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Contributors

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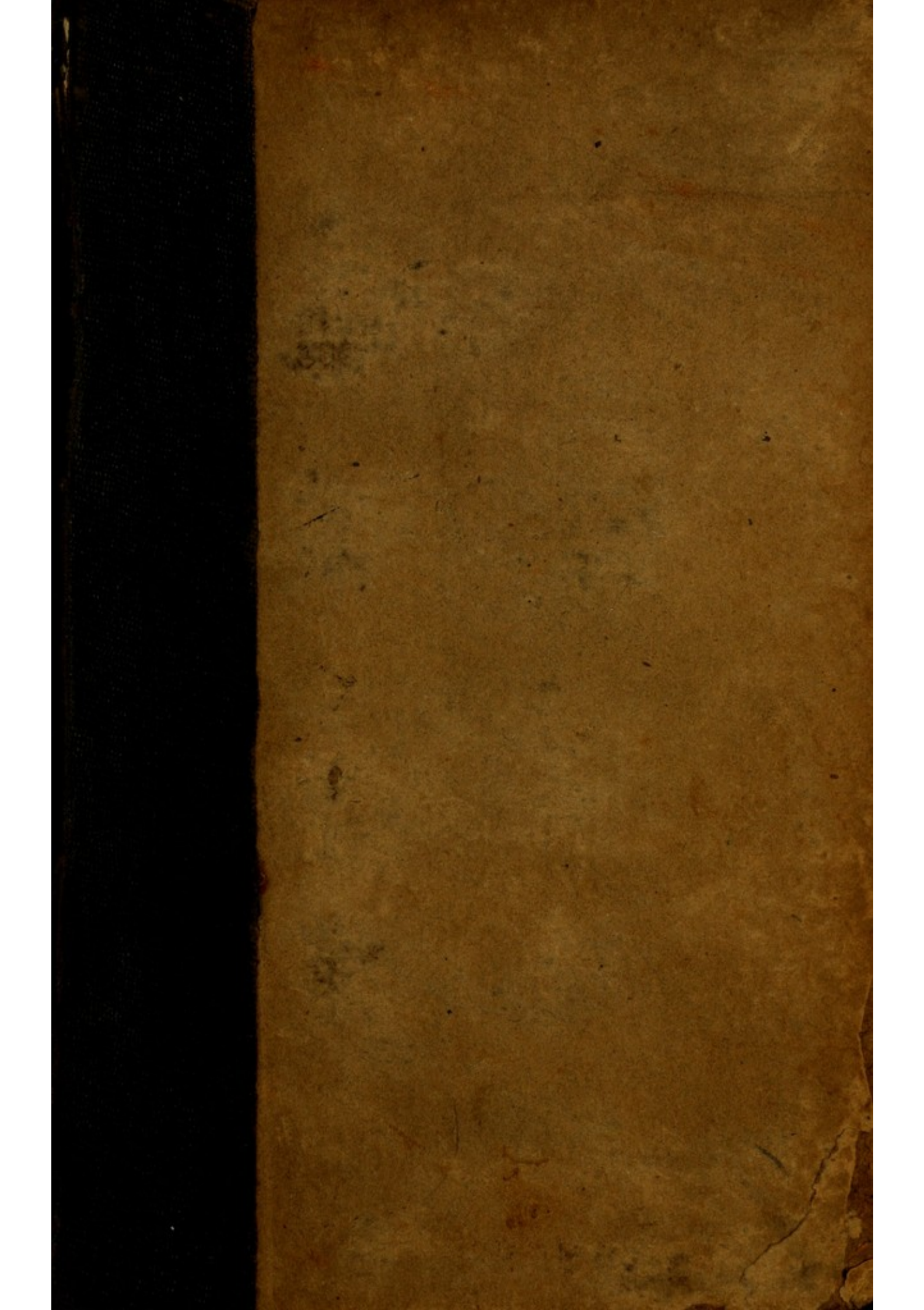
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ON THE
TREATMENT OF THE DISEASES
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PRACTICAL OBSERVATIONS
ON
THE TREATMENT OF THE DISEASES
OF THE
PROSTATE GLAND.

ILLUSTRATED BY COPPER PLATES.

BY
EVERARD HOME, ESQ. F.R.S.

SERJEANT SURGEON TO THE KING, AND SURGEON
TO ST. GEORGE'S HOSPITAL.



LONDON:

PRINTED FOR G. AND W. NICOL, BOOKSELLERS TO
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FACTICAL OBSERVATIONS

ON

TREATMENT OF THE DISEASES

OF THE

OSTATE GLAND.

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BY

VEDWARD HOME, ESQ. F.R.S.

AT REQUEST OF THE LIND, AND SUBSE
 TO ST. GEORGE'S HOSPITAL.

LONDON:

ST. JAMES'S

1831

TO THE
RIGHT HONOURABLE
SIR JOSEPH BANKS, BART.

K. B. P. R. S.

MY DEAR SIR,

DEDICATING this Work to you, affords me a double gratification; the one paying a just tribute to the greatest Patron of Medical Science in this country; the other, indulging myself in a public acknowledgment of the high value I feel for an uninterrupted

DEDICATION.

intimacy that has subsisted between us for forty years. During the whole of that period, you have been my guide in the pursuits of philosophy ; an example to me in the paths of honor and indefatigable exertion ; and a friend, to whom on all occasions I have applied without reserve.

The following pages explain a discovery in human anatomy first registered in the Philosophical Transactions, and tend to increase its value by an application of it to the treatment of a dangerous malady ; they have therefore a claim upon you, who preside with so much lustre over the Society, in which the discovery was first made

DEDICATION.

public, and under your protection
I wish them to be introduced into
the world.

I remain,

MY DEAR SIR,

Your much obliged,

and obedient Servant,

EVERARD HOME.

Sackville-Street,

November 10th, 1811.

INTRODUCTION.

THE most valuable works on the diseases of the Prostate Gland that have been published, which have come within the Author's knowledge, are those of Hunter and Desault. As these publications have not been noticed in the following pages, it becomes necessary to observe in this place, that the only reason for not referring to them, is, that the Author has confined himself to what has been the result of his own observation and experience; at the same time there are many practical remarks in the present Work, which will also be found in the above publications. These, however, are such as must occur to every practitioner who has had much experience

in the treatment of diseases of the Prostate Gland; and although the remarks themselves may be the same, they have been drawn from very different sources. Such remarks are therefore not borrowed, but are the result of the experience of different individuals, who have been led to them by different views of the subject.

CONTENTS.

Introduction.

CHAP. I. <i>On the Discovery of a Middle Lobe of the Prostate Gland,</i>	- -	p. 1
CHAP. II. <i>On the Enlargement of the Middle Lobe of the Prostate Gland, and the different Effects it produces,</i>	-	16
SECT. I. <i>On the different Stages of its Enlargement, in which it either impedes the flowing of the Urine, or entirely puts a stop to it,</i>	- -	17
SECT. II. <i>On the Effects produced on the Secretion of the Gland,</i>	-	30
SECT. III. <i>On the Effects produced on the Coats of the Bladder,</i>	- -	33
SECT. IV. <i>On the Disposition which this Disease gives for the Formation of Stone,</i>		39
SECT. V. <i>On the Effects of this Disease upon the Secretion of Urine,</i>	-	42

SECT. VI. <i>On Suppression of the Secretion of Urine, one of the Causes of Death when the Retention of Water in the Bladder has been long continued,</i>	-	p. 50
CHAP. III. <i>On the Mode of Treatment of Cases of Enlargement of the Middle Lobe of the Prostate Gland,</i>	-	69
SECT. I. <i>On the Means to be employed in the First Stage,</i>	-	70
SECT. II. <i>On the Mode of drawing off the Urine,</i>	-	74
SECT. III. <i>On the Circumstances under which the Swelling of the Prostate Gland sub- sides, and the Bladder recovers its Tone,</i>		95
SECT. IV. <i>Cases illustrative of this Mode of Treatment,</i>	-	107
CHAP. IV. <i>On the Enlargement of the Mid- dle Lobe of the Prostate Gland, when it comes on while the Patient is labouring under Strictures in the Urethra,</i>		120
SECT. I. <i>The Complication of the two Dis- eases explained</i>	-	122

SECT. II. <i>On the Mode of treating these complicated Cases,</i>	- -	p. 127
SECT. III. <i>Cases in which the Treatment of the Complication of the two Diseases is illustrated,</i>	- -	131
CHAP. V. <i>Cases of different degrees of Enlargement of the Prostate Gland, in which the Parts were examined after Death,</i>	- - -	147
CHAP. VI. <i>On the Effect of different Kinds of Injections into the Bladder upon the Symptoms of this Disease,</i>	-	187
CHAP. VII. <i>On the Enlargement of one of the Lateral Lobes of the Prostate Gland, producing painful Sensations in the Rectum,</i>	- - -	205
CHAP. VIII. <i>On the Inflammation of the Verumontanum,</i>	- -	216
CHAP. IX. <i>On Abscess in the Prostate Gland,</i>	- - -	522
CHAP. X. <i>On Ulcers in the Prostate Gland,</i>		232

APPENDIX.

*Tables to shew the irregularity of the Secretion
of the Kidneys.*

TAB. I.	-	-	-	p. iv
TAB. II.	-	-	-	viii
TAB. III.	-	-	-	ix

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ON THE DISEASES OF THE
PROSTATE GLAND.

CHAPTER I.

ON THE DISCOVERY OF A MIDDLE LOBE OF
THE PROSTATE GLAND.

IT is near six years since I laid before the Royal Society an account of a middle lobe of the prostate gland in the human body, which I had recently discovered. I have now reprinted the same account without any material alteration, thinking it the most candid manner of laying the discovery before the public at large, and having obtained permission from the President and Council of the Royal Society for that purpose.

Read before the Royal Society, Feb. 20, 1806.

Discoveries in the anatomy of the human body have been ever considered as deserving a place in the Philosophical Transactions: in the present improved state of our knowledge of this subject, a small addition to it cannot fail of being acceptable, since after the long continued labours of so many acute observers, such only can be expected, and even those are rarely to be acquired.

The subject of the present paper is a portion of a gland, which from the obscurity of its situation has hitherto escaped observation: and were it not for the changes, produced in it by disease, which enlarges it so much that it sometimes completely shuts up the canal, by which the urine ought to pass, it would be little deserving of attention; but when this important effect is considered, the part itself becomes an object of very serious interest.

In stating the circumstances, which led

to the present investigation, it may be necessary to mention that the prostate gland is liable, in the latter period of life, to enlarge: and when it does so, there is frequently a nipple-like projection, which rises up and forms tumors of very different sizes, projecting into the cavity of the bladder. These tumors, as they obstruct the passage of the urine, have attracted the attention of all anatomical surgeons, from the time of Morgagni to the present day. Their appearance has been described, and specimens of them in different degrees of enlargement are preserved in many collections of morbid parts. The attention of surgeons has been naturally called to what is of the greatest consideration, the appearances they put on, and the symptoms they produce: but the particular circumstances in the natural conformation of the gland, which dispose it to form these tumors, have never been ascertained. Morgagni says, "These
 " caruncles were found to grow out in the
 " very middle of the upper and internal

“ posterior circumference of the gland ;
 “ but whether these things happened by
 “ chance or otherwise future observations
 “ will show.”*

From these expressions, it is evident that Morgagni had no idea that there was any conformation of the prostate gland, that could account for this tumor, and believed that it arose from the surface of the body of the gland.

Mr. Hunter, in treating of the enlargement of the prostate gland, says, “ From
 “ the situation of the gland, which is principally on the two sides of the canal,
 “ and but little, if at all, on the fore part,
 “ as also very little on the posterior side,
 “ when it swells it can only be laterally ;

* Si ea, quæ ex sepulcreto indicavimus et id, quod supra ex Valsalva attulimus, et nostra omnia attentè inspicias, cuncta in senibus fuisse animadvertes : ita nostra omnia, in quibus carunculæ initium fuit, hanc in medio ipso posteriori interni summique glandulæ ambitûs excrescentem obtuliss : casune hæc cuncta, ansecus, futuræ ostendent observationes.—Morgagni de Sed. et Caus. Morb. lib. iii, epist. 41, A. 19.

