication.

5. The operation is exceedingly simple in these circumstances. A directory is introduced instead of the probe, from the external orifice through the sinus, until it enters the gut. Along this the probe-pointed bistoury is passed, until the point

rests upon the finger, and then the directory is withdrawn. The finger being in the rectum, with the point of the bistoury thus pressed against it, both are withdrawn, and the intervening part betwixt the gut and sinus, is by this means cut through.

6. In introducing the knife, there is no necessity that the directory should be previously introduced, for with the point of the bistoury groping against the finger in the gut, the communication may be found; and even this communication is of little consequence if we are sure that we lay open the gut to that point, and make our incision extend as far as there is felt a thin membrane, only, betwixt the probe and the finger. In this operation there is seldom a necessity for any other instruments than the probe-pointed bistoury, the probe, and the directory. If the patient refuses to admit an assistant, and the side of the gut is to be perforated, the fistula knife (which is a union of the probe-pointed and sharp bistouries) must be used.

7. Sometimes the fistula in ano is by no means so simple as I have described it; but, on the contrary, besides the sinus communicating with the gut, there run callous fistulæ in the perineum, and towards the hips. These we should lay open, but it may be too much to do this at once; for, the patient's constitution being injured, we must be particularly careful that too much impression be

not made on it, by the severity and protraction of the operation.

When the disease is of the nature of the internal fistula, it is made complete by thrusting the abscess lancet into the hard margin of the anus, the hardness indicating the neighbourhood of the sinus. But it will be better, after ascertaining the nature of the disease, to endeavour to find the opening of the gut, which in this case being the sole opening is generally free. We may do this by introducing the probe, with about an inch or more of its extremity, bent almost entirely back on itself. The probe is carried flat upon the fore finger; and where the finger feels the inequality or hard margin of the communication, the end of the probe drops into it, and then the probe being drawn, the point appears by the side of the anus; and with the knife, we can cut upon it. Then the parts being in the state of the perfect fistula, the operation is completed by the probe-pointed bistoury being made to follow the probe, and by laying the gut and sinus into one cavity.

If, in our examination of the fistula, the intestine feels bare, and the probe is felt distinctly upon the finger, we may thrust the probe through the gut, and proceed as if there had been a communication *.

* Professor Barovero has expressed his astonishment, that Mr. Bell has not recommended the use of the wooden gorget,

Operation without using the Knife.

Various methods have been in use, as appears upon the very oldest authorities, of curing the fis-

in this operation: "for with it," says the Professor, "we can cut a fistula, which we cannot reach with the finger." For two good reasons we ought to disagree with the Professor: first, because it would be improper to cut a fistula so high up, as to be above the reach of the finger; and, secondly, because the opening into the intestine is very seldom higher than an inch within the verge of the anus. In support of this we have the authority of Sabatier, who says, "that during the forty years he practised surgery, he never found any difficulty in operating with a grooved sound and a bistoury, and that the opening of the fistula was always near the verge of the anus."

This opinion is farther corroborated by the observations of M. Ribes, of Paris, who, during the last twenty-five years, has examined, by dissection, seventy-five cases of fistula. He says, "that he has most frequently found the opening immediately above the union of the mucous membrane of the rectum and the skin; sometimes a little higher, but never more than five or six lines above it."

"Quant à la situation de l'orifice interne, le plus souvent, je l'ai trouvé immédiatement au dessus de l'endroit ou la membrane interne du rectum s'unit avec la peau, et quelquefois un peu plus haut, mais cette ouverture ne s'ouvre à plus de cinq ou six lignes au dessus, du moins chez aucun des soixante quinze cadavères sur lesquels j'ai trouvé des fistules, l'ouverture interne ne depassait cette hauteur, et chez un certain nombre elle était tout au plus à trois ou quatre lignes au dessus; cette ouverture était comme dechirée, elle était molle chez la plupart des sujets, dure et calleuse chez quelques uns."

M. Ribes dwells at considerable length upon this; for it

tula in ano without cutting with the knife. And some of those will continue to be practised from the natural horror of the knife.

There is a manner of dressing the fistula with escharotics towards the gut, which at last, but tediously and with pain, lays the fistulous sore and the gut into one cavity.

The method of operating with the ligature may be substituted for the operation with the knife. In some cases it is even preferable. An operation with the ligature was described by Celsus, and continues to be practised by quacks. The method of Foubert will be preferable in some constitutions to the operation with the knife, especially when large incisions are otherwise required. Foubert's

would appear that many of the French surgeons had greatly exaggerated the difficulties of the operation for fistula in ano. It is a curious fact, that when Louis XIV. had a fistula, many of his courtiers, pretending to have fistulæ, went to Versailles, hoping, as Dionis says, to make themselves interesting in the eyes of the monarch, who was affected with the same disease. This author says, that many of these gentlemen were much vexed on being told, that there was no necessity for any operation. Perhaps, the rewards which Louis gave to the surgeons who performed the operation upon him, might have been some inducement for them to magnify the dangers and difficulties of the performance To Felix, his principal surgeon, he gave 50,000 crowns; to Daquin 100,000 livres; to Fagon 80,000 livres; to Bessieres 40,000: four apothecaries had each 12,000 livres; and to a M. Raye, a pupil of Felix, he gave 400 pistoles.—J. S.

operation was to pass a piece of leaden wire into the fistula, and bring it out by the anus, and by twisting the wire gradually to cut through the substance intervening betwixt the fistulous sore and the anus. The ingenious surgeon will find no difficulty in introducing the wire. Take the following method as an example.

Operation with the Wire.

Have a small silver canula curved towards one end, and of calibre just sufficient to let a piece of leaden wire be passed through it. Have a probe adapted to the silver canula, so that the point of the probe projects from the end of the canula, and is smoothly fitted to it.

1. Introduce the canula with the probe into the fistulous opening. 2. Introduce the finger of the left hand into the rectum. 3. Seek with the point of the instrument for the passage betwixt the fistulous cavity and that of the gut, and introduce the end of the instrument into it. 4. Now withdraw the silver probe, and introduce the leaden wire through the canula. 5. A second time introduce the finger of the left hand into the rectum, catch the end of the leaden wire with the last joint of the finger, and pull it down until it appears at the anus; then withdraw the canula. 6. Now twist the ends of the wire, and introduce under them a little lint.

The dressing consists merely in twisting the wire a little every day, so that at last it cuts through the same part of the gut which is divided in the operation with the knife. The more gently and gradually the wire is twisted, the less pain the patient will suffer, but the slower will be the cure.

Operation with the Ligature.

The patient being in the same position, the surgeon uses a leaden probe with an eye, to carry the ligature from the fistula into the gut. When one end of the ligature hangs from the fistula, and the other from the anus, they are drawn tight and tied. But before the knot is drawn, a small compress of lint is, as in the operation with the wire, placed betwixt the orifice of the anus and fistula, so as to be included in the ligature. The purpose of this compress is to protect the skin, and make the cord act more on the gut.

The cord should be tightened daily: it produces little pain when it is operating on the inner part of the gut; but before the skin can be cut through, this operation will give great pain; therefore we ought not to persevere with the ligature for the purpose of cutting through the skin: indeed it may be attended with dangerous symptoms. The skin, therefore, should here, as in the operation with the wire, always be cut with the knife.

Whenever a fistula runs high by the side of the gut; instead of cutting with the bistoury, we ought to pass the ligature, and draw it gently from time to time, until the communication is brought near to the anus. It is remarkable in these operations with the ligature and leaden wire, that as they are brought nearer to the anus, the communication is progressively closing from above.

For the reasons I have already given, the operation should, in these deep fistulæ, be at last completed, by cutting through the skin and verge of the anus with the knife. It is my last advice to the operator to be very careful in these operations by ligature, or the leaden wire; for, if the ligatures be drawn too tight, they are nearly as bad in their consequences as the strangulation of the part. Sickness, pain through the whole extent of the canal, and tenderness of the abdomen, may result from these operations; and thus there may occur a fatal peritoneal inflammation.