“ whereby it presses the two sides of the
 “ canal together, and at the same time
 “ stretches it from the anterior edge or
 “ side to the posterior, so that the canal,
 “ instead of being round, is flattened into
 “ a narrow groove. Sometimes the gland
 “ swells more on one side than the other,
 “ which makes an obliquity in the canal
 “ passing through it.

“ Besides this effect of the lateral parts
 “ swelling, a small portion of it, which lies
 “ behind the very beginning of the ure-
 “ thra swells forward like a point, as it
 “ were into the bladder; acting like a valve
 “ to the mouth of the urethra, which can
 “ be seen, even when the swelling is not
 “ considerable, by looking on the mouth
 “ of the urethra, from the cavity of the
 “ bladder, in the dead body. It sometimes
 “ increases so much, as to form a tumor
 “ projecting into the cavity of the bladder
 “ some inches.”*

From the first paragraph, it is evident

* Hunter on the Venereal Disease, p. 169.

that Mr. Hunter was unacquainted with this lobe; and in the second, we see that his knowledge of the disease led him to conclude, that in the natural state of the gland there was a portion of it in this situation; but neither at that time, nor at any future period of his life, did he prosecute the inquiry.

Although a great part of my time has been for many years occupied in attending patients labouring under complaints of the bladder and urethra, and my opportunities of examining these parts after death have been very frequent, my attention has been always so much employed on the modes of emptying the bladder, (an operation, which in many cases is attended with considerable difficulty,) that it never occurred to me to institute an inquiry for the purpose of attaining an accurate knowledge of the origin of the disease until the month of December, 1805.

At that time my attention was directed to this subject, by the following circum-

stances. In the examination of the prostate gland of an elderly person, who had died in consequence of this part being diseased, the nipple-like process was found very prominent, and a bridle nearly a quarter of an inch in breadth, extended from the middle line of the tumor to the bulb of the urethra, where it insensibly disappeared. The usual rounded projection of the verumontanum was not visible: it had wasted away, and the remains were concealed in the fold forming this bridle, which at that part was not thicker than any other. The space between the tumor in the bladder, and the bulb of the urethra, was unusually short, which is the reverse of what is commonly met with in old men; so that this bridle appeared to have drawn the bulb towards the tumor, and shortened the membranous part of the canal.

As this was an unusual appearance, it led me to consider it with attention, and to ask if other anatomists had noticed it; which, as far as my inquiries have gone,

has not been the case. The bridle had evidently been formed by the membrane of the bladder adhering firmly to that part of the prostate gland composing the tumor, which it consequently followed in its future increase, and drew up after it the membrane of the urethra. In this way the fold had in time become nearly a quarter of an inch broad, and was continued of the same breadth to the bulb, where the lining of the urethra being more attached to the surrounding parts, it did not admit of being drawn up.

This appearance of a bridle is more or less met with in all the cases, in which the nipple-formed process occurs, but in a much smaller degree, and does not extend further forwards than the verumontanum.

To satisfy myself how this tumor was formed, it became necessary to examine the prostate gland in its natural state; and ascertain whether there is any part sufficiently detached to move independent of

the rest of the gland, and so explain the appearances which had been met with in this particular case.

My professional avocations not affording time to make the dissections requisite for this purpose, Mr. Brodie, who is engaged in teaching Anatomy, with Mr. Wilson, in Windmill-street, whose knowledge of the subject fitted him for the task, and whose zeal for the improvement of his profession made him willingly undertake it, gave me his assistance, and took the whole of that labour on himself.

While dissecting the parts for this purpose, the urinary bladder was distended with water, and the surfaces of the prostate gland, vesiculæ seminales, and vasa deferentia, were fairly exposed. This being done, the vasa deferentia, and vesiculæ seminales were carefully dissected off from the bladder, without removing any other part. These were turned down upon the body of the prostate gland. An accurate dissection was then made of the circumfe-

rence of the two posterior portions of the prostate gland, and the space between them was particularly examined. In doing this a small rounded substance was discovered, so much detached that it seemed a distinct gland, and so nearly resembling Cowper's glands in size and shape, as they appeared in the same subject, in which they were unusually large, that it appeared to be a gland of that kind. It could not, however be satisfactorily separated from the prostate gland, nor could any distinct duct be found leading into the bladder.

A similar examination was made of this part in five different subjects. The appearance was not exactly the same in any two of them. In one there was no apparent glandular substance, but a mass of condensed cellular membrane: this, however, on being cut into, differed from the surrounding fat. In another there was a lobe blended laterally with the sides of the prostate gland. These facts are mentioned in proof of its not being always of the same

size, or having exactly the same appearance; this is found also to be the case with Cowper's glands; they are sometimes large and distinct; in other subjects they are scarcely to be detected, and in others again are in all the intermediate states. The most distinct and natural appearance of this part was in a healthy subject, twenty-five years of age, of which the following is an account. On turning off the vasa deferentia, and vesiculæ seminales, exactly in the middle of the sulcus, between the two lateral portions of the prostate gland, there was a rounded prominent body, the base of which adhered to the coats of the bladder. It was imbedded not only between the vasa deferentia and the bladder, but also in some measure between the lateral portions of the prostate gland and the bladder, since they were in part spread over it, so as to prevent its circumference from being seen, and they adhered so closely, as to require dissection to remove them; nor could this be done beyond a

certain extent, after which the same substance was continued from the one to the other. This proved it to be a lobe of the prostate gland; its middle had a rounded form, united to the gland at the base next the bladder, but rendered a separate lobe by two fissures on its opposite surface. Its ducts passed directly through the coats of the bladder, on which it lay, and opened immediately behind the verumontanum. By means of this lobe, a circular aperture is formed in the prostate gland, which gives passage to the vasa deferentia.

The appearance of this lobe has been since examined in a subject twenty-four years of age, and it was found still larger and more distinct. A representation of it is given in Plate I.

Previous to this investigation, it was not known to me that any distinct portion of the prostate gland was situated between the vasa deferentia and the bladder. These ducts were considered to pass in the sulcus between the two posterior portions, in close

contact with the body of the gland. This account corresponds also with the description given by Winslow and Haller; it is, however, now proved to be erroneous. It is not in my power to determine, whether all the anatomists of the present day have fallen into this error in the same degree with myself: but none of them have pointed out this lobe; and, therefore, in whatever way they have described the vasa deferentia to pass into the bladder, they have neither anticipated, nor thrown any light on the present inquiry. Haller* says expressly, that “the prostate gland has no lobular appearance;” and the anxiety which all anatomists have to improve their art would have led them to correct this error, had they discerned that it was one.

* Glandula, aut certe cellulosum compactum corpus, quod prostata dicitur, p. 464. Fabricia obscura est, et neque glandulæ simplicis similis, cujus cavea esset aliqua, neque compositæ; neque enim in lobulos recte discedit, p. 465.—Elem. Physiologiæ Corporis humani, Autore Albert. Haller. Tom. VII.

This newly acquired anatomical fact, enables us very clearly to understand the nature of a disease, which it was not possible we could have a correct idea of, when we were ignorant of the existence of the part in which it takes place. It not only explains the situation of the tumor, the apparent want of connection with the body of the gland, and the narrowness of the base, which in many instances is met with, but it solves what has ever appeared to me the greatest difficulty, how it should protrude into the cavity of the bladder. This arises from the hard substance of the coats of the vasa deferentia being in close contact, and bound down upon this lobe, so that from its first enlargement, it must immediately press up the inner membrane of the bladder, which can make very little resistance.

Since the above account was published in the Philosophical Transactions, I find that it was known to several anatomists, that the vasa deferentia perforate the prostate gland, as appears from the works of Portal, Sabatier, and Fife, but none of these writers went further than ascertaining that fact, and they give no description of the appearance of the glandular part between such perforation and the coats of the bladder, so that they cannot be said to have anticipated any thing I have stated on this subject, with regard to the middle lobe, either with respect to its natural form, or to the regularly rounded shape it preserves in the different stages of its enlargement.

CHAPTER II.

ON THE ENLARGEMENT OF THE MIDDLE LOBE
OF THE PROSTATE GLAND, AND THE DIF-
FERENT EFFECTS IT PRODUCES.

As it is this particular lobe, which in its enlargement closes up the entrance of the bladder, I have directed my observations to that particular point, at the same time I have not passed over the enlargement of the other portions of the gland, nor been unmindful of its effects in keeping up irritation and interfering with the passing of instruments into the bladder. These are circumstances of considerable importance, but are not direct symptoms of the disease which produces an impediment to the passing of the urine. Those entirely arise from the enlargement of the middle lobe.

SECTION I.

On the different Stages of its Enlargement, in which it either impedes the flowing of the Urine, or entirely puts a stop to it.

THIS lobe in the earlier periods of life when the body of the gland is in a healthy state, is small, nor does it appear to be liable to become enlarged, even when the body and the lateral lobes have been considerably increased in size; but in those men who die at the latter periods of life, this, as well as the rest of the gland, is usually found somewhat enlarged, even in cases where no disease was suspected during life.

At different periods of his life, man is liable to different diseases. From 15 to 40 years of age, the most common disease of the urinary organs is strictures in the urethra, and after that age persons are not

only less liable to that complaint, but if no serious consequences have been previously produced by it, there is little reason to apprehend them afterwards, unless some unusual circumstances occur to aggravate the original complaint.

In advanced life, on the other hand, the prostate gland, which in all the earlier periods was little liable to disease, is more subject to be affected than most other parts of the body; and it is a rare occurrence for a man to arrive at 80 years of age, without suffering more or less under disease of this part. From its frequent occurrence, perhaps we may be justified in believing that it is alluded to in the beautiful description of the natural decay of the body, in the Bible, in the book of Ecclesiastes, the 12th, chapter, the 6th verse, where it is written, "or the pitcher be broken at the fountain, or the wheel broken at the cistern." Expressive of the two principal effects of this disease, the involuntary passing of the urine, and the total stoppage.

The more common causes of inflammation of the prostate gland, are, full living of every kind, inebriety, indulging to excess with women, a confined state of the bowels, and exposure to the effects of cold; indeed whatever increases the circulation of the blood in these parts, beyond the healthy standard, may become a cause of inflammation in this gland, the blood vessels of which lose their tone in the latter periods of life.

When the middle lobe begins to enlarge, it presses inwards towards the cavity of the bladder, putting the internal membrane upon the stretch, and communicates to it by immediate contact, the inflammation which occasioned its own enlargement: this is increased by the effects of its pressure.

This inflamed state of the membrane which lines the orifice of the bladder, produces pain in making water, particularly after the last drops are voided, and a desire and straining to make more, although the bladder is empty; as the bladder can

only retain a small quantity of urine, the desire to make it frequently comes on. There is also commonly more or less constitutional disturbance, or symptomatic fever.

As the middle lobe increases in size, it projects into the cavity of the bladder in the form of a nipple, pushing the membrane before it, so as to put it still more on the stretch, in the direction from the ureters to the verumontanum. In its further increase it loses the nipple-like appearance, becoming broader from side to side, and forms a transverse fold by pushing forward the membrane, connecting it to the lateral lobes, which also becomes proportionally extended.

As the tumor and the transverse fold are situated immediately behind the orifice of the urethra, they are pushed forwards before the urine in every attempt, that is made to void it, acting like a valve, and closing up the opening, till the cavity of the bladder is very much distended, when the

anterior part of the bladder being pushed forward, and the tumor being drawn back in consequence of the membrane of the posterior part of the bladder being put on the stretch, the valve is opened, so that a certain quantity of water is allowed to escape, but the bladder is not completely emptied.

The quantity that is retained will vary according to circumstances; but whatever it may be, it keeps up a pressure constantly on the tumor, which tends to increase the disease, and therefore to make the quantity retained still larger.

Under these circumstances, as the patient is in great pain, and always finds relief from passing a little water, he is constantly endeavouring to procure ease in that way; keeps walking about his room, and stops every two or three minutes to make a fresh effort, then sits on the close-stool, that he may exert more force with the abdominal muscles; and every teaspoonful that is voided encourages him to make fresh

efforts, not aware that by so doing, he is in the most violent manner disturbing the affected part, and accelerating the progress of the disease.

As the tumor enlarges, the quantity voided at each time becomes smaller, and that which is retained is increased. This is, however, by insensible degrees, so that if the whole quantity made in 24 hours is measured, it does not fall very short of the usual quantity, although perhaps a pint remains in the bladder.

While the patient makes water, he cannot be induced to believe that he does not empty his bladder; and the same circumstance may deceive the medical attendant, until at length the disease becomes so much aggravated, that there is a complete retention of urine.

Although the body of the gland and the lateral lobes are not equally disturbed by the efforts that are made to empty the bladder, as the middle lobe, still they are more or less enlarged; they do not, how-

ever, preserve either their natural proportion, or indeed any regular one, to the middle lobe, in the progress of their enlargement, nor do they always keep pace with one another, the left in some instances becoming much larger than the right.

The diseased state of the body of the prostate gland, and of the lateral lobes, which I am at present describing, is very different from that which is met with in the earlier periods of life, in consequence of strictures in the urethra, a symptom which, when it comes on, frequently occasions great alarm to the patient as well as to the surgeon, from an apprehension that they have an incurable disease to contend with.

In very few patients under 50 years of age, have I found the middle lobe so much swelled as to produce retention of urine, or an inability to empty the bladder, although the rest of the gland has been much enlarged, so much so, that in one instance, when examined by the rectum, it was said to equal in size the half of an

orange. As the swellings of the body of the gland and its lateral lobes, which are brought on in consequence of strictures in the urethra, which have come under my observation, have disappeared when the strictures were cured, it becomes necessary to distinguish them from the permanent disease under our immediate consideration. We may consider them as the consequences of accidental inflammation in the neighbouring membranes extending to this gland, the effects of which subside as readily as in the membranes in which they originated. These two affections of the prostate gland may not unaptly be compared to the swelling of the testicle that takes place in gonorrhœa, which is an accidental inflammation in a healthy testicle, and the more permanent disease of that organ.

In some few instances this enlargement of the body of the prostate gland, in consequence of strictures, in persons 50 years of age, has not subsided immediately upon

the removal of the stricture, and has been so considerable that a common bougie has been stopped at the neck of the bladder, although a catheter, which had a regular curve, has been readily introduced. This must have arisen from the alterations which take place in the form of the urethra within the gland, in consequence of its tumefaction. From the circumstance that the patient was able to empty his bladder, it was evident that there was no enlargement of the middle lobe.

Such enlargement, whether it readily subsides or not, is of no material consequence, since it produces no symptom of importance; and if the stricture is not allowed to return, will always ultimately diminish, though in some cases less readily than in others.

In cases of stricture where the straining to make water is very great, and all the parts between the bladder and the obstruction are disturbed and dilated, it is readily explained why the body and lateral lobes

of the prostate gland should inflame and swell, while the middle lobe, not being liable to the same kind of disturbance, is not affected.

I dwell upon this subject, because I believe it is a part of surgery less generally understood than most others, and because I have known many errors committed in practice, and much misery experienced by patients, from an apprehension that in such cases of old strictures, the gland is permanently diseased. The surgeon also, too frequently, is led away by this apprehension, from the endeavour to relieve the stricture, bestowing the whole of his attention on the disease in the prostate gland, for which, as he knows of no surgical treatment that is likely to be beneficial, he prescribes the different internal remedies which have been at various times recommended, and neglects the removal of the disease, of which this is only a symptom.

Some of these observations have been

made in my treatise on Strictures in the Urethra. I think it however right, not to pass over the subject in this place, more particularly, since I am now enabled to explain why the enlargement of the prostate gland, connected with that disease, does not produce the same symptoms as this apparently similar enlargement in the later periods of life, the subject of the present work.

A very small enlargement of the middle lobe, projecting into the bladder, with the transverse membranous fold connecting it to the lateral lobes, is sufficient to produce a complete retention of urine. When the disease has arrived at this stage, the constant pressure that is produced by the efforts to void the urine, hurry on the disease; and the lobe in many cases goes on increasing in size, and projecting further into the cavity of the bladder. The plates which are annexed, show the progress of this enlargement better than can be expressed by words, so as to make a more

particular description unnecessary. In some cases the left lateral lobe, which I have stated to increase more rapidly, and to a greater extent than the right, projects into the cavity of the bladder nearly in the same degree as the middle lobe. When this happens, it is also larger in a lateral direction, and presents a convex surface to the canal of the urethra. Whether this arises from any peculiarity in the left lobe, or is only an accidental circumstance, I am unable to determine ; but it is deserving of notice that I have never met with the same circumstance in the right lobe.

Where the middle and left lobe both project considerably into the bladder, their surface is sometimes excoriated, and has the appearance of being ulcerated, as is seen in the representation Plates XI. and XII. When this happens, the pain that occurs after passing the last drops of urine, is very severe, and is attended with spasmodic affections of the neck of the bladder, of the most distressing kind, which will be

better understood from the description given of them in the Cases, to which the reader is referred, than from any general account in this place.

SECTION II.

*On the Effects produced on the Secretion of
the Gland.*

WHEN the middle lobe is enlarged, it is difficult to say whether that circumstance has any particular effect upon the secretion of the gland, for the body and lateral lobes are also enlarged, and from their size must have the principal concern in every thing connected with that secretion. Under these circumstances, the secretion is rendered extremely viscid and very abundant. I have known it occasionally almost equal in quantity to the urine that is voided, and so ropy, when allowed to subside to the bottom of the vessel, that it could be drawn out to more than two feet in length without giving way.

That this ropy mucus comes entirely from the prostate gland, when in an

inflamed state, is proved by its having in one instance been found with one extremity floating in the bladder in the dead body, while the other extremity was discovered to be divided into small filaments, terminating in the orifices of the excretory ducts of the prostate gland at the verumontanum.

The quantity of the secretion depends more upon the degree of irritation, than on the actual enlargement of the gland; for when occasional attacks of irritation come on, it is much increased, and when they go off it is diminished; the act of straining appears to be one of the principal causes of it being very copious, for the quantity is always greatest when the involuntary efforts are most violent. The degree of tenacity varies exceedingly, and at very short intervals; it is most commonly in proportion to the quantity secreted, but not always so; when most viscid, it is very difficult for the patient to get rid of it; and it is of so irritating a nature, that the

membrane of the urethra, over which it passes, appears at times to be excoriated by it. The urine in which it is contained is very offensive to the smell, and readily goes into putrefaction.

As this state of the secretion is met with in those cases of the enlargement of the gland in consequence of strictures, in which the body and lateral lobes only are affected, it may be concluded, that the enlargement of the middle lobe is no further concerned in increasing this symptom, than as it produces the straining, and by that means keeps up a great degree of disturbance in every part of the gland.

SECTION III.

On the Effects produced on the Coats of the Bladder.

THE first effect produced upon the bladder is inflammation of that part of the internal membrane in immediate contact with the tumor, for the muscular coat interposed between them is so involved in the thickened parts, as to become entirely lost. This inflammation afterwards generally extends over its whole surface. The inner membrane of the bladder becomes in consequence extremely irritable; and this is a principal cause of the great and frequent desire and consequent straining to make water, when there is even a small quantity in the bladder. The inflammation extends itself to the muscular coat, and prevents the fibres from relaxing themselves to the same extent as in health, so that the bladder does

not contain more than half the usual quantity of urine, before the most violent involuntary efforts are brought on to empty it. Hence the patient, as well as the surgeon, are often induced to believe that it must be considerably overcharged, when in reality the quantity of urine in it is small.

When the size and form of the tumor are such as to allow the greater part of the urine to pass, although great effort is required for that purpose, the symptoms may continue nearly the same for months ; liable, however, to occasional aggravations from slight causes, and becoming more or less relieved, when these are removed. It even happens that the symptoms shall lessen, although the disease is not at all diminished. This arises from the muscular coats of the bladder having acquired greater strength, and the internal membrane losing, from habit, the sensibility which it had acquired in the earlier stage of inflammation.

The internal membrane of the bladder,

in its inflamed state, throws off a discharge like shreds, which are seen floating in the urine; these are small filamentous portions of coagulable lymph. This is changed, when the inflammation increases, to a powder, which when deposited at the bottom of the vessel, looks not unlike white hair powder; and when there is a violent paroxysm of irritation, perfectly formed pus is met with in the urine. This too is secreted from the surface of the internal membrane, for I have examined the bladder after death, when during the patient's life great quantities of this matter had been discharged, and yet this membrane was every where entire.

As the inflammation subsides, whether from habit, or from the treatment employed, the coats of the bladder admit of being further distended than before, so that a larger quantity of water is allowed to remain in the bladder without bringing on symptoms of distress; this is attended with a disadvantage, for there is not the

same power in the bladder, in this overdistended state, to exert itself, and less urine is voided, so that there is a greater accumulation of it in the bladder; when this is carried to any extent, it not uncommonly happens that during sleep several ounces of water shall pass, and give relief. This circumstance can be explained only by supposing, that there is more or less of spasm upon the orifice, which is taken off during sleep.

The urinary bladder we know to be capable of being dilated to a very great extent, without much injury to the constitution, or great distress to the patient; but the dilatation, in these cases, is very gradual and unattended with inflammation. Cases of this kind more commonly occur in females, where there is no prostate gland to be disturbed. In them the sphincter of the bladder is liable to spasm producing a retention of urine, and the coats of the bladder being in a natural state, admit of a great degree of dilatation before the

spasm is overcome; in producing this effect, their power of action is weakened, and as soon as the distress is removed, no further effort is made, and the spasm returns; in this way the bladder goes on gradually becoming more dilated without any symptom occurring to explain what is taking place; the patient makes water, but it is in small quantities, and there is a constant uneasiness referred to the bowels, or some other part. In a case of this kind, I was consulted about a tumor in the abdomen, supposed to be an abscess, requiring to be opened; upon drawing off the water, the quantity exceeded two quarts, and the tumor was found to have been formed entirely by the distended bladder.

In an instance of this kind, the case was mistaken for a dropsy of the cavity of the abdomen, and Mr. Hunter was employed, not to give an opinion, but to tap the patient in the usual way. He performed the operation, but from the smell of the fluid, found out at once the mistake, which had been

committed, and with a presence of mind, that did him credit, put a plug into the canula, made an incision into the cavity of the abdomen, and secured the wound in the bladder.

Although the bladder admits of this extraordinary degree of gradual dilatation, yet when it is very rapid, the coats of the bladder only yield to a certain extent, and if further pressed, give way and burst; this, however, is an effect which rarely, if ever takes place in the disease now under consideration, the cause of which will be hereafter explained.

In this distended state of the bladder, the internal membrane does not take on inflammation in the same degree as when it is more contracted, nor are the symptoms of a distressing kind; it is possible that the extended state of the smaller vessels and nerves is unfavourable for such action.

SECT. IV.

*On the Disposition which this Disease gives
for the formation of Stone.*

THE calculi more usually met with, are composed of two different kinds of hard materials united with animal mucus; the one is formed upon a nucleus composed of uric acid, has its origin in the pelvis of the kidney, descends from thence into the bladder, and there increases by addition of new matter, according to the circumstances in which it is placed. The other has a nucleus, of ammoniaco-magnesian phosphate and mucus, and is only met with in the cavity of the bladder; that substance not being in sufficient quantity in the kidneys to form itself into a solid concrete.

When the middle lobe of the prostate gland has once increased to any bulk, it is quite impossible for a stone of an ordinary

size to pass out at the orifice of the bladder, therefore all those which drop from the ureters, will be retained in the cavity of the bladder, in many instances aggravating the symptoms of the disease, and producing a complication, which is not suspected. On the other hand, when the stone is the first formed disease, the enlargement of the middle lobe of the prostate gland, not unfrequently produces a cure of its symptoms by preventing it from coming in contact with the neck of the bladder.

This, however, is only an accidental interference of two distinct diseases with each other; but in some instances, the affection of the prostate gland becomes the actual cause of the formation of a calculus. The bladder never being completely emptied, the dregs of the urine, if I may be allowed the expression, being never evacuated, a calculus, formed on a nucleus of the ammoniaco-magnesian phosphate and mucus, is produced, when it would not have been produced under other circumstance.

This species of stone, or a stone upon such a nucleus, can only be produced where the bladder is unable to empty itself; it may, therefore, be arranged among the consequences of the enlargement of the middle lobe of the prostate gland. Among the cases, one is stated, in which two stones were formed in succession in this way.