APPENDIX.

APPENDIX:

CONTAINING THE

DESCRIPTION OF THE PREPARATIONS

WHICH ARE IN THE

Fourteenth Division of the Museum.

XIV. I. M. 1.

A PREPUCE in which there is phymosis, in consequence of inflammation of the internal membrane.

XIV. I. M. 1. a.

Example of hypospadias, or preternatural opening of the urethra below the glans; it is introduced thus early in the catalogue, because there is at the distance of an inch and a half below the glans, the first appearance of the formation of stricture. An obstruction was sensibly felt to the passage of the bougie through this part; but on opening the urethra, it was difficult to see any alteration in the state of the membrane at this part; excepting that it was not so dilatable as the rest

of the canal. There was a stricture at the bulb. There is no perforation of the glans. But there is a depression where the urethra should open; and instead of the opening, there are three holes of the size to admit bristles: they do not communicate with the urethra. The opening of the canal is about the size of a crow-quill; the patient did not appear to suffer any inconvenience from it. He was a Spaniard, and died of inflammation of the larynx.

XIV. 1. M. 1. b.

A very narrow stricture of the orifice of the urethra. Part of the penis appears to have been destroyed by ulceration. The internal membrane of the urethra is very much thickened. The history of the case is not known, as it was taken from a soldier who was accidentally killed.

XIV. 1. M. 2.

A very narrow stricture of the orifice of the urethra. Large abscesses formed round the root of the penis, and the lower part of the belly, in consequence of the stricture.—See pages 109 and 246.

XIV. 1. M. 3.

A small tumour attached to the lower part of the urethra: this had been originally formed by the inflammation of one of the lacunæ of the urethra.—See page 250.

XIV. 1. M. 4.

Frenulum, or the bridle stricture of the urethra. During life it was several times touched with the caustic alkali, which has not abraded it.

When I first saw the patient from whom this preparation was taken, he suffered excessively, made urine often in small quantities, and in a small stream; he could not permit a bougie to be passed; yet in the end, he let me apply the *kali purum*. I applied it a second and a third time. By this, and the use of a small bougie, passed occasionally into the bladder, I subdued the irritability of the canal. The patient was relieved, but at this time he was sinking from disease in his lungs. He died, and I had an opportunity of examining the parts to observe the effect of the caustic: no spot, no abrasion, no slough were to be seen; the bridle of the stricture remained as we see, sharp and fine.—Vide page 133. I need make no farther remark on this; only I deem it necessary to guard

my reader against concluding, that a bolder use of the caustic alkali would be equally harmless. A medical gentleman consulted me: I felt a solitary stricture; but, when I saw him some months after, the whole urethra was as hard as whip-cord, in consequence of the too free use of *kali purum*.—See page 140, and the engraving of this preparation in the Morbid Anatomy of the Urethra.

XIV. 1. M. 4. a.

A fine specimen of strictures. A false passage has been formed by the bougie, anterior to the first stricture. There is a considerable degree of dilatation in the canal between the two strictures; posterior to the second stricture, which is at the bulb, the urethra is very much dilated; and the ducts of the prostate are so enlarged, that they are of the diameter of a common-sized bougie.—See page 7 and 124.

XIV. 1. M. 5.

The bougie which was cut by the frenulum, or bridle stricture, No. 4.—See what is said on a manner of employing the caustic at page 139.

XIV. 1. M. 6.

A stricture forming in the orifice of the urethra.—See page 109.

XIV. 1. M. 7.

Urethra sound resting on a frenulum or common stricture. It may very easily be understood by this preparation, how the bougie or catheter may hitch anterior to the stricture, and make a false passage; especially in such a case as this, where the stricture is exactly at the curve, the part at which the greatest difficulty is experienced in directing the point of the instrument. This preparation is engraved in the Morbid Anatomy of the Urethra.

XIV. 1. M. 8.

The appearance which by many has been described as spasmodic stricture: it shows the first stage of the formation of stricture. Inflammation has so destroyed the elasticity of a part of the membrane, that it does not dilate as the other parts do. It is engraved in Doctor Baillie's Morbid Anatomy.

XIV. 1. M. 9.

A cast of the urethra in wax, taken before dissection of the preparation No. 10. The singular deformity of the cast shows the urethra to have been universally affected with thickening and contraction.

XIV. 1. M. 10.

The urethra from which the cast No. 9 was taken. The canal is at one point exceedingly narrow, so that only a bristle can be passed through the stricture.—Engraved in the Morbid Anatomy of the Urethra.

XIV. 1. M. 11.

A narrow stricture at the anterior part of the caput gallinaginis: the urethra has been torn anterior to the stricture, in the attempt to pass the bougie into the bladder.—Engraved in the Morbid Anatomy of the Urethra.

XIV. 1. M. 12.

A very narrow stricture at the bulb, from a patient who had long suffered from stricture, but

who died of another complaint. The urethra posterior to the stricture is rough and dilated; the ducts of the prostate are enlarged.

XIV. 1. M. 13.

A cast of the urethra in wax. A, The part of the urethra anterior to the first stricture, and dilatable. B, A narrow stricture: behind this stricture the wax has burst the tender coat of the urethra, and has run into the spongy body. C, C, Two inches and a half of the canal much contracted. D, The sinus of the urethra capable of its natural distention. E, A very narrow stricture just behind the sinus. F, The part corresponding with the canal, where it is embraced by the prostate gland. G, Cast of the cavity of the bladder. H, Wax escaped into the cellular membrane of the perineum.—See Preparation 14.

XIV. 1. M. 14.

A stricture at an inch and a half from the orifice; a narrowing of the canal for the space of two inches; and a stricture of the most common kind, and at the common place, viz. just behind the bulb of the urethra. But this preparation is of more consequence, when compared with the cast of the urethra and bladder (13), which shows, that

the stricture near the orifice was very narrow, and of that kind which might be destroyed by a touch of the caustic. The thickened part, of two inches, could only be injured by the use of it. Behind the narrow stricture, at the bulb, the membrane of the urethra is burst up by the wax injection. This is worthy of attention, because it is an illustration of what sometimes takes place in consequence of a push of urine. It shows that the part behind the stricture is the weakest part of the canal; since the membrane burst here, although the wax was thrown in by the orifice of the urethra, and not in the course of the urine.—See page 256. This preparation is represented in Plate XI. of the Morbid Anatomy of the Urethra and Bladder.

XIV. 1. M. 15.

In this urethra there are two fine specimens of bridle stricture; in the membranous part there is another stricture; and in the sinus there are several caruncles or warts.

XIV. 1. M. 16.

A cast of the urethra 15, taken while it was in its natural situation. a, The first stricture: b,

the second: c, the irregularity produced by the caruncles: d, the stricture at the bulb.

These two preparations, 15 and 16, illustrate several points. Here are two strictures an inch distant from each other, and between them the canal is of its natural diameter. This proves, that it is not necessary, as has been supposed, that the intermediate portion should become thickened. We have here, also, an excellent illustration of the use of the urethra probe. The preparation, in some degree, resembles the plan of the strictures in Plate III. In looking into the deep cuts in the wax cast, and comparing the effect with the cause, we perceive how well adapted the lunar caustic is to destroy these strictures; for, the large bougie and the full surface of the caustic coming against them, have such effect, that one or two applications will admit the bougie into the bladder. There are in this preparation, those warts or caruncles mentioned at page 112. A plate of this preparation is given in the Morbid Anatomy of the Urethra and Bladder.

XIV. 1. M. 17.

This is an example of stricture with ulcer, or perhaps ulcer forming stricture: it also shows how the callosity extends to the surrounding spongy substance of the urethra. It would have been

impossible to have destroyed this stricture with caustic. The use of the smooth metallic bougie is the best means of relieving such a stricture. It was taken from a young soldier who died of pneumonia. In this preparation there is sufficient evidence in support of the opinion that a cicatrix may form in the urethra, in consequence of ulceration, and thus produce a firm stricture; but it will be presently shown by other preparations, that an appearance exactly similar to a cicatrix may be formed, without there being any ulcer previously. —See page 109. The preparation is engraved in the Morbid Anatomy of the Urethra.