When the disease has been of long continuance, and new symptoms of a distressing kind come on, the mind of the surgeon will be naturally led to suspect that a stone is forming, and he will immediately endeavour by every kind of examination to ascertain whether this is really the case, that he may be enabled to treat these new symptoms in the manner best calculated for the relief of his patient.

SECTION V.

On the Effects of this Disease upon the Secretion of the Urine.

As a general rule, it will be found that patients who labour under this disease, and do not completely empty the bladder, secrete less water than usual ; and after the bladder is relieved, by proper treatment, the secretion is increased ; this may be accounted for from the bladder, under such circumstances, not admitting of its usual degree of distention ; in consequence of which, the cavity is readily so much filled, as to prevent more urine passing down through the ureters, keeping the kidneys more or less loaded, and by that degree of pressure against the mammæ, impeding the secretion, which, upon such pressure being removed, becomes more abundant.

In some cases of this disease not more

than eight ounces of urine are voided in the 24 hours. When this secretion is much diminished, the general health of the patient is always affected. He has a hot skin, with occasional attacks of chilliness; his tongue is furred of a brown colour; his pulse is quick, and there is a remarkable appearance of depression in the countenance.

These observations are well illustrated by the following case.

CASE I.

A. B. 50 years of age, in October 1809, first experienced a frequent desire to void his urine, and a difficulty in doing it. These symptoms gradually became worse; he observed that the total quantity of urine, which he voided in the 24 hours was diminished, and his general health was disordered.

In the middle of February, 1811, he came to London, for the purpose of procuring surgical assistance. At this time he experienced a violent desire to void his urine, not less than 100 times in 24 hours; but he seldom succeeded in the attempt to void it, and seldom passed half an ounce at one time. The total quantity of urine, which he voided in twenty-four hours, did not exceed half a pint. He experienced great pain in the attempts to make water, which he referred chiefly to the bladder

and middle of the penis, never to the glans. He often experienced pain in the loins, and round the abdomen. The urine deposited a brown sediment, and sometimes contained blood. He had occasional rigors, but they were not violent. His skin was hot and dry; his pulse was quick; he was much emaciated; in a state of debility; and there was a remarkable appearance of depression in his countenance. On the 15th of February, a bougie was introduced, which met with an obstruction at the neck of the bladder.

On the evening of the 16th of February, a flexible gum catheter, of a full size, was introduced into the bladder without difficulty, and half a pint of urine was drawn off. During the night afterwards, he was free from uneasiness; slept well without being once disturbed to void his urine. He said he had not had so good a night since the beginning of the disorder.

On the 17th, the catheter was introduced in the morning and evening, and half a pint

urine was drawn off each time. He was free from pain; was called upon to void his urine only four or five times during the day, and voided a larger quantity at a time.

On the 18th, the catheter was introduced twice: the quantity drawn off each time was greater than before. He voided his urine himself only three times in the day, but passed a larger quantity at a time, and without pain. The sediment in the urine was less.

On the 19th, the catheter was introduced in the evening only. He voided more urine without assistance; and in the afternoon passed nearly a pint at one time.

He continued gradually getting better, and on the 1st of March, he was able to empty his bladder; made water only five times in the 24 hours, and on the average half a pint each time.

This effect of retention of urine in the bladder, readily explains the possibility of a patient remaining for a longer time without relief, than could otherwise be imagined,

and afterwards getting well. An instance of this kind, occurred to me many years ago. A gentleman was four days without passing any water in consequence of stricture in the urethra; the distension was so great, that it was proposed to puncture the bladder; but the patient could not be induced to submit to the operation; at the end of that period he made a small quantity, and gradually more and more, till the bladder was completely relieved; this gentleman is still alive.

The effect of direct pressure upon the mammæ appears to be to impede the secretion, but other irritations increase it.

In a patient who laboured under an enlargement of the middle lobe of the prostate gland, and was liable to occasional attacks of irritation, in which the secretion of urine was so much increased, that it was necessary to retain a catheter in the bladder, the quantity secreted in one of these paroxysms of irritation, was four ounces every hour: in another eight ounces for

six hours together ; and this so regularly, that there was not a deviation of a minute in point of time, nor of a tea-spoonful in quantity. At the end of this period, the kidneys were 24 hours without secreting more than 4 ounces.

It is probable, that this great increase of secretion arises from the orifices of the ureters into the bladder, being præternaturally dilated, and a slight degree of inflammation coming upon the internal membrane of the bladder, and being continued from that cavity along the ureters to the kidneys, and irritating them. The same effect is not unfrequently met with in cases of old strictures in the urethra. Sixty-four ounces, and even a larger quantity, shall be secreted in 12 hours, and afterwards no more than the usual quantity.

Violent hæmorrhage diminishes the secretion of urine. A gentleman 30 years of age, in March 1806, lost 2 pints of blood from the urethra, after which he

had no inclination to make water for 19 hours, although he did not perspire in the least in all that time. He then voided about half a pint: at the end of 14 hours he voided the same quantity: there was an interval of 9 hours before he voided any more, and then of 13 hours, after which his calls to make water were of the usual frequency.

This case favours the practice recommended of bleeding copiously in cases of diabetes.

Tables shewing some of the more common variations in the quantity of urine secreted, when the kidneys themselves are little, if at all affected, are contained in the Appendix.

SECTION VI.

*On Suppression of the Secretion of Urine,
one of the Causes of Death, when the Reten-
tion of Water in the Bladder has been
long continued.*

IN many cases of long continued retention of urine, where the symptoms become very violent, and terminate fatally, there is nothing met with in the examination of the parts in the dead body, to explain the cause of the patient's death. There is no mortification, no rupture of the bladder, nor any other violent injury committed upon it.

In the early period of the distention of the bladder, the principal uneasiness appears to arise from the pressure of the urine against the tender parts at the neck of the bladder; and the pain is referred there and to the glans penis; as the dis-

tention increases these symptoms go off; and the patient does not even experience an inclination to void urine. This arises from the bladder having lost its sensibility, so that pressure is no longer felt, although the bladder is now pressing backwards upon the rectum, and forwards against the abdominal muscles.

The local symptoms having in a great measure subsided, others come on, shewing the constitution to be much disturbed; there is a quick pulse; great thirst; general irritation; anxiety of mind; the tongue is covered with a brown fur; and the patient becomes delirious, with intervals of stupor. Under these symptoms the patient dies, and is not uncommonly believed to have been carried off by a typhus fever, totally unconnected with the disease of the neck of the bladder.

When I had ascertained that no alteration of the structure of the bladder was in these cases the cause of death, I was at a loss to account for its taking place; I

could not attribute it to the effect of inflammation communicated from the membrane of the bladder along the lining of the ureter to the kidney, nor to the pressure upon the glandular structure of the kidney, because the effects of inflammation and retention in the kidneys, do not produce similar symptoms. I have known an abscess form in the pelvis of the kidney, in consequence of the opening of the ureter into the bladder being obliterated by inflammation; the symptoms were, languor, depression of strength, constant nausea, and every thing taken into the stomach was immediately rejected, so that the patient, who was perfectly sensible, died worn out for want of sustenance.

In a case of malformation of the pelvis of one of the kidneys, the opening into the ureter was oblique, so that there was an obstruction to the urine; the pelvis became gradually more and more dilated, till at last it formed a tumor, occupying the greater part of the cavity of the belly.

Under these circumstances the patient died at 22 years of age, but had no symptoms corresponding to those which have been described; although the whole substance of the kidney was found in the examination after death, to have been obliterated, and the secretion entirely to have been carried on by the other kidney.

I was unable to form any correct opinion on the cause of death in this disease, till the following cases came under my observation.

CASE I.

A GENTLEMAN 72 years of age, who for a year before had made bloody urine, when in a carriage upon rough pavement, and for the last six months, had great frequency in voiding it, at the time I saw him, made no water at all. I considered the case to be one of retention of urine, and twice passed a catheter, but found no water in the bladder. In 36 hours after the instrument was introduced, he passed a drop or two; in four days less than a tea-spoonful. On the 5th day two ounces; on the 6th, four ounces; on the 7th, none. In the following night violent straining to make water came on, but none passed. He became restless, impatient, was occasionally delirious, could not be kept in bed, or in any one posture. At night he was scarcely sensible. On the 8th, the pulse began to flag, and at times to intermit. He was hardly sen-

sible, had convulsive twitchings in the arms, and seemed to be in great pain ; two or three table-spoonfuls of water passed involuntarily ; and in a few hours he died.

Permission was not granted to open the body ; I was, therefore, prevented from ascertaining the real nature of the case ; and such is the effect of prejudice, that although I had twice passed a large catheter into the bladder without finding any water, I could not, from the similarity of the symptoms to those met with in cases of retention of urine, divest myself of the idea that this was the disease. I had heard of cases of suppression of the secretion of the kidneys ; but I had never seen one, nor had the parts in such cases been examined after death, at least no account of such dissections had come to my knowledge. I was, therefore, unable to come to any conclusion, till another case of the same kind came under my observation ; and not only established the fact,

that such a disease does occasionally occur, but from the similarity of the symptoms, convinced me, that this which I have just related was of that kind.

CASE II.

A GENTLEMAN had a gonorrhœa, in 1772, and another, in 1784, which was severe, and from that time never made water freely; the stream continued gradually to diminish, and in 1804, was very small, requiring an effort to force the water out. He remarked that the water which he made was considerably less than the fluids taken into the stomach; and that he never seemed to have emptied the bladder, but only passed what was sufficient to take off the present uneasiness.

In this state, on the 3d of June, 1804, in the 52d year of his age, he drank a large draught of cyder; this was immediately followed by a great noise in his bowels, which continued the whole of that day, and the greater part of the next; the noise the wind made was so great as to disturb persons sitting in his company. On the 4th,

he complained of slight pain in his bowels, and took some magnesia and rhubarb ; but this procuring no evacuation, on the 5th, in the morning, he took half an ounce of Rochelle salts, and half an ounce of castor oil. In the evening he took two grains of calomel, five grains of pil. ex colocynthide, and washed them down with two ounces of a purging mixture, which last was repeated every four hours. This was continued till, on the 6th, he had three or four evacuations, he made water as usual, but the urine was very turbid. The having stools, gave him no relief. On the 7th, he had no evacuation by stool, great tension of the abdomen, but made water. On the 8th, in the morning, he made some water while at the night table, but had no motion. His feelings were, that he could not live ; that a mortification had taken place in his bowels. He was perfectly collected, and made all his arrangements, and became very impatient for death.

On the 9th, he neither had a stool, nor

made any water. He continued sensible, exceedingly restless, could not lie still, was anxious to die, complained of internal heat in his loins, great thirst, and kept constantly wetting his mouth with two or three tea-spoonfuls of weak tea, which was highly grateful to him.

On the 10th, continued in the same state, taking nothing but thin liquids, and was at times incoherent in his mind, but readily recovered himself when spoken to; as he had made no water since the 8th, and had been constantly taking liquids, and the lower belly was tense; it appeared probable, that the present symptoms might arise from the distended state of the bladder; it was, therefore, proposed to draw off the water, but in the attempt a spasmodic contraction was met with, which at first did not admit the smallest catgut bougie to pass; but by making six or seven different trials, a small one went on to the bladder; when withdrawn no water followed. Bougie was passed after bougie,

and in the course of an hour, a very small catheter was introduced into the bladder, but only drew off two ounces of water. This gave no relief, but brought on a desire to make water, which he had not experienced for two days. He now became less collected, had a very restless night, would not go to bed, but sat up in a chair, said that his kidneys were burnt up, that his inside was consumed, and his throat parched; and on the 11th, at ten o'clock in the morning, he died.

On inspecting the body, there was a very slight appearance of inflammation on the peritoneal covering of the intestines; the colon was much distended, as well as the small intestines; but there was no fluid in the general cavity of the abdomen, nor redness in the coats of the bowels. The bladder was contracted, and entirely empty. Its internal membrane was fasciculated, which proved that it had been previously diseased.

The kidneys and ureters were not much

more than half the natural size. The other viscera were in a natural state.