XIV. 1. M. 18.

A remarkable degree of contraction in the urethra of an old man: there is here not only a stricture or tightening of the urethra of two inches in extent, but a wasting of the spongy body. It is quite evident that caustic could not be of use in such a case.—See page 108, and Fig. 2. Plate V. in the Morbid Anatomy of the Urethra.

XIV. 1. M. 19.

A stricture with great thickening of the surrounding parts: posterior and anterior to the stricture there is ulceration. This is another case in which caustic could only do harm.

XIV. 1. M. 20.

A cast of the urethra and bladder of a negro. (The preparation is 21.) Under the same glass there is a catheter covered with incrustation; it had lain three weeks in the bladder of a patient, upon whom the operation for fistula in perinæo was performed. The quantity of calculous matter on this instrument, shows the necessity of withdrawing the catheter from time to time, and cleaning it. If this catheter had remained much longer, the urethra must have been lacerated before it could have been withdrawn.

XIV. 1. M. 21.

Chancrous ulceration of the orifice of the urethra, producing stricture. (The cast of this is 20.) Here we have the demonstration of the nature and origin of stricture. An ulcer has eaten away about an inch of the urethra; the inflammation attending this state of ulceration, has formed many bands or bridles in that part of the canal which is exposed. This preparation is engraved in the Morbid Anatomy of the Urethra.

XIV. 1. M. 22.

In this preparation the urethra has been injected with wax, and afterwards dissected, so as to show the effects of the stricture on the wax cast. The glans is seen to be partly destroyed by ulceration; there are several portions of the thickened membrane which have formed deep impressions on the wax, similar to the *nip* which is frequently seen on the bougie. In such cases the lunar caustic is well adapted for the removal of the *bride*. This preparation is also engraved in the Morbid Anatomy of the Urethra.

XIV. 1. M. 23.

Stricture which had existed for many years. It is hardly possible to pass a bristle through the stricture at the bulb; there is ulceration anterior to it, which was a consequence of the attending surgeon's attempt to force an instrument into the bladder. Engraved in the Morbid Anatomy of the Urethra.

XIV. 1. M. 24.

Here is a false passage made by the patient himself using caustic. He died of a different

disease. It is worthy of remark, that while the patient was in the habit of introducing the bougie into this false passage, he felt relieved after each introduction. This is not a solitary example of the fact; the irritation produced in forming the false passage, appears to diminish the morbid sensibility of the stricture.

XIV. 1. M. 25.

A number of warts on the prepuce. This preparation is preserved to show the great size of the lacuna magna. In examining the dead body with a bougie, the obstruction produced by the lacuna was supposed to be a stricture. Had this patient been treated for stricture, it is highly probable that a false passage would have been made.

XIV. 1. M. 26.

A fine specimen of false passage. The stricture is very narrow, and is marked by a piece of wood: the urethra posterior to the stricture is very much dilated, and has numerous bands running across it. The false passage in this case, is of great length. It may be imagined that such a passage as this, must have been the consequence of repeated applications of the caustic; but it is not so: such passages are made by repeatedly forcing

with the bougie. Indeed, by the frequent use of the bougie, when it has got out of the right passage, a false route is made so rapidly, that it is of the utmost consequence to avoid the first error of bearing unequally against the stricture. In 27, the next preparation, the first error was in the use of the caustic, by which the membrane of the urethra was broken, and a lodgment made for the point of the bougie. There are several other examples in the Museum of false passages made by the bougie. As I have observed above, the introduction of the instrument into the false passage, relieves the irritation of the stricture; and as the use of the bougie very quickly enlarges the false passage, by these two occurrences both the surgeon and the patient are apt to be led into a most serious error.

It is very necessary to observe the irregular bands of fibres which are crossing the canal posterior to the stricture; as, in the event of the catheter being passed through the stricture, its point is liable to be entangled by them, or by the enlarged ducts. A good representation of this preparation is given in Plate VII. of the Morbid Anatomy.

XIV. 1. M. 27.

A false passage made by the improper use of the caustic bougie. The urine escaped into the

cellular membrane of the scrotum, and produced gangrene.

XIV. 1. M. 28.

A false passage made by the bougie.

XIV. 1. M. 29.

This was taken from a patient of Mr. ——. He had had for some time difficulty in passing his urine, attended with great irritation. At last he had an attack of retention. An instrument could not be passed into the bladder, but on withdrawing it from the urethra, the urine followed. Next day the patient felt something burst at the neck of his bladder, after which, a quantity of pus and urine flowed from the penis. A catheter of a full size could now be introduced into the bladder. The patient not expecting his surgeon, until the evening, sent for his apothecary, and requested him to introduce the catheter; but he unfortunately failed in the attempt to pass it. In the evening Mr. —— and another surgeon met; neither of them could now introduce the catheter, as the instrument passed into an abscess of the prostate. Mr. ——'s consultant, after trying for some time in vain, at last pushed the catheter into the bladder; pus and some urine flowed through it. The

patient lived for ten days after this, with the usual symptoms of peritonitis.

On dissection, the bladder was found much thickened, the inner coat was highly inflamed, a large abscess was found in the prostate, and from thence extending up between the rectum and bladder. There was a communication betwixt this abscess and the bladder, by a hole, the diameter of a catheter. There is now a bougie passed through the hole by which the catheter entered; at this part the inner membrane is much ulcerated.—See the note of a similar case at page 155.

XIV. 1. M. 30.

The bladder of a person who had for some time complained of not having passed any urine. His apothecary introduced a catheter, but no urine flowed; and upon withdrawing the instrument, he found feculent matter adhering to it. Immediately after this the abdomen swelled, and symptoms of peritoneal inflammation came on. A physician was called in, and he requested, that a surgeon should be sent for. The patient was then in articulo mortis; but the surgeon being urged by the gentlemen present, and by the patient, to introduce the catheter, he did so, although there was no circumscribed tumour above the pubes. The catheter entered easily into the bladder, but no urine flowed.

After death, the hole in which the bougie now

is, was found corresponding exactly to the size of a catheter, and appeared to have been made by that instrument. This hole formed a communication between the bladder and the abdomen; but there was also immediately opposite to this opening, and corresponding to it, a hole in the rectum. The peritoneum was much inflamed; the bladder is not thickened, nor has it the appearance of a bladder which had suffered from retention of urine. It is probable, that the apothecary had, in the first instance, mistaken an attack of suppression for retention of urine; and when he introduced the catheter into the empty bladder, he supposed he had not reached it, and so pushing on, had forced the instrument through into the rectum. Cases have occurred of rupture of the bladder in consequence of a blow, where the surgeon has introduced the catheter into the bladder, and from that, into the cavity of the peritoneum. This, of course, could do no harm; it is only noted here, as it has happened, that, in a similar case, the operator, thinking he had not reached the bladder, requested the assistance of another surgeon.

XIV. 1. M. 31.

The urethra very much contracted, nearly through all its extent. This is an example of that

case, in which the bougie is preferable to the caustic. This state of the passage is produced by the inflammation of gonorrhœa, by inattention to the prescribed means of allaying the inflammation: or by the improper use of irritating injections. In such a case the urethra feels tense, and hard, as a cord along all the lower part of the penis, which is accompanied with heat, great discharge, and chordee. When a patient with such symptoms is neglected, the urethra becomes contracted, as in this specimen.

XIV. 1. M. 32.

The cast of a urethra and bladder. This cast shows that the urethra from which it was taken must have been very much in the same state as in the Preparation 31.

At A, corresponding with the part where the first obstruction was felt, there is a sudden narrowing of the canal; from A—B the diminution is continued; at C, the canal was again remarkably diminished; at D, the deep indentation in the wax was occasioned by the caput gallinaginis. In a canal so contracted as this (not remarkable for the degree, but for the extent of the stricture), the use of the caustic is quite out of the question, nor is it possible to effect a cure by forcing in large bou-

gies. The best treatment is to pass occasionally small bougies, and to dilate the passage gradually.

XIV. 1. M. 33.

A small calculus which fell against a stricture, and acting as a valve produced complete obstruction. About twelve years ago, in visiting a public institution, my attention was called to the patient, from whom this was taken, by the surgeon asking him, with as much sympathy and kindness of manner as could have been wished, "how he was this morning?" I was at the same time told, that he had long suffered from stricture. I saw the man was dying—dying after months of kind attention from good surgeons. I had not then the confidence to propose any thing, being, indeed, ignorant of the case; but yet I did not see why he should die, and I was most anxious to discover the cause of death which I saw approaching. Three days afterwards, I obtained leave to dissect the body, and the immediate cause of his death was evident: a round stone stuck in the urethra, being impeded by a trifling stricture. The urethra was in a high state of inflammation, being full of coagulable lymph and pus; around the stone, even the sheath of the spongy body was inflamed. The bladder was of a great size, and made so, evidently by distention;

but it was not full of urine at the time of death. Within, the bladder was ragged, and spotted with extravasation. The ureters and pelvis of the kidnies were distended and inflamed. The urine was dark and bloody.—A plate of this preparation is given in the Morbid Anatomy of the Urethra.

The circumstances of the case as they had come to my knowledge, made me desirous to learn all that I could regarding the original state of the patient. But whoever knows the difficulty of treating a case of this kind, will be slow to blame, and careful of giving offence by inquiries into unsuccessful practice. I learned, however, that the patient had a stricture, about three inches from the extremity of the urethra, and one, near the neck of the bladder; that there was great difficulty in introducing the smallest bougie; that he often refused to admit a bougie to be introduced, and suffered exceedingly when it was passed. In this state he was allowed at last to lie, without being teased with the introduction of instruments; in the mean time a stone formed in the bladder, and fell forward into the urethra.—See page 275.

XIV. 1. M. 34.

This is the bladder of an old man: the urethra is seen to be quite ragged and torn; portions of the inner membrane are seen hanging

loose in the canal. The interior of the bladder is covered with lymph, and shows evident marks of having been highly inflamed. Indeed, there was a large quantity of pus found in the bladder.

This old man had retention of urine; it was not possible to introduce a catheter; but the urine was drawn off by passing a bougie along the canal. He had retention a second time, and then he unfortunately went to a very ignorant man, who attempted to pass a catheter; this could not be done; and the patient having told him, that two days before, the urine had been drawn off by the bougie, he passed down the wire of the catheter! which, as might have been expected, tore the membrane, and brought on a fatal inflammation.

XIV. 1. M. 34. a.

This preparation shows that the patient was correct in saying, that he had had stricture for years, and occasional attacks of retention. About three weeks before his death, he was seized with retention; he went to a surgeon, who first endeavoured to pass a catheter, but not being able to do this, he passed a bougie, in the hope that the urine would follow; however, it did not, except in very small quantity, until he had given him a large dose of opium, and applied fomentations to the parts. In a few days the pa-

tient recovered from this severe attack, but in the course of the succeeding ten days he had several fits of retention, which were relieved by the introduction of the bougie. During all this time he had a considerable degree of fever, with a furred tongue; but the fever did not appear to be increased by the fits of retention. After the patient had been gradually getting better for some days, he had on the Monday evening an attack of irritation; the same night he had again retention, which was relieved as before, by the bougie: but during the whole of Tuesday he was very ill, with symptoms of peritonitis, yet not suffering much in the bladder, and passing his urine without difficulty. In the evening he was evidently sinking, and he died next day. On dissection, the intestines were found very much inflamed, and there was a quantity of pus within the abdomen. The peritoneal surface of the bladder was not more inflamed than the other parts of the peritoneum; but the interior of the bladder was highly inflamed, and pus was mixed with the urine. The stricture is seen to be very narrow; and anterior to it, there is the commencement of a false passage in the upper part of the canal; it is more frequently found on the lower part of the urethra. Into this false passage, there is a bougie introduced; behind the stricture, the canal is, as in the other cases, much dilated; but the prostate is very little affected: indeed, excepting

the state of the interior of the bladder, the general appearance of the parts would have led one to say, that the attack of peritoneal inflammation was independent of the stricture. But experience proves that such insidious cases frequently occur. It is worthy of remark, that a patient may die with the bladder in a state approaching almost to gangrene, while the peritoneum shows very little mark of inflammation; and, on the other hand, the peritoneum is sometimes much affected, while the bladder is not. The same circumstances may be noticed in the dissection of those patients who die after the operation of lithotomy.

XIV. 1. M. 35.

Here a great degree of inflammation extended from the stricture to the bladder in consequence of an improper application of caustic. Behind the stricture, we see a very peculiar furrowed appearance, which is owing to a thick layer of coagulable lymph deposited there; and from the density and pearly whiteness of this coagulable matter, it must have been deposited there before the more extensive accumulation of the inflammatory crust in the bladder and the urethra. In the front of the stricture, we see the effect of the lunar caustic. The stricture is in part eroded, and delicate fleecy membranes

hang from the part, like what are seen in a dead ulcer when in maceration. The stricture is not entirely destroyed, and the flow of urine must have been as much impeded by the stricture as ever; yet, immediately after the application of the caustic, the symptoms were remarkably relieved. The patient had suffered long in extreme agony; he at last unwillingly submitted to the application of the caustic, and from its effects we see that this application had been a very effectual one. When the slough, which was formed in consequence of the application of the caustic, was thrown off, an ulcerated and sensible surface was exposed; and hence arose a new and aggravating cause of pain and spasm. So in this case, as it often happens, the patient expressed himself highly delighted with the effects of the operation; but in a few days the spasm was increased in an extraordinary degree, and he became altogether so irritable, that he would allow nothing further to be done. If we were to look upon the state of the bladder, thickened and lined with coagulable lymph, and the whole passage from the stricture backwards, also covered with it, as a consequence of the application of the lunar caustic, then this case would be decisive against the use of the caustic; but all this mischief would not have happened in consequence of the application of the caustic, in a common case of stricture. This pre-

paration only shows the consequence of a severe application of the caustic, when the bladder is so formidably diseased. In this case, a repetition of the caustic might have been beneficial; for a second application would have taken off the sensibility from the exposed surface, just as it does in the case of ulcer on the cornea, when, after the first application of the caustic, there is a return of the irritability. In the present instance, there has been evidently general and long-continued irritation on the urinary organs, and the patient died worn out with long suffering. There is an engraving of this preparation in the Morbid Anatomy of the Urethra.

XIV. 1. M. 36.

The urethra and bladder of an old man: the urethra is thickened through its whole extent; but he died in consequence of the great irritation produced by the disease in the bladder. There are a number of fungous excrescences growing from the inside of the bladder.

XIV. 1. M. 37.

An extraordinarily fine specimen of the increase of the muscular coat of the bladder in consequence of stricture of the urethra. On the external surface, the several orders of fibres are

quite distinct, and on the inside the mucous membrane is seen lining the cavities between the enlarged fasciculi. In several places these sacs are so large as to give the appearance of cysts communicating with the bladder.

XIV. 1. M. 37. a.

Puncture of the bladder above the pubes. The prostate is very much enlarged and ulcerated. The operation was performed above the pubes, in preference to the rectum, in consequence of the state of the parts in the perineum.

An abscess formed between the bladder and the muscles, the matter of which has spread to a considerable distance: this would have been in some degree prevented, had an incision been made, as recommended at page 191. The canula is in the opening through which the puncture was made; it is covered with an incrustation, although it was only a few days in the bladder.

XIV. 1. M. 38.

Disease resembling fungus hæmatodes in the coats of the bladder. It was felt from the abdomen like a distended bladder, and the surgeon was tempted to puncture it above the pubes.