On laying open the kidneys and examining their internal structure, the following appearances were observed. The cortical substance was loose in its texture, and contained so little red blood, that there appeared to be a fatty matter intermixed with it, but when steeped in water, this appearance went off, as it had arisen entirely from some parts having more blood than others. The mammæ were compact in their texture, and even more so than these parts are after having been coagulated by spirit; they were unusually distinct in their base from the cortical part; oviform, and more blunted at the apex, than in a healthy state. The pelvis was small, and the processes leading to the infundibula, as well as the infundibula themselves, were contracted. There was also a considerable quantity of fat, filling up all the interstices on the outside of the pelvis, between the mammæ and the processes leading from them.

The effects produced in the constitution by a suppression of the secretion of urine being so very similar to those, which occur when the patient dies from a complete retention in the bladder, makes it reasonable to conclude, that in such cases, the pressure of the urine against the mammæ stops the secretion in them; were that not the case, the bladder would be ruptured, or greatly distended, which does not commonly happen. Of this fact, I have had abundant experience, and insert the following as an instance.

CASE III.

A. B. between 50 and 60 years of age, was brought to St. George's Hospital, June 8th, 1804. For twelve years preceding he had had difficulty in making water from a stricture, and for two days before his admission had only made a few drops, attended, with great pain, and tension of the belly; bougies and catheters were attempted to be introduced, but to no purpose; twice he went into the warm bath, and had fomentations applied to the region of the bladder; three or four starch glysters with laudanum, were given; he was every hour getting out of bed; running about the ward, crying out with pain, and voiding a few drops of water after violent straining; his restlessness was so great, and the pain so intense, that he could not be prevailed on to lie still; his tongue soon became dark-coloured and furred; his pulse was quick,

and his skin hot, and he was much inclined to sweat. 10th, he took aq. kali pur. 15 drops, and tinct. opii, 20 drops. 11th, port wine, a pint daily, and a strong bark mixture were given. About this period the penis became swollen and ædematous, so much so, that the glans could not be denuded to find the orifice of the urethra; livid spots soon appeared on the penis. He still continued extremely restless, would get out of bed, and void the urine by drops about the ward. Two days before he died, which was on the 16th, vomiting came on of brown fæculent matter; and within 24 hours of death, a delirium ensued, which continued till his strength was exhausted, when a comatose state followed, and in this way he went off. On examination of the body, the kidneys were found to be smaller in size, and of a softer texture than common. The bladder was much distended with a dark coloured fluid, and there was inflammation near the neck and prostate gland. A stricture was found

about seven inches, and a very small aperture through it ; and directly behind it, was a portion of coagulated blood, an inch nearly in length, completely filling up the urethra.

When the constitutional symptoms produced by a suppression of the secretion of urine, in consequence of the pressure upon the mammæ have gone a certain length, the drawing off the urine is of no avail.

In one case where the bladder was very much distended, and had been allowed to continue in that state three days, I succeeded in drawing off the water, and the patient sunk into a sound sleep, and in three hours died. The bladder was found entire.

I visited a patient under these circumstances, twenty miles from London : when I arrived, it was stated, that the complaint was not in the bladder, but in the stomach ; that the patient, it was true, had made no water ; but no secretion was going on, and his bladder was not distended. Upon passing a catheter, I drew off three pints of water ; and in six hours more, a pint and a

half, which had been collected in the kidneys and ureters; but the patient immediately sunk into a dosing state, and died in two hours.

In another case of long continued retention of urine, upon my arrival, I found my patient, who was 70 years of age, occasionally wandering in his mind; he scarcely knew me, and was beginning to dose. Upon emptying the bladder, which contained a pint and a half of water, he almost immediately fell asleep, perspired freely, and awoke in three or four hours, tranquil and refreshed. He recovered perfectly, and lived for several years. From what has occurred in other cases, I have no doubt, that if the water had been retained but a few hours longer, drawing it off would not have afforded relief.

The following case, with which I shall conclude this Chapter, proves that pressure against the mammæ stops the secretion of urine, and that when such an event takes place, death is the consequence.

CASE IV.

A YOUNG man, about 24 years of age, in all other respects in perfect health, very strong and muscular, was on the 27th of November, 1790, immediately after making water, suddenly seized with a violent pain in the region of the kidneys, with a constant inclination to make water, without being able to void any. A catheter was passed, and no water was found in the bladder. The pain increasing, he was bled, took purging medicines, had clysters administered, was put into the warm bath, and all means were used that could be devised to stop the progress of inflammation; but nothing appeared to have the least good effect; on the contrary, the pain increased to a degree of torture, which no quantity of opium that was given (which at last was very large), had the least effect in mitigating. He continued in agony for seven days, without having made any

water, and died. On opening the body, no trace of a kidney could be found on the left side, and in the ureter of the right side, was found a stone, that completely stopped up the canal. The bladder was empty.

CHAPTER III.

ON THE MODE OF TREATMENT OF CASES OF
ENLARGEMENT OF THE MIDDLE LOBE OF
THE PROSTATE GLAND.

THE diseased enlargement of this lobe, when arrived at a great size, is allowed by every one to have gone too far to admit of a cure; and it is very generally believed that the disease is equally desperate in all its other stages.

One object of the present Work is, to do away this prejudice, and to shew that, if attended to in proper time, the enlargement may in many instances be reduced, in others prevented from increasing, and, even in less favourable cases, rendered so much slower in its progress, that the patient's life is prolonged, and his sufferings mitigated in a very great degree.

SECTION I.

On the Means to be employed in the First Stage.

IN the first stage of the disease, when the membrane of the bladder is only pushed forward by the lobe beginning to enlarge, and no absolute obstruction to the passing of the urine is brought on, bleeding from the loins, opiate glysters, and the internal use of Dover's powder, are the means to be had recourse to. The use of the tepid hip bath for 15 minutes once in the 24 hours, at 94° or 95° of temperature, quietness and abstinence, and the other means in common use to allay irritation, are to be employed; but on no account should catheters or bougies be introduced, more especially those of the metallic kind, since when done in the most skilful manner, they must produce a degree of disturbance

which the parts are not in a state to bear ; and if an instrument is unskilfully passed, it will increase the swelling, and bring on a complete retention of urine.

As the vessels of the prostate gland are liable, in the advanced stages of life, to become enlarged, whenever I am consulted in a case of this kind, I immediately recommend the patient being cupped on the loins. This is very commonly objected to, on account of a prejudice, that has gone abroad against taking blood from people at an advanced period of life : this objection should, however, in the present disease be over-ruled, since in many cases, by bleeding from the loins, without resorting to any other means, the symptoms have been entirely removed.

A gentleman 85 years of age, who had had a paralytic attack of a slight kind, consulted me about a frequency in making water, which was most distressing in the night. I advised his being cupped on the loins, which relieved this symptom ; but

as he lived very freely, it returned once or twice, and sometimes oftener in the year, but yielded invariably to the same treatment, which I advised him by all means to resort to whenever it came on, both with a view to his present relief, and to prevent his having another paralytic attack. This, however, when he was at a distance from me, was not attended to, the physician who was consulted objecting to take away blood; and he died of an apoplectic fit.

Attacks of this kind are generally attributed by the patients themselves to a stricture in the urethra, as that is now commonly understood to be the prevailing complaint which creates frequency in making water, and therefore they propose having a bougie passed; but if it is found on enquiry, that in no former part of his life the patient has had such a disease, and he is now advanced in years, it may be laid down as a certainty, that it has not now taken place; and therefore, upon

that ground, there is no reason for passing a bougie. Yet, if a bougie is passed in the present irritable state of the parts, it will not uncommonly be stopped about five inches and a half down the urethra, or in some other part of the canal. This does not arise from any permanent stricture, but from the urethra being in an irritable state, and liable to spasmodic contractions, in consequence of the disease at the neck of the bladder. It is of the greatest consequence that the surgeon should be aware of this circumstance; he will otherwise entirely mistake the nature of the complaint, and instead of taking the most proper means for the patient's relief, will aggravate all his symptoms by attempts to dilate the stricture, which are entirely unnecessary, since, when the irritation is removed, the spasm of the urethra will go off.

SECTION II.

On the Mode of drawing off the Urine.

WHEN it is found that the frequency in voiding water increases, and the efforts to make it pass are more violent, it will be proper to put the hand upon the lower part of the belly, and ascertain whether there is any fulness in the region of the bladder: if the parts are soft and pliant, every suspicion of that kind may be removed; but if the parts are turgid, and have a regularly circumscribed form, corresponding to that of the bladder, no time should be lost, a catheter should be immediately introduced, and the water drawn off. The previous bleeding which the patient has undergone, will be the best possible preparation for this operation.

In the introduction of the catheter there are three things to be attended to: the first

is, to avoid bringing on a spasm of the urethra; the second is, conducting the point of the instrument over the prominence at the neck of the bladder; and the third, to employ an instrument that is fitted to be retained in the bladder, should much difficulty have occurred in the introduction, as less disturbance is found to arise from an instrument remaining in the bladder, than is produced by repeating the operation of introducing it, where any degree of violence is committed upon the parts.

The instrument should be very soft and smooth, to prevent its disturbing the urethra, rounded at the point, and as large as the canal will easily admit, that it may more readily disengage itself at the turn into the bladder: the apertures in its sides should be wide, to prevent their being clogged by mucus or blood; and it should be pliant, that it may adapt itself to the form of the parts, and give little disturbance while retained in it. Besides

these properties, there is another, which it is very desirable that it should possess; this is, a permanent curvature at the point, even to a greater degree than is usually given to the common silver catheter.

The only instrument with which I am acquainted, capable of possessing all these requisites, is the elastic gum catheter; but it requires years before it can be made to acquire the permanent curvature which I have described, and for that purpose it must be constantly kept upon an iron stilet of a proper shape. This has not been attended to; and the makers neither in England nor France give their flexible catheters a proper shape, but either keep them quite straight, or so curved, that the curvature is not regularly continued to the point, and is therefore of no use in practice.

This has arisen from surgeons being in the habit of only using these catheters with stilets; not aware of the advantage to be derived from using them in this particular disease in a more pliant form, and there-

fore, not having given directions either to the makers or venders upon the subject.

This has been a great oversight, and has deprived the flexible gum catheter of one of its greatest excellencies, both in the present disease, and in cases of stone attended with great irritation; since in many instances of both complaints, an instrument so prepared, will admit of being introduced without pain into the bladder, when a common catheter cannot be passed at all, or with much pain to the patient, and no small difficulty to the surgeon.

For the last ten years, I have had a large supply of catheters carefully formed into a proper curve, and with them have been able to draw off the water in cases in which other surgeons, who did not possess them, have necessarily failed. I have also sounded patients for the stone, and succeeded in discovering a calculus, which has eluded the search, when made by any other instrument.

The advantages of such an instrument in sounding for the stone, are so great, that for many years I rarely have employed any other. The operation is performed, without the patient having an idea that any thing is to be done but to pass a common bougie, which gives no alarm. The instrument gives little or no pain in passing, it empties the bladder, the coats of which are allowed to contract without effort, and therefore, without irritation; whatever is contained in the cavity, is brought down to the orifice, and readily felt by grating against the orifices on the side of the catheter, and the parts are left in a more tranquil state than before the operation, because the instrument prevents the calculus from coming upon the orifice of the bladder, the situation in which it gives most pain. I was led to adopt this mode of examining the bladder, by the following circumstance, which occurred about 13 years ago. I was consulted respecting a complaint in the bladder, which had foiled

every attempt that had been made for the patient's relief, by several surgeons of eminence in London; they had not even been able to ascertain what the complaint really was. At the time I was called in, I was told that I was not to be permitted to sound the patient, as that operation had been performed by a very skilful and experienced surgeon, who had satisfied his mind, that his examination of the bladder was complete, and that there was no stone there; that the pain had been so severe, and the consequences so distressing, and of so long a continuance, that the family could not submit to the operation being repeated. On conversing with my patient, I found, that he had every symptom of stone, and none belonging to any other disease; every thing had been done that could be devised, both in the way of internal treatment and external application, except drawing off his water. I made a remark, that as that was the only thing that had not been done, I thought it should be tried, more especially

as it would not give pain, and might throw some light upon the complaint. He readily submitted to having the flexible gum catheter passed, which was done with great facility; about two ounces of water were drawn off, and something hard was distinctly felt to strike against the point of the instrument; the point of the instrument being pushed a little forward, I felt the substance go before it: the patient said immediately, that he was quite easy; all the pain was gone. I told him there was a stone, that I had pushed it away from the orifice of the bladder, and the pain would return, as soon as the stone came back into the situation from which it had been removed.

From habit, I am now so well acquainted with the feel of a stone with this instrument, that in one case I detected one, when two other surgeons were unable to do so, and when I could not detect it with any other instrument; and was sufficiently satisfied with this evidence, to perform the

operation, which was attended with success, and the patient restored to health.

These observations on sounding for the stone, will not, I trust, be considered as misplaced, as they tend to shew one more advantage from the use of the flexible gum catheter, when properly prepared for being introduced into the bladder.

As I consider the bringing into use the flexible gum catheter without a stilet, a matter of very great importance, it is necessary that I should make myself clearly understood upon two points, which ought to be generally known respecting the introduction of an instrument into the bladder of a patient labouring under an enlargement of the middle lobe of the prostate gland.

These are, that in some cases a flexible gum catheter with a stilet, cannot pass along the urethra on account of spasm; and although, without a stilet, it readily goes on to the neck of the bladder, unless it has a permanent curvature that will

keep its form when opposed by a certain degree of resistance, it cannot be conducted into the cavity of the bladder. Such cases are by no means uncommon, and in some of them, if the surgeon is not in possession of such an instrument, he will be unable to give his patient the necessary relief without having recourse to the operation of puncturing the bladder, a very severe one, when compared with the passing of a flexible gum catheter. The following case will put this in a still clearer light. A gentleman, 70 years of age, had a difficulty in making water, voiding only a few drops at a time, and constantly straining to force them away, so that the pressure kept up at the neck of the bladder, was very great; this produced spasm in the urethra. As the bladder was loaded with water, it became absolutely necessary that the urine should be drawn off. The gentleman lived 40 miles from London, and called in my assistance: I went provided with catheters of different kinds, but as it

was 16 years ago, had none well fitted for being passed in a flexible state. I was aware of the difficulty I had to contend with at the neck of the bladder, and prepared my instrument to overcome it, by giving it a considerable curvature upon an iron stilet, but found that it could not be passed further down the urethra than five inches and a half; when I took out the stilet, it went on with great facility to the verumontanum, but could not be conducted into the bladder. There was reason to hope, that by keeping the flexible instrument in the urethra a little while, and immediately upon withdrawing it, following it with one upon a stilet, it would pass before the spasm returned; but every attempt of this kind failed. I was, therefore, obliged to confine myself to trials with catheters in a flexible state, and picked out one which had been long enough upon a stilet, to have got some degree of curvature at the point; with this I made several attempts, varying, as much as I could, the direction of the

point, and in this way was fortunate enough to succeed, and draw off the water. When the bladder was emptied, and the pressure removed from the orifice, there was no longer the same disposition for spasm in the urethra, and in future attempts to draw off the water, I succeeded with one upon a stilet, as well as without.

The urethra is liable to the same kind of spasmodic affection, when the neck of the bladder is irritated from any other cause. It frequently occurs in cases of stone in the bladder, more particularly at the time when an operation is about to be performed. The state of mind at that time, and the uncomfortable position in which the patient is placed, as well as the exposure of the parts to cold, may all conduce to bring it on. I have known the late Sir Cæsar Hawkins and Mr. Hunter, both employed for half an hour in introducing the staff, which was not at last accomplished, till this spasm was removed by the patient being quite exhausted, and

warm applications made to the parts. This spasm may in general be prevented from coming on, by passing the staff while the patient is standing opposite the end of the table, before his mind has become much agitated, or his body is put into an uncomfortable posture.

In using the gum catheter in a flexible state, if it does not pass at the first or second trial, it should be withdrawn, and another employed; for the warmth of the parts, and the act of passing it along the straight part of the canal, makes it so soft, that it loses its curve, and does not regain it again till put upon the stilet, and exposed to cold.

Where catheters fit for use, in a flexible state, are not to be procured, or will not pass, a leaden stilet should be used, as it gives a sufficient degree of support to overcome the usual resistance that is met with, and can be withdrawn, when the instrument is in the bladder, with less disturbance to the prostate gland.

When the catheter neither in its flexible state, nor with a leaden stilet, can be passed, there is often an advantage in using an iron stilet; a more permanent curvature can by this means be given to the instrument, and when the point arrives at the neck of the bladder, a still greater degree of curvature can be given it by withdrawing the stilet, which forces the point forwards, and often carries it into the bladder. This object may be better obtained in such cases by using a large sized instrument, whose end is so round as to prevent it from being entangled in the irregular surface produced by the disease, and will be less liable to do injury to the parts.

The force of this observation will be best seen by an attentive examination of the annexed Plates, in which the capacity of the canal at the orifice of the bladder will be found to be greater than has been at all known. There are cases in which a metal catheter will pass more readily along the urethra, and from the smoothness of the

holes near the point will be less liable to be impeded at the neck of the bladder, than any of the others. These cases, however, in whatever number they occur, are in small proportion to those for which such instruments are not adapted; and whoever examines the appearances put on by the middle lobe in the different stages of disease exhibited in the annexed engravings, will require little persuasion from me to be induced to believe, that hard metallic instruments should never be employed when the others will answer the purpose.

In diseased urethras the polished surface, and the hardness of a metallic instrument prevents it from being grasped, and may be passed in some cases where a bougie cannot, and in such instances it is to be preferred; but where the neck of the bladder is diseased and the urethra is sound, we are to use the instrument which is least likely to injure the diseased parts.

In the human body the diseases of the same parts differ in some way or other in



every two individuals, so that it is impossible to lay down rules, which are adapted for the management of every case ; and it requires more than the length of an ordinary life, to get knowledge enough of any one disease, to establish even such general principles of treatment as are adapted to the greatest number of cases. It is much easier to take up some few instances of an uncommon kind, and shape our practice to these particular cases : in this way metallic bougies and metallic catheters have got into use among surgeons much beyond what, in my judgment, they ought to have done, although I am ready to admit there are many cases in which they may be usefully employed.

In passing the catheter a degree of nicety and lightness of hand is necessary, which can be no where acquired but in the school of experience, and that in cases of this particular disease. It is not, therefore, to be expected that many should arrive at it, since the opportunities afforded must so

frequently be insufficient for the purpose. An eminent engraver, on whom I passed a catheter, after unsuccessful attempts had been made by others, told me that he saw by the light mode of handling the instrument that I was master of it; and that in his own art the graver required a management in the hand which it was difficult to learn, and only to be acquired by practice. The catheter should be introduced either towards the right or left side with the handle nearly in a horizontal line, and when it reaches the membranous part of the urethra, the handle should be gently and gradually brought towards the perpendicular line, the point all the time being kept in motion; and when it is nearly upright the handle should be depressed: where the flexible catheter has no stilet, a good deal of dexterity is often required. The great advantage of passing the instrument in a lateral direction, is, that the point is by that means guided into the space between the lateral and middle lobe of the prostate, where

there is a groove, along which it may be directed, between these two projecting parts, into the cavity of the bladder. In this part of the operation the greatest nicety is required; for if the point is too much pressed on, it is entangled in the membranous fold between the two lobes; and this very frequently happens: when this takes place, a second and third attempt made in the same way will most commonly carry the point into the same spot. There will, therefore, be an advantage in partly withdrawing the instrument, and trying to introduce it on the opposite side, where the same thing may not occur.

If the catheter without the stilet cannot in this way be made to pass, it must be tried with a stilet, and if it is still prevented from going further than before, a finger introduced into the rectum and pressing upon the curved part of the catheter may give it a right direction so as to guide it into the bladder.

Wherever any degree of difficulty has

occurred in passing the instrument the first time, it is always prudent to retain it in the bladder ; for unless it is introduced again in five or six hours, its having been introduced at all is of little use ; for in that period the bladder is generally as full as it was when the water was drawn off. Whether this arises from the accumulated fluid in the kidneys passing into the bladder, or from the pressure taken off from the mammæ, making them secrete more freely, is immaterial ; but the fact is of importance, since it makes it necessary again to empty the bladder, and the disturbance the parts received in the first operation, cannot so soon have gone off, and therefore must increase the difficulty in the second attempt.

Much has been said respecting the posture of the patient most favourable for the instrument being passed ; it appears to me that in this respect the ease of the patient is to be principally considered ; for in that position which is most easy, the parts will

be in the most tranquil state. The standing position I prefer, but not to that degree to make a patient get up when lying in bed. Where it is necessary to introduce the finger per anum, of course the recumbent posture must be employed.

When the instrument is passed and it is determined to keep it in the bladder, it is necessary to observe when the cavity is empty, how much of the catheter projects beyond the external orifice at the glans penis, and cut off all that is superfluous, only leaving an inch, by means of which it may be secured on each side to prevent it from either coming out or going further into the bladder ; the orifice is to be stopt with a wooden peg, as corks are apt to break ; and this is to be withdrawn whenever the inclination to make water comes on.

The best mode of securing the catheter is to apply, in the usual way, a common T bandage, the longitudinal band of which is divided up the middle, into two portions,

one of which lies in each angle between the scrotum and thigh, and furnishes a fixed point, to which the catheter may be secured by ligatures. The catheter thus secured is less liable to slip out of its place than if it was merely fastened by a ligature round the penis.

The time the instrument is to remain in the bladder must depend upon circumstances : if it can be kept there without great inconvenience, it should be left in three or four days ; but if the patient is much troubled with erections, or the bladder is rendered very irritable, it had better be taken out ; and in general it will be found that there is not the same difficulty in passing it the second time as the first. Whether it is afterwards to be kept in, or to be introduced each time that the urine requires to be drawn off, must be determined by the degree of facility with which the catheter can be passed.

The object to be obtained is, that the middle lobe may be as little disturbed as

possible till the inflammation and swelling have subsided, and there is a free passage to the urine. It is hardly necessary to state that while the bladder is full, and the patient, by strong efforts to get rid of his urine, is pressing it against this lobe, there is no chance of these desirable objects being obtained.

SECTION III.

On the Circumstances under which the Swelling of the Prostate Gland subsides, and the Bladder recovers its Tone.

To relieve the middle lobe of the prostate from the pressure of the urine, and the violent efforts, which are made by the bladder and abdominal muscles during the patient's exertions to make water, the urine should be regularly drawn off every eight, six, or even four hours, accordingly as the secretion is more or less rapid, and the patient should be requested never to strain to make it himself, or at least only occasionally, and with the least possible effort.

Soon after this treatment is adopted the internal membrane of the bladder becomes less inflamed, the secretion from the prostate gland diminishes in quantity, and loses the extreme tenacity which it before pos-

sessed, and all pain and uneasiness subside : these changes take place not uncommonly in two or three days, although not always so soon.

The secretion of the urine is very often considerably increased, probably arising from its passing more freely from the kidneys than it did before, and therefore leaving those glands more at liberty to perform their functions. The constitutional symptoms of thirst, restlessness, and general indisposition which arise from the diminished secretion of urine, subside. The bladder admits more readily of dilatation now than it did before, and holds a much larger quantity of water ; it therefore cannot so readily throw off a portion of its contents as when its muscular fibres were less upon the stretch. This circumstance will very often alarm the mind of the patient, who is wholly intent upon being able to make water. He could before with great efforts make a little, but now he can make none, even with apparently greater efforts ; but

these are made with the abdominal muscles, not the coats of the bladder. It is, in fact, much better that he should for a time, make none by any exertion of his own, that the parts may remain in the most tranquil state that can be given to them.

When the bladder has been kept in an over distended state, it loses its sensibility, and its muscular coats lose the power of contraction, so that it is, for the time, in a paralytic state: a few days, however, only are necessary for the fibres to recover their action, after all resistance is removed to their efforts; but this cannot take place, while the urine is only drawn off once or twice in the 24 hours. In many such cases this is not adverted to, and the existence of a tumor is overlooked, the whole disease being supposed to be the paralytic state of the bladder, for the recovery of which, internal medicines are exhibited, and it is deemed unnecessary to draw off the water more frequently, than the feelings of the patient seem to require. The cure for

this paralytic affection, is either leaving the catheter in its cavity, and every three hours drawing off the water, or passing the instrument at the same intervals.