XIV. 1. M. 39.

A bladder which has been punctured four different times. The preparation was presented by a surgeon in the north of England. The portion of the canal in which the stricture was, is not preserved; but the state of the bladder is sufficient evidence of the necessity of an operation. There are masses of coagulable lymph hanging in it, like pieces of rag. The prostate is in such a state, that the puncture above the pubes should have been preferred; for it is much enlarged, and there are a number of calculi in it. This preparation shows well to what a great distance the peritoneum is removed from the neck of the bladder, when it is distended, and the utter impossibility of recognising with the finger that triangular space which is described as having the peritoneum for its base, the vesiculæ for its sides, and the prostate for its apex.

XIV. 1. M. 40.

A bladder punctured from the rectum: the parts are so dissected as to show the course of the trocar. The puncture has been made in the triangular part, recommended by lecturers on anatomy; but the two vasa deferentia lay so close

to each other, that they have been both touched by the trocar passing between them. See the case, pages 162 and 189.

XIV. 1. M. 40. a.

Case in which the bladder was punctured, and after the subsiding of the irritation, which was in consequence of the retention of urine, an incision was made through the stricture, for the purpose of introducing a catheter.

The history which the patient gave of himself was nearly the following:

That during his whole life he had difficulty in making water; that he had been always obliged to get up several times during the night, sometimes nine or ten times in the same night. At first he would not allow that he ever had gonorrhœa; but on being further questioned, he acknowledged that he had had it three times, twenty, twelve, and four years ago. For the few last years, the urine has dribbled constantly, so as to oblige him to wear a cloth. He has had several attacks of stoppage, which were relieved by a discharge of matter, which was facilitated by spirits of nitre and turpentine drops.

On Saturday, he had one of his attacks of retention; he had great thirst, and he drank plentifully of water, which he thinks filled the

bladder. He walked about his room all night, unable to pass a drop of urine. In the morning he went to an apothecary, who tried, but could not pass a catheter. On Sunday night, at twelve o'clock, Mr. Bell saw him for the first time. The bladder had risen above the umbilicus; there was something very particular in the appearance of it; one circular swelling occupied the space above the pubes, while that above the umbilicus was considerably to the right side: this gave the impression of the bladder being sacculated, and was another reason for immediately evacuating the urine. Mr. Bell introduced an instrument into the urethra; but could not pass it further than four inches and a half; there he felt a stricture of a stony hardness; he then immediately punctured the bladder from the rectum.

The man slept well that night, and in the course of ten days he was sufficiently well, to allow of an incision being made through the stricture, that the catheter might be introduced from the glans into the bladder. See page 179. The catheter was passed into the bladder, and the patient did well for some days; but he had suffered so much from his previous attacks, that he could not bear up against an erysipelas and sloughing of the scrotum. Upon dissection, it was discovered that a false passage had been made by the attempts to introduce the catheter before the bladder was

punctured, and that during the last operation the point of the catheter had entered into this passage; so that, as is shown by the preparation, the communication between the point of the urethra and the bladder had been made, by cutting into the urethra behind the stricture, and then by carrying the catheter from the false passage into this opening, leaving the strictured portion of the urethra uncut. There is now a piece of quill in the false passage; the urethra is so completely closed by the stricture, that it was difficult to push a bristle through it; the stricture not only affected the mucous membrane, but also the spongy body; so that, in laying it open, it resisted the knife as much as a piece of cartilage. Posterior to the stricture which is near the bulb, the urethra is, as in all the other cases, of a great width. There is a black probe in the part through which the trocar passed, showing that it was in the lateral part of the prostate. There is here, as in almost all the other bad cases, abscess of the prostate, and thickening of the bladder.

XIV. 1. M. 40. b.

This preparation is introduced here to show that state of the bladder which should have been relieved by an operation. The case is fully described at page 182. There is also a correct paint-

ing representing the high degree of inflammation in the internal coat of the bladder. There may be seen in the fundus, a sloughy spot, which would probably have given way, had not the urethra ulcerated behind the stricture. There is a whale-bone bougie passed into the false passage. The stricture is absolutely so complete, that a bristle cannot be passed through it. There is a white probe through the ulcer, which communicates with the false passage, and by which some urine escaped into the anterior part of the urethra.

XIV. 1. M. 40. c.

The bladder with a large hole at the fundus. It is very difficult to decide whether it has been a consequence of rupture or of sloughing.

The history of the case is nearly the following: On the Saturday morning the patient was going down into the country. He was about twelve miles from town, when standing up on the top of the coach, the coach moved on, and he fell to the ground. The hind wheel went over his belly. He was brought up to St. George's Hospital. He had passed no urine after the accident. Mr. Freston, the house surgeon, found, on questioning him, that he had had a stricture for some years. A very small catheter was passed, by which only eight ounces of urine were drawn off; there was no

tumour as of a distended bladder. The patient in the evening was put into the warm bath; while there, he passed a little water, and during the night he passed about eight ounces more. On Monday morning, there was again retention: the catheter could not be introduced. A tobacco enema was given, under the idea of relieving the spasm; but he passed no more water. He suffered exceedingly from the tobacco; indeed he never appeared to recover from the effects of it. On Tuesday morning, he had symptoms of peritonitis; there was only a degree of general tension of the abdomen, and he did not suffer much pain, except on pressure over the bladder. The abdomen never appeared as if distended with fluid. On Wednesday morning he died.

On opening the abdomen, the peritoneum appeared considerably inflamed. There was scarcely any urine effused. At the fundus of the bladder, a ragged and sloughy hole was found, and the peritoneum bounding its margins covered with lymph. The inner coat was not much inflamed; but between it and the muscular coat, which was much thickened, there was an effusion of blood. The prostate and urethra bore evident marks of having long suffered from irritation.—Presented by Mr. Ewbank.

This preparation differs in appearance from a ruptured bladder, preserved in the College Mu-

seum, and from two specimens in the possession of Mr. Cusack, of Dublin, an account of which is given in the Dublin Hospital Reports. In neither of these three cases was there any previous disease of the urethra. This case differs so essentially from the last preparation (40, b), that we can hardly suppose the rupture to have been a consequence of retention. The appearance of the urethra makes it very improbable that this patient could have so retained his urine during a frosty morning, as to endanger its being burst by a blow. The probability is, that the wheel going over the belly had pressed the fundus of the bladder, already diseased, against the sacrum, and so injured it as to produce a slough.

There may be introduced here the description of a preparation which is classed with those of the uterus. It shows the amazing size of the female bladder in consequence of retention from retroversio uteri. It is as large as a bullock's bladder, and still it has not given way. The patient died of peritoneal inflammation, the water never having been drawn off.

The patient had been in a workhouse for three weeks, and while there, frequent complaints were made that she was a nuisance, that she constantly wetted the bed. At the end of that time she was evidently very ill; and as she confessed that she was pregnant, she was carried into the infirmary.

She was now supposed, by the house apothecary, to be in labour; but on examining her he could not discover the os uteri, and felt a tumour in the pelvis. Becoming uneasy about the state of the patient, he sent for more assistance, but before the surgeon came, the woman was dead.

When the body was laid on the table for examination, it appeared certainly like the body of a pregnant woman; but when I put my hand on it I declared there was no child or uterus there, but observed that it felt more like a distended bladder.

Upon opening the body, the bladder was seen extended to the utmost possible degree, rising high towards the margin of the chest, very vascular, with a blush of redness upon it, and yet not in a state which we would have called high inflammation. The peritoneum generally, and the bowels, were not inflamed. It now appeared that there might be a tumour in the pelvis; but the greater probability was, that the woman was right in her conjecture of being pregnant, and that the case was that of retroversio uteri. I now cut the symphysis of the pubes, and separated the legs so as to give a distinct lateral view of the viscera of the pelvis. Of this I made a drawing and a cast, which are in the Museum.

The fundus of the uterus lay deep in the pelvis, and under the promontory of the sacrum; the os uteri lay high, towards the os pubis, and a very

little to one side of the pelvis. The urethra was very much stretched, and the bladder lay quite over the uterus, extending backwards across the brim of the pelvis, and upwards to very near the scrobiculus cordis. The rectum was completely compressed, and the fæces were collected in the lower part of the colon.

What was very remarkable, and what I scarcely expected, was the flaccidity of the uterus, which lay in the pelvis with less convexity and tension than was exhibited in the bladder.

XIV. 1. M. 41.

The bladder, prostate gland, and part of the urethra of a patient who had suffered from stricture for forty years. Two years before his death a surgeon was called to him in consequence of his having allowed a catgut bougie to slip into his urethra. The patient was soon again enabled to pass the bougies himself, so that he did not again send for the same surgeon until a day or two before his death. Mr. —— found him sinking, and in the course of a short time he died. There is a very narrow stricture plugged by a calculus; behind this, the urethra is covered with calculous matter: there is also an ulcer here, which permitted the urine to escape into the cellular membrane of the scrotum and penis.

XIV. 1. M. 41. a.

Large abscess in the prostate. The patient had long suffered from the effects of a narrow stricture, and for three years of his life he had stillicidium urinæ. In consequence of the improper use of a bougie there was such irritation produced as terminated in an abscess between the rectum and bladder. This abscess burst into the general cavity of the abdomen.

XIV. 1. M. 41. b.

The glandular part of the prostate completely destroyed, the external coat of it forming the sac of an abscess. External to this sac there is another cyst seen, which communicated with the cavity of the abdomen. The preparation was presented by Dr. Harrison.

XIV. 1. M. 42.

A fistula, or abscess in perinæo, from the Lock Hospital. There is a very narrow stricture, but no direct opening between the urethra and perineum. The abscesses were probably the consequence of the irritation in the urethra. The

patient died the morning after he was admitted into the hospital, so that he was unable to give an account of himself; but the state of the parts is similar to the cases mentioned under the title *Urinary Abscess*.

XIV. 1. M. 43.

The urethra and bladder slit open. The inner membrane of the urethra was highly inflamed, and ulcerated in many points. The prostate gland contained a quantity of pus: an ulcer took place in the urethra behind the stricture, and allowed the urine to pass into the scrotum, which mortified. This patient had been for many months previous, in a state of great irritability.

XIV. 1. M. 44.

Ulceration of the urethra, producing fistula in perinæo. The ulceration had destroyed all the urethra posterior to the stricture.

XIV. 1. M. 45.

Effects of ulceration on the bladder, urethra, and rectum. It shows how much the parts are sometimes wasted by disease.

XIV. 1. M. 46.

Cavity in the prostate which communicated with the urethra; the commencement of a species of fistula in perinæo.

XIV. 1. M. 47.

Sloughing of a large portion of the internal membrane of the urethra. This patient had been for some time under the care of a surgeon, who he suspected had made false passages with the bougie. He became alarmed, and went to the Lock Hospital, but died the day on which he was admitted.—Presented by Mr. Nicholl, house surgeon to the Lock Hospital in 1808.

XIV. 1. M. 48.

Bursting of the urethra behind the stricture. The urethra gave way suddenly, three inches from the bulb. The urine injected the scrotum and the integuments of the penis. They mortified and sloughed. This preparation is described at page 207.

XIV. 1. M. 49.

This is the case mentioned at page 212. The model in the adjoining cabinet gives an accurate

representation of the gorging of the penis with urine, and the consequent mortification. In the preparation, a very narrow stricture is seen about an inch from the bulb; the urethra, posterior to the stricture, has ulcerated and allowed the urine to escape; but it differs from the common cases in this, that the urine has passed into the cavernous body, so that the penis was much more enlarged than the scrotum.

XIV. 1. M. 50.

Bursting of the urethra. This is a remarkable example to what an extent the destruction of these parts will take place, in consequence of stricture. The inner coat of the bladder is rugged with patches of lymph. Several abscesses communicate with the urethra. The scrotum is thickened and consolidated by extravasation of urine. There is a probe introduced through the opening which was made in the perineum by Sir William Blizard to permit a free evacuation of the urine from the scrotum.

XIV. 1. M. 50. a.

A very narrow stricture at an inch from the glans. All the urethra posterior to it, is very much dilated; but the most important fact to observe, is the labyrinth formed at the lower part of the

passage by filaments running across the canal, and by the enlargement of the ducts of the prostate. This preparation shows, what is certainly not sufficiently noticed, that though the stricture may be overcome, still it may be impossible to introduce an instrument into the bladder.—See page 8 and 112. There was nothing done in this case, as the patient, who was a street beggar, was brought into the hospital dying in consequence of retention. He lived only a few hours after he was brought in.

XIV. 1. M. 51.

A cast in wax of the urethra, 50. It gives a good idea of the numerous sinuses which were formed. a, Part of the urethra anterior to the stricture. b, A portion of wax which has run into a breach of the urethra, made by an error of the surgeon. c, The stricture. d, A long false passage made by the caustic and frequent introduction of the bougie: this passage communicates with the sinus. f, An abscess or sinus formed in the perineum behind the stricture. g, Another great abscess in the opposite side. e, The canal behind the stricture greatly dilated. h, Neck of the bladder. i, The wax which has entered into an abscess of the prostate gland. k, The wax in another abscess.

XIV. 1. M. 52.

Bursting of the urethra. The stricture is very narrow, and an ulcer is seen behind it. In the cavernous body, there is a sloughy abscess, apparently from irritation, as it is not connected with the urethra. There is also an abscess in the prostate, probably from the same cause. The urine escaping into the perineum and scrotum produced mortification. See page 209.

XIV. 1. M. 53.

As this preparation belongs more probably to the cases of disease of the rectum, it is described among them.

XIV. 1. M. 54.

This was taken from the patient whose case is related at page 222. It shows to what an extraordinary degree the urethra may be destroyed: the prostate is entirely gone, and a very considerable portion of the lower part of the urethra; about three inches from the glans, there is a portion of the spongy body laid bare by abscess. The testicles in this case were also diseased; the extremity of the vas deferens of one, was completely

dissolved, and hung loose in the abscess which occupied the place of the prostate.

N. B. The preparations of the testicles diseased in consequence of irritation in the urethra, form an interesting series in the Museum.

XIV. 1. M. 55.

Abscess in connexion with the urethra. This man, endeavouring to allay irritation by using a straw as a bougie, brought on more irritation, and at last urinary abscess.—Presented by Mr. Brodie.

XIV. 1. M. 56.

Fistula in perinæo. Fistula opening into the incision, a stricture almost closing the canal, and an ulcer posterior to it. The inner coat of the bladder is rough by many attacks of inflammation. The case is described at page 215.

XIV. 1. M. 56. a.

Ulceration of the urethra behind a stricture, causing fistula in perinæo. There is great dilatation of the urethra behind the stricture.—Presented by Mr. Kelson of Seven Oaks.

XIV. 1. M. 57.

This is the preparation which is described at page 253. The stricture is very narrow, but there was no communication between the urethra and the large urinary abscess which surrounds it.

XIV. 1. M. 58.

There are two circumstances shown in this preparation. 1. The commencement of a valvular obstruction to the urine, produced by the projection of a part of the prostate into the bladder, which part is anterior to the third lobe. 2. That the muscles of the ureters are inserted into that part of the prostate which, when diseased, projects into the bladder. This preparation is particularly interesting, as it was the first dissection which distinctly proved that the projecting tumour of the prostate into the bladder, was not produced by the enlargement of the third lobe: there are several preparations which prove the same fact. The muscles of the ureters are in all these preparations inserted into this portion, and so much enlarged are they in all the cases, that it may be asserted, whenever there is a valvular projection of the prostate, that the muscles of the ureter will be enlarged. The muscles of the ureters are de-

scribed in the Medico-Chirurgical Transactions of 1812; and a fuller description is given of this preparation in the second number of the Surgical Observations.

XIV. 1. M. 59.

Part of the bladder, prostate gland, and urethra of a patient in whom the surgeon found much difficulty in passing the catheter. The prostate gland is generally enlarged, the ducts on the side of the caput gallinaginis are very large, and it would appear that the catheter had passed into one of them. There is a projection of the middle portion of the gland into the interior of the bladder. The muscles of the ureters are dissected, and shown to be attached to the projecting part of the gland.