The following case shows the readiness with which the bladder recovers from this state of over-distention.

CASE I.

A GENTLEMAN, 39 years of age, became affected with strictures of the urethra, in consequence of the use of irritating injections during the inflammatory stage of a very severe gonorrhœa. The progress of the disease had not been checked, although many internal medicines had been used; electricity afforded no benefit, nor did the common bougie give the usual degree of relief. The distressing symptoms were, difficulty in making water, afterwards occasional suppressions of urine, which could only be got the better of by the introduction of a small bougie. In this state, in the year 1797, having then laboured under the disease during seventeen years, he put himself under my care. The armed bougie was applied to a stricture at six inches from the external orifice of

the urethra, several times. This relieved the disposition to spasm, the cause of the occasional suppressions; and although he was obliged to go into the country before his cure was completed, he remained without any very urgent symptoms, till the year 1805, when he was again seized with a suppression of urine, and came under my care. Besides the constant difficulty of expelling the urine in any quantity, and the occasional suppressions which took place, the urine dribbled from him involuntarily, and his bowels had become so irregular in their action, that he seldom had an evacuation without the aid of medicine. He often complained of sickness, and had frequent paroxysms of fever. The caustic was again had recourse to; the application at several different times brought on temporary suppressions of urine, and paroxysms of fever. On the 2d of November, the armed bougie was applied about eleven o'clock in the forenoon, at two o'clock there was a difficulty in

making water. This increased, and at eleven o'clock of the morning of November 3d, he was unable to void any urine. He continued in this state till eight in the evening, when a violent pain attacked him in the belly, for which an opiate glyster was injected. In two hours he passed some water; and in the course of the night voided more, at four different times, but the pain in the abdomen increased. On the morning of the 4th, at eight o'clock, an attempt was made to throw up an aperient glyster, but the pipe could not be introduced. At ten o'clock, when visited, he said, that he had voided some water without much difficulty, but he complained of insupportable colicky pains in the bowels, and had no desire to make water. Upon feeling the belly, the bladder could readily be distinguished in so great a degree of distention, as to fill up the abdomen nearly as high as the navel, and it appeared that the bladder, thus distended, pressed upon the rectum allowing nothing to pass, pro-

ducing the distress he complained of in the bowels. As soon as this was ascertained, a small bougie was passed through the stricture, and when it had been retained there for ten minutes, it was withdrawn. A teaspoonful of water followed immediately, but by pressing upon the belly, two ounces more came away.

This was repeated, and no water came without similar pressure, the bladder itself having no action. In this way the bladder in less than an hour was completely emptied, the quantity of urine passed was three pints. The pains in the abdomen ceased, and did not return. Next day the bladder could empty itself, with the assistance of the abdominal muscles, and continued to do so, the resistance from the stricture having been much diminished by the enlargement of its aperture. This gentleman in about a month had the stricture entirely removed, and his bladder performed its functions as perfectly as in other persons in health.

I have endeavoured to show that all the material symptoms which this disease in the prostate gland produces, arise entirely from the obstruction given to the urine in its passage from the bladder, and that they are completely removed by an artificial mode of emptying the bladder, when judiciously used.

This must be admitted to be the most essential part of the treatment, and in practice it is found, that when it is closely pursued, in very many instances the swelling subsides, and the patient is enabled to make water as usual.

There is an opinion very generally received by medical men, that when once a tumor is formed, extending itself into the cavity of the bladder, there is no mode by which it can be reduced; and this opinion may be founded upon the inefficacy of every means that have been employed to reduce tumors in whatever parts of the body they form: but the present swelling is not to be considered in that light; it is not a new part formed by some unnatural

actions of the blood vessels, as tumors in general, nor is it an excrescence from the body of the gland, as has been generally supposed, but it is an enlargement or swelling of a natural part, as much so as an enlargement of the tonsils, in consequence of inflammation, and like them by quietness, and such means as lessen inflammation, it subsides.

The time required for the lobe being sufficiently diminished, to allow the water to pass, will vary exceedingly in different cases. In some where relief is given at the beginning of the attack, the patient shall get well in a few days; in others it shall be weeks, months, or even years; and as it is a disease of old age, when the actions of the different parts of the body are slow, in patients above 80, the disease, under the treatment I have proposed, shall remain stationary as long as the patient lives, without appearing to have been the cause of death, or even having tended to shorten life.

Many patients who have acquired the

mode of passing the catheter upon themselves, have gone through the remainder of their lives, a period of seven or eight years, without any symptoms of distress, or other inconvenience; and with so much ease does the instrument pass in some cases, that, from habit, no uneasiness is felt.

In cases of this kind, I have found no other means attended with material advantage; the tepid bath, made of salt or fresh water, is very commonly employed, but after the first symptoms of irritation are removed, I rather believe it does harm; in no one instance have I seen it do good.

Cold sea-bathing I am inclined to recommend, although my experience is not sufficient to say more of its use, than that it makes the patient less liable to be affected by the changes of the weather, and seems in every respect to agree with him. This, however, is not to be adopted in gouty habits, or after 60 years of age.

Various internal remedies are recom-

mended, but none that I am acquainted with, have any specific power over the disease. The bowels are to be regulated, since a confined state of the body aggravates all the symptoms. Irritation is to be allayed, and is best done by means of euemas with opium; symptomatic fever is to be removed. On these points, I have nothing new to offer, as every well educated practitioner must be sufficiently acquainted with the means that are generally employed.

SECTION IV.

Cases illustrative of this Mode of Treatment.

IN detailing cases in which the mode of treatment above recommended has been attended with success, it has only been thought necessary to state a sufficient number, to prove the position that has been laid down. Many more, were it necessary, might be brought forward; but as the doing so would only be a repetition, without conveying additional information, it has purposely been avoided.

Were it not that there is something more instructive to the young practitioner in detailing the little circumstances which occur in practice, than in making general observations, the number which is brought forward, might be made still smaller; but in a practical work of this kind, nothing should be

omitted that can give clear ideas to those who are young enough to learn, and, therefore, most likely to be benefited by such publications.

CASE I.

AN Italian servant of a nobleman, 68 years of age, in November, 1804, first experienced a difficulty in voiding his urine. During the following winter, this symptom increased to a considerable degree: he voided it with pain, and in small quantities at a time; the urine was frequently bloody, and constantly deposited more or less of a sediment of a white colour, and of a mucous consistence, resembling the white of egg. Occasionally he experienced a total retention, but not of long continuance. All these symptoms became aggravated towards the end of the winter. On the 26th of April, 1806, he awoke at two o'clock in the morning: on endeavouring to void his urine, he found himself unable to do it. During the day, he was still unable to void the smallest quantity, and he suffered in consequence a great deal of pain and uneasiness.

At half past four in the afternoon, a small flexible gum catheter, the only one at hand, was introduced, but it met with an obstruction at the neck of the bladder, which prevented it from entering that cavity.

At half past six, a large silver catheter was introduced, which readily went into the bladder, and three pints of urine tinged with blood were drawn off. I requested Mr. Brodie to take charge of the patient: he saw him at one o'clock of the morning of the 27th of April, when the patient again experienced great uneasiness from the bladder being distended, and as there was an inability to void any urine, the catheter was again introduced, and three pints of urine were again drawn off. He continued free from uneasiness till six o'clock, when he again felt a violent desire to void his urine, and on the catheter being introduced at seven o'clock, a pint of urine was evacuated. This urine, and

that before drawn off, deposited a mucous sediment in large quantity.

The catheter was introduced three times in the course of the day.

April 28. The urine deposited less mucus. He was free from pain, and voided small quantities of urine himself when his bladder was full. The catheter was introduced three times, and each time about twelve ounces of urine were evacuated.

April 29. The catheter was introduced three times.

April 30. He voided more urine himself; the quantity which remained in his bladder was diminished. The catheter was introduced twice.

May 1, May 2, May 3, May 4. The quantity of urine which he voided himself, increased, and that which was retained in his bladder diminished every day. The catheter was introduced twice each day.

From the 5th of May, to the 18th, there was only occasion to introduce the catheter once in the 24 hours.

From the 18th of May, to the 24th, the catheter was introduced on the alternate days. He now was able to empty his bladder without the assistance of the catheter; there was no mucus in the urine, and he was in all respects well, and the use of the catheter was left off.

CASE. II.

A GENERAL officer 75 years of age, was seized with an attack of irritation upon his bladder, as it was believed, for he was incessantly making water, and only in small quantities at a time. He sent for his physician, who prescribed medicines for his relief; the physician called upon me, and told me that my friend had such a complaint, and would take a visit from me as an act of kindness. I expressed a doubt of his emptying his bladder, and stated an opinion that that was the real disease. He begged of me in that case to lose no time in calling on him. I went to the patient and persuaded him to let me draw off his water: I found a pint and half had been retained in the bladder, the evacuation of which entirely relieved his distress. I called in six hours, and drew off more than

a pint; he had a good night, and next day made a considerable quantity without assistance; upon passing a catheter, the quantity retained was not more than six ounces. I drew off the water again the following day, just after the patient had made water, and found only two ounces, which enabled me to say, that it was unnecessary to pass the catheter again. He continued well for two years, and then had a similar attack; this, however, did not subside so readily, but went off under the same treatment in about a fortnight; after which, he continued well, and died of old age between 80 and 90.

This is one of the few cases in which, from an accidental circumstance, the patient received almost immediate assistance, and consequently got sooner well than any other patient that has been under my care.

CASE III.

A GENTLEMAN about 72 years of age, had a difficulty and frequency in making water; this increased so much as to bring on a complete stoppage, which made it necessary to draw off the water; this was at first done morning and evening, which was all that was required to keep the patient in a state of ease; but at the end of three days, the secretion of urine was so much increased, that it became necessary to pass the catheter every eight hours. A physician attended, and tried the effects of the uva ursi, quince-seed, gum tragacanth, and various other internal medicines, but there did not appear to be the smallest benefit derived from using them. By going on steadily, drawing off the water three times a day, the prostate gland gradually recovered itself, and the patient made a greater quantity of water without assist-

ance. In about two months, he was so well that the catheter was no longer used.

In two years he had a relapse, in which the urethra was more affected by spasm, and the kidneys were more irregular in their secretion; the catheter was kept in the bladder; he had an inclination to make water every two hours, and in that interval the quantity secreted was 8 ounces; this continued for 12 hours, and the next 24 hours, the kidneys only secreted four ounces. He again recovered in a little more than ten weeks, and in two years more, he had a third attack, from which he got well in nearly the same time. He died at 80 years of age of a complaint in his bowels.

CASE IV.

A GENTLEMAN about 64 years old, in July, 1806, after having been more costive than usual for several days, was seized with an inability to void his urine. The surgeon of the place attempted to introduce a catheter, but as he did not succeed in doing it, I was sent for. I found him with his bladder much distended, but without pain or fever. I introduced a catheter of elastic gum, which passed with ease, and drew off about two pints of urine. About six hours afterwards, he experienced a desire to void his urine, but was unable to do it; and a pint of urine was drawn off by means of the catheter. He then came in a carriage to town, from which he was only sixteen miles distant. He bore the journey without any inconvenience. The catheter was introduced twice every day. At first he voided no urine without the

assistance of the catheter, but he experienced no pain, and there was little or no sediment in the urine. At the end of a fortnight, he voided some urine by natural efforts, and the quantity drawn off by the catheter was reduced to seven ounces and a half. On the 17th day only five ounces were drawn off by the catheter, and it was not judged necessary after this time, to introduce the instrument oftener than once in the 24 hours. On the 26th day, the quantity of urine remaining in his bladder, was diminished to two ounces and a half. On the 27th day, the instrument was not introduced. On the 28th day, an ounce and a half of urine was drawn off. On the 29th day, the instrument was again omitted. On the following day only half an ounce of urine was found in the bladder, and the catheter was not after this employed, and he was in all respects well. Upon taking my leave of him, I explained the nature of his complaint, and the risk attending his going into the country at

any distance from London. He continued well for four years, which made him neglect my advice, and he went 100 miles into the country; a stoppage of urine came on, and for want of proper assistance, he fell a sacrifice to this return of his complaint.

CHAPTER IV.

ON THE ENLARGEMENT OF THE MIDDLE LOBE
OF THE PROSTATE GLAND, WHEN IT COMES
ON WHILE THE PATIENT IS LABOURING
UNDER STRICTURES IN THE URETHRA.