XIV. 1. M. 59. a.

The old man from whom this preparation was taken, had been about a year previous to his last illness, attacked with retention of urine; he was relieved by the use of bougies. About a month previous to his death he was again attacked with retention. The surgeon to whom he went, found some difficulty in passing the catheter at about four inches down the urethra, but with a little

force the obstruction at that part of the canal was overcome; he could not, however, pass the instrument farther than the neck of the bladder. See Plate II. fig. 1. He then requested the assistance of a friend, and he, by taking a catheter of a full curve, and by bearing the point of the instrument against the arch of the pubes, passed it into the bladder. The attending surgeon still found so much difficulty in introducing the catheter (for the patient could not pass water without it), that the instrument was left in the bladder, as less likely to produce irritation, than the repeated attempts to introduce it. It was, however, only kept in for a day or two; for the patient regained the power of passing his urine. But though he passed his water, and had no more fits of retention, it was evident that he was suffering a great deal of irritation: he gradually sunk; for the last two or three days of his life there was stillicidium urinæ. On dissection, the bladder was found to be very much contracted, not holding more than two ounces of water; the internal coat was much inflamed. In the preparation, the prostate is seen to be very much enlarged generally, and also exhibiting a fine example of the valvular projection into the bladder. The dissection has been so made as to show that there is no connexion betwixt the third lobe and the projecting portion; the third lobe is slightly enlarged, and projects towards the rectum.

On the anterior and lower part of the prostate, are seen the openings into which the catheter went, in the first attempts to introduce it; that part of the urethra where the first stricture was, has ulcerated and communicated with the cyst of a small abscess which was on the outside of the spongy body. This has probably taken place in consequence of the introduction of the bougie, as noticed at page 245.

XIV. 1. M. 60.

Disease of the prostate. The whole gland has a tuberculated appearance; but that portion into which the muscles of the ureters are inserted, is most enlarged. There are several calculi in the substance of the gland. The preparation was much hurt by an accident.

XIV. 1. M. 61.

The surgeon who attended the patient from whom this was taken, imagined that it was a stricture which obstructed his bougie; and to destroy it, applied caustic; the consequence was a breach in the prostate; he still persevered, and with the bougie made the false passage into which the catheter is introduced.—See Plate II. fig. 1.

XIV. 1. M. 61. a.

Tuberculated and general enlargement of the prostate: the part which is described as the third lobe is enlarged, but it projects towards the rectum.

XIV. 1. M. 62.

The prostate gland generally enlarged. It was necessary to introduce the catheter regularly, for some time before death.

XIV. 1. M. 63.

A remarkably fine specimen of scirrhous rectum extending to the prostate. It is more particularly described with the diseases of the rectum.

XIV. 1. M. 64.

The bladder, prostate gland, and vesiculæ seminales, with the vasa deferentia of a patient who had for many years diseased prostate. The bladder is much thickened and has many pouches formed in its coats. The internal membrane is in some points ulcerated. The prostate is scirrhous, but is not much enlarged. The vesiculæ seminales and vasa deferentia are much larger and more

distended than usual, arising perhaps from the state of the prostate, producing some obstruction to the passage of their secretion.

XIV. 1. M. 64. a.

A great number of calculi in the prostate. The prostate is almost destroyed, so are the membranous part and bulb of the urethra. A large abscess had formed in the perineum, which burst, and allowed some calculi to escape. There are a great many calculi, which were found in the abscess, lying at the bottom of the bottle.—See this case at page 281.

XIV. 1. M. 65.

A very fine example of disease of the prostate gland. The gland is nearly the size of a large apple; one side is rather larger than the other, so that the line of the urethra is crooked. That portion of the tumour which has been described as the enlargement of the third lobe (but of which there is no proof among these preparations), is of a considerable size, and so covers the opening of the urethra as to form a complete obstruction to the exit of the urine.

XIV. 1. M. 66.

This is a very fine example of the common disease of the prostate. The penis and bladder are preserved in their relative situation to each other, and a catheter is introduced.

It is here made evident that the obstruction to the flow of urine, is in consequence of the valvular projection of the prostate falling down on the orifice of the urethra. It shows also the absolute necessity for the use of a catheter; and it is obvious that in this case, the instrument must be longer than usual, and also that it must be large and round at the point, otherwise it will be apt to catch under the projection of the tumour. See Plate II. Fig. 3, and page 58.

The difficulty of discovering a stone in a bladder thus diseased, is also evident. The distressing and ineffectual attempts of the patient to discharge the urine in this particular case, are manifest in the great size of the bladder, in the coagulable lymph hanging on its inner surface, and in the sacs formed in the fundus.—See an engraving of this preparation in Plate III. of the Morbid Anatomy of the Urethra and Bladder.

XIV. 1. M. 67.

The prostate is considerably enlarged, the bladder is thickened, and the muscular fasciculi are

very distinct. At the fundus, the bladder opens by a hole into a large sac, the edges of which are ragged, as if ulcerated; this sac formed a cavity betwixt the fundus of the bladder, the peritoneum, and the abdominal muscles. It contained a calculus weighing four ounces; at one part the stone was only covered by peritoneum, which was inflamed, and seemed to threaten ulceration. This patient had the symptoms of stone in the bladder strongly marked, but no stone could be discovered, until sounded by Mr. Wilson: he was then eighty years of age.—The preparation is engraved in the Fourth Number of the Surgical Observations.

XIV. 1. M. 68.

A monstrous enlargement of the prostate gland, probably the largest in the country; presented by Mr. Goolden, of Maidenhead. The patient was eighty years of age; he was a baker, and until three weeks before his death, he suffered no inconvenience from it, but was so well as to be able to put his bread into the oven daily. The first surgeon who was called to him, after he had retention, thrust the catheter into the substance of the prostate. There is now a probe in the false passage—by looking upon this preparation we are satisfied, that in such a case our common catheters are much too short. In fact, in this instance the

catheter was fully introduced by the surgeon called into consultation, but no urine flowed; because the holes of the instrument were embraced by the prostate. The accumulation of urine was then permitted to increase, and the patient died.

XIV. 1. M. 68. a.

A very fine contrast to the last preparation. It was taken from a boy thirteen years of age; his case is given at page 25. The great source of disease was in the kidney, but the consequence of the irritation on the bladder, was to excite the muscles of the ureters, so to pull on the middle part of the prostate, as to form a valvular projection, similar to that which is considered to be peculiar to old men. It is also worthy of remark, that the foramen cæcum of the caput gallinaginis is very large.

XIV. 1. M. 68. b.

A very fine specimen of disease of the prostate. This disease is more of the nature of soft cancer than scirrhus. The patient was an old man, and naturally very irritable; the pain which he suffered from the complaint, increased his bad temper so much, that it was not possible for his children to live in the same house with him.

[The Preparations from 69 to 75, are examples of calculi contained in the bladder. As they are not immediately connected with the present subject, the description of them is omitted. The specimens of calculi, amounting to more than 100, some of which are very fine, are in another part of the Museum.]

XIV. 1. M. 76.

The bladder of a patient who for several years, had all the symptoms of stone. The inner membrane has a spongy surface, which resembles the vessels of the placenta when they are unravelled. The flocculi were quite loaded with blood; a hole is seen at the back part which communicated with a large cyst, which, on first opening the body, was supposed to be the bladder itself. A small calculus was found in the urethra; it has fallen to the bottom of the bottle. The internal surface of this bladder is very similar to one in the Museum collected by Mr. Cruikshanks: in that case Mr. C. attempted to introduce a catheter; the patient, as the instrument entered the bladder, uttered a loud cry, and immediately expired. This preparation was presented by Mr. Spencer, of Islington.

XIV. 1. M. 77.

The bladder of a young man who died of fever —he did not complain of pain in his bladder, until a few days preceding his death—he then had some difficulty in making water, and passed a little purulent matter, but did not suffer much pain. A substance something between coagulable lymph and scrofulous matter, is seen lining and strongly adhering to the internal surface of the bladder.