THESE two diseases, from the vicinity of the parts in which they take place, have many symptoms in common, which leads to their being frequently mistaken for one another, when only one of them exists. It also happens when they have both taken place in the same patient, that one only is suspected to be present.

These errors, when they are not detected, must always prevent the patient from being properly treated, and are often attended by still more serious consequences.

When the influence they have upon one

another, is explained, the practitioner will be better able to distinguish them, and have many doubts which had weighed upon his mind, entirely removed.

SECTION I.

The Complication of the two Diseases explained.

As we find that men who have had no previous disease in the genital organs, are liable to an enlargement of the middle lobe of the prostate gland, it is naturally to be expected, that those who have laboured under strictures in the urethra from their youth, without having them cured, should be still more so, and this we find to be the case. Whether the stricture is in any degree the cause of the enlargement of the gland, is not easily determined; there is, however, much reason to believe it is; but in those cases the swelling is not greater than in many others, and in the instances which have been under my observation, the increase in size has been less rapid.

The symptoms are exactly the same,

as where no stricture is present, but the diseased state of the prostate gland gives an activity to the stricture, which it had lost for many years, every paroxysm of irritation in the neck of the bladder throwing the strictured part into a state of spasm, whence the water, which escapes from the bladder, is retained behind the stricture, and gives great uneasiness, till the paroxysm goes off. As the patient has laboured under strictures for so many years, he very naturally attributes all he now suffers to his old complaint, and the surgeon is readily led into the same error. It frequently happens that such patients, from long habit in the use of bougies, pass them upon themselves, and only report to their surgeons. They become so conceited, as to believe that no surgeon can pass a bougie in their particular case, so well as they can themselves, or with so little pain; and I have found them very much astonished, when I stated, that to form a correct opinion of the case, I must pass the bougie,

and make my own examination. This is commonly with great reluctance submitted to. In passing a bougie, in such cases, small enough to go through the stricture, it goes on to the neck of the bladder, and the point of it is bent against the body of the prostate gland, just at the root of the middle lobe; and the irritation brought on by its coming against that part, brings on a spasm upon the stricture, so that the bougie is with difficulty withdrawn; by this occurrence, the case is explained, to be a stricture with its symptoms aggravated by an enlargement of the middle lobe of the prostate gland, in consequence of which, a portion of the urine is constantly retained in the bladder.

In one case of this kind, in which I was consulted, the patient positively refused to allow me to pass a bougie; he said it was more than his life was worth; that it would be held so fast that nothing could draw it out, that it would break, and he should die; that a highly polished elastic gum bougie

was the only one that he himself durst use, and it required great management to prevent that being held in, and no surgeon could pass it. This account enabled me to understand the case. I told him that unless he allowed me to examine the parts in my own way, I would give him no opinion; that I pledged myself to pass an instrument without giving him pain; that I would withdraw it without difficulty, and put him upon a plan for his relief, which he was not likely to obtain from the use of the bougie. He remained unconvinced, but allowed me to make one trial. I passed, with great ease, a flexible gum catheter, which had retained a very considerable curve, into the bladder, and drew off nearly six ounces of water, and the instrument came out without being at all grasped; and then when he was brought to hear reason, I explained to him the mistake he had gone into, and what was the real nature of the difficulties belonging to the management of his bougie: that the bladder not being

allowed to empty itself, produced irritation in the neck of the bladder, and this occasioned a spasmodic affection of the strictures, which was more increased by irritating the prostate gland with the point of the bougie ; but by drawing off the water, the prostate gland was relieved, and the spasmodic state of the stricture completely removed.

SECTION II.

On the Mode of treating these complicated Cases.

WHEN it is discovered that the symptoms of stricture have been rendered more violent in consequence of the enlargement of the middle lobe of the prostate gland, the mode of treating the stricture must be changed from that, which had been previously followed; the bougie must only be passed a little way through the stricture, and never allowed to come to the verumontanum. It must never be allowed to remain for any length of time in the urethra, and had better be introduced only once in the day. By these gentle means, the stricture will be found to dilate more readily than by any others that I am acquainted with.

As soon as the smallest sized flexible gum catheter can be passed through the stricture, an attempt should be made to draw off the water. This is to be done without a stilet, and when the catheter has acquired a curve, and has a good deal of elasticity, this can generally be done. From this time, the water is to be drawn off once or twice a day, as occasion may require: this must be regulated by the quantity the patient is able to void, and by doing so the stricture will be gradually dilated. The size of the catheter is to be increased as rapidly as circumstances will allow. When the canal is accustomed to the passing of the bougie, the stricture will be less liable to spasm; but very often the state of the neck of the bladder will be such, that the catheter cannot be passed without the stilet, which the urethra will now admit.

As the disease in the prostate gland produces a spasmodic affection of the urethra, even where there is no disposition to

permanent stricture in that canal. It is reasonable to conclude that when a permanent stricture has existed for many years, and disease in the prostate supervenes, there is little chance of a complete cure of the stricture ever being produced; and most of the attempts to that purpose that I have ever seen made have proved unsuccessful; for whatever is gained by dilatation, beyond a certain point, is lost the first time that an attack of irritation comes upon the neck of the bladder.

This is not a case of stricture in which the caustic can often be employed with advantage; the symptoms it in general produces are violent; and when that is the case, whatever is gained, cannot by a repetition of the application be established, so that its use should be resorted to only in those instances where the constitution is not in an irritable state.

All that can be done in most cases with safety, is persevering in the use of the flexible gum catheter; and where the patient can

introduce it himself, he may spend the later years of his life in tolerable comfort; but in the attempt to get a still greater degree of relief by resorting to more violent means, he may destroy life altogether.

SECTION III.

Cases in which the Treatment of this Complication of the two Diseases is illustrated.

CASES of this description occur very frequently in practice, and from the advanced age of the patients, and the complication of the diseases, they are very tedious, and require a great deal of management. A statement even of one them in minute detail would prove very tedious, and little instructive, since it would consist of repetitions of the same circumstances taking place at different times. I have, therefore, in drawing out the following cases, confined myself to those symptoms most deserving of notice; and have given rather abstracts, than the cases themselves. The selection is small, but all the important peculiarities arising out of the combination of the two diseases, which have come under my observation, are taken notice of.

CASE I.

A GENTLEMAN, 70 years of age, consulted me on account of a stricture, under which he had laboured for fifty years, but which, by the occasional use of the common bougie, had been prevented from occasioning much inconvenience, notwithstanding during the greater part of his life he had been actively employed in high military command in India. At the time when he consulted me, he had great difficulty in voiding his urine. A bougie of a small size, was with difficulty, and after repeated trials, passed into the stricture; and after some more trials, and by giving the bougie a curve before it was used, I succeeded in introducing it into the bladder; but the symptoms notwithstanding were not alleviated. This induced me to employ a gum catheter, a little larger than the bougie last used, which readily entered the

bladder. Several ounces of water which had been collected in the bladder, and which he was unable to void by his natural efforts, were drawn off. He experienced immediate relief. The introduction of the catheter was repeated twice every twenty-four hours; and in the course of two months all the distressing symptoms had abated, and the stricture was so much dilated, that a catheter of a middle size could be readily passed. However, as he did not completely empty his bladder, it was found necessary that the catheter should be passed once every day; and this he was instructed to do for himself. By persevering in this plan of treatment, he kept himself free from any distressing symptoms, nor had this complaint any share in the immediate cause of his death.

CASE II.

A MAN, 53 years of age, in the year 1795, was affected with a gonorrhœa. After the gonorrhœa had subsided, he always made water with more or less difficulty. In the year 1799, he had a retention of urine. He now applied to a practitioner in the country. The common bougie was employed, and he made water better; but, when this was the case, he left off using the bougies, and the difficulty of making water returned. From this time he always made water ill, and sometimes laboured under a complete retention of urine. He employed bougies occasionally with advantage. In July, 1809, he came to London for advice. At this time he made water always with great straining and difficulty, and sometimes had a total retention of urine. A stricture was found to exist in the membranous part of the urethra, which would not admit the smallest bougie. The caustic was applied to this stricture, and

after eight or nine applications a full sized bougie was passed into the bladder. He now was somewhat, but not considerably relieved. A flexible gum catheter being introduced immediately after he had made water, a pint of urine was found still remaining in his bladder. The catheter was introduced every morning; the quantity of urine remaining in the bladder gradually diminished; and at the end of three weeks from the first introduction of the catheter, he made water without any difficulty, was able completely to empty his bladder, and the use of the catheter was omitted.

In this case, as a bougie could not be passed, there was no opportunity of discovering the diseased state of the prostate gland, and the complaint was believed to be only a stricture in the urethra. The caustic was accordingly employed as the only means of removing a stricture which is impervious to the bougie; and fortunately in this instance the local effects were so mild, that its use was attended with success.

CASE III.

A MAN had been long troubled with strictures of the urethra, for which he was in the habit of using the common bougie, so as to palliate the disease, although it was never completely relieved. When he arrived at the age of seventy, the symptoms had undergone a change, which greatly alarmed him. The urgency to make water was more violent, and there was a very copious discharge of viscid mucus, so as to impede the passing of the urine. Under these circumstances I was consulted. In passing a bougie, I found that he had two strictures, and I was led to attribute the symptoms of which he complained, entirely to that complaint. As I had rarely occasion to apply the caustic to strictures in persons beyond sixty years of age, I employed the common bougie, beginning with one of a small size. After a few

trials, I succeeded in introducing a small bougie through both the strictures, as far as the neck of the bladder, but it could be passed no farther, and he experienced no benefit. I then introduced a small gum catheter without a stilet, which readily entered the bladder, and drew off twelve ounces of water. This gave him immediate relief. By using the catheter once in twenty-four hours he was relieved from the distressing symptoms; but it became necessary to continue doing this, as the enlarged lobe of the prostate did not recover itself sufficiently to allow the bladder to be completely emptied.

Under these circumstances both diseases were palliated, but neither of them cured. Every exposure to cold brought on irritation at the prostate gland, and this was followed by a spasmodic affection of the stricture; it therefore became necessary that the patient should have some person to pass the catheter for him, as the spasmodic state of the urethra made it at times

difficult, and he could not manage it himself. As I could not promise him further relief, he did not require me to continue my attendance; and went in search of a cure to those who ventured to promise it, and I never heard of him afterwards.

CASE IV.

AN officer of Engineers, of a very nervous and irritable habit, and who had laboured under strictures of the urethra since he was 20 years of age, was attacked, at the age of 72, with the symptoms belonging to an enlargement of the middle lobe of the prostate gland. The surgeon whom he consulted, supposing the symptoms to be dependant on the strictures, applied the lunar caustic to them ; but from the peculiarity of his constitution, and the complicated nature of the disease, the application brought on spasm of the urethra, and violent irritation at the neck of the bladder, which made it necessary to relinquish that mode of treatment. From this time he went on passing common bougies, and occasionally, when the water only came in drops, had it drawn off by a small flexible gum catheter.

He went on in this manner passing a miserable existence. At one time the irritation at the neck of the bladder was insupportable, from the constant straining and tenesmus it brought on. At another time the spasm in the urethra was so violent that the smallest bougie could only go into the stricture, and the water was with difficulty brought away. Added to these, he was liable to nervous attacks, independent of the present disease, which came on about once a fortnight, and lasted for five or six hours: during their continuance he was so much depressed as hardly to be in possession of his reason. After four years spent in this way he consulted me, and told me that he had been afraid to do so before, understanding that I would recommend the use of the caustic, and from the trial that had been made, he did not think himself able to bear it. I laid down the plan of drawing off the water regularly three times a day, which gave him considerable relief; but whenever one

of his nervous attacks came on, he was unable to pass the instrument, or indeed to act like a reasonable being, so that the use of the catheter was omitted, and all the symptoms returned. I proposed to him to keep the instrument in the bladder for a few days, but never could induce him to submit to it. Under all these disadvantages, he went on tolerably well, except at the times his constitutional indisposition came upon him, and lived several years. He was 80 years of age when he died, so that old age may with more propriety be considered to be the cause of his death, than any disease which he laboured under.

CASE V.

A GENTLEMAN had been for many years affected with a stricture