XIV. 1. M. 78 and 79.

Are described with the preparations of the Diseases of the Rectum.

XIV. 1. M. 80.

A very remarkable source of obstruction at the neck of the bladder. A double valvular projection is ready to fall before the stream of urine and prevent its discharge: a part of this membranous valve is attached to the inner membrane of the bladder, at a considerable distance from the orifice of the urethra.

XIV. 1. M. 81.

This preparation is an example of what has been described as a double bladder: these sacs are of equal size, and have a common septum, which is perforated by a hole of an inch in diameter. We observe, however, that the ureters, the urethra, and vesiculæ seminales belong to one of the sacs, and by this we discover which is the true bladder of urine; the other is a sac or pouch enlarged in an extraordinary degree. There was a stricture in the urethra.

XIV. 1. M. 82.

A bladder which had suffered much in consequence of an obstruction to the discharge of the urine—two remarkable pouches project from it.

XIV. 1. M. 83.

Great suffusion of blood in the internal coat of the bladder.—This was taken from a patient who died in consequence of fungus cerebri; it is preserved as an example of an affection of the bladder, which is frequently found when the patient dies of an acute disease.

There is a series of preparations illustrative of the effects of stricture of the urethra, on the *kidney*, and on the *testicle*, attached to this part of the Museum; but the Appendix has been prolonged to such an extent, that it is necessary to omit the description of them. In the same division there is a series of bougies, in bottles, to show the impressions of the several kinds of stricture.

PREPARATIONS OF THE DISEASES OF THE RECTUM.

XIII. 4. M. 48.

Stricture of the orifice of the rectum. This disease was discovered by the finger being introduced into the anus, for the purpose of puncturing the bladder.—See page 311.

XIII. 4. M. 49.

Stricture of the same kind, laid open, also taken from a patient, who died of irritation in the bladder: a portion of skin is cut through, so as to expose a pile.

XIII. 4. M. 50.

Stricture of the rectum. The lower mesenteric vein is injected, to show the formation and structure of piles. In the same gut there is one fistula, which communicated with Cowper's gland; another which opened between the two sphincters, by a projection which appeared like a

pile: there is also in this preparation, a band of membrane across the margin of the anus, similar to the bands of membrane seen in the urethra.

XIII. 4. M. 51.

Stricture of the rectum.—See explanation of Plate IV. which was taken from this preparation.

XIII. 4. M. 52.

Stricture of the verge of the anus. A number of small warty tumours are seen within the rectum, similar to the disease described at page 301.

XIV. 1. M. 63.

A very fine example of the scirrhous contraction of the rectum. The disease has extended to the prostate. This patient was long ill; and for months previous to his death, it was necessary to bring away the fæces by a tube. This case was in some degree similar to that related at page 317.

XIII. 1. M. 53.

Carcinoma or scirrhous contraction of the rectum, which had become cancerous and ulcerated. There is a communication formed between the rec-

tum and urethra, by which feculent matter passed into the bladder, and was voided with the urine.

XIV. 1. M. 78 and 79.

In the bottle 79, is a part of the intestine, *ileon*, thickened and ulcerated. Fifteen years before the death of the patient, the intestine had contracted an adhesion to the bladder, and at this point an ulceration took place; for from this time, up to the death of the patient, fæces passed by the urethra: 78 is the bladder opened, to show the extensive communication betwixt the bladder and gut.

XIII. 4. M. 46.

Stricture of the rectum, adhesion of the rectum to the bladder, and a hole of communication between them. The patient from whom this was taken, had been attended by Dr. Baillie: he had frequently passed feculent matter from the urethra, and the small seeds of fruit, which had been taken into the stomach, were also expelled with the urine. The patient had constant tenesmus, and great irritation in the bladder, urethra, and rectum. Previous to his death the adhesion between the bladder and rectum had given way; for, on dissection, the contents of both the bladder and rectum were found in the cavity of

the abdomen: this had produced peritonitis, of which the patient died.

These three last cases are all so complicated, that it is not probable that any means of treatment would have been successful; but sometimes the case is not so desperate, and may admit of a cure.

When a communication has taken place, it will be discovered, 1. From the previous disorder of the viscera of the abdomen; 2. By the pain and irritation in the bladder, at certain stated intervals after taking food; 3. By the discharge of air from the urethra, and by feculent matter being mixed with the urine.

The most obvious treatment will consist in attention to the original disease of the parts. It has probably been owing to some dysenteric affection of the bowels, that the intestine has formed the adhesion. This is to be remedied by mild laxatives, small doses of ipecacuanha, and tepid clysters with laudanum. On the part of the bladder, the cure must be accomplished by injection of the bladder, so as to free it of all feculency, and by letting the catheter remain in the bladder, so that the coats may be always in a state of contraction; for this will tend to obstruct the passage of the matter of the intestine into the bladder, and give time for the fistulous communication to heal.

XIII. 4. M. 36.

A stricture of the lower part of the colon, arising from scirrhus. The person from which this was taken, was a tailor; he was admitted as a patient in St. George's Hospital, in August 1808. He had been subject to violent pain in the course of the colon, attended with vomiting and costiveness, for the last four months, and for eight days preceding his admission he had not passed any fæces. In the evening, while exerting himself in a violent fit of vomiting, he found something give way under his heart, as he expressed himself, and immediately called for the nurse; he appeared to be in the most excruciating pain, rolling about in bed, and making very loud expressions of the pain he felt: he continued in this state until about half past five in the morning, when he died.

Upon laying open the abdomen, it appeared that some part of the intestines had given way, for a considerable quantity of their contents had escaped into the general cavity of the abdomen. In tracing the intestines this was found to have taken place in the sigmoid flexure of the colon, where a considerable thickness and hardness was felt. On opening it, a scirrhous contraction was found, extending for two inches downwards, so that the passage was quite obliterated, and part of the stricture had become ulcerated, by which the fæces had escaped. The texture of the gut is much altered,

being in some parts transparent and of a gelatinous structure; in other points opaque, ligamentous, and cartilaginous.—Presented by Mr. Daw.

XIII. 4. M. 47.

The rectum of a child two years of age. The boy was born with a closed anus, which was perforated by a surgeon. There was much difficulty in keeping the passage open. An enormous enlargement of the rectum and colon has taken place here. For some time the child passed fæces only through a canula, and some days before death the quantity of fæces collected was so great, that, according to the surgeon's account, the sides of the lower part of the gut were so pressed together as to prevent the entry of the canula. The opening at the anus is not larger than just sufficient to admit a small bougie: the circumference of the gut above the stricture is fifteen inches.

XIII. 1. M. 54.

A very fine specimen of a tumour of the nature of fungus hæmatodes, which projects into the rectum. The surface of the vagina is covered with similar tumours; the upper part of it, and the os uteri, are so much affected, that there was a complete stricture of the rectum formed by pressure.—Presented by Dr. Ashburner.

XV. I. M. 51.

A vagina almost totally obliterated by inflammation and adhesion. This is an example of a very common accident; and the preparation is placed here to show, that in whatever natural canal, a stricture or obstruction takes place, there is danger of nearly the same symptoms and the same melancholy consequences, whenever the bougie is used with too much force.

This woman being taken in labour, the child's head was permitted to rest in the pelvis, stretching and occupying the vagina, in such a manner, that when at last the child was delivered, the surface of the vagina inflamed and sloughed. The raw surfaces then united, and appeared to have entirely obliterated the vagina. After some time, it was discovered, that there remained a very narrow passage to the os tincæ. It was, however, such as would only admit a common silver probe, and it became an object with the surgeon to enlarge this passage to the degree that would permit the menstrual discharge; therefore it was advised that a succession of common wax urethra bougies should be used. There is no reason to suppose that the bougie was used with violence; yet there is no doubt, that the operation cost the woman her life. It produced inflammation of the peritoneum, and she died in great pain with peritoneal inflammation.

THE END.

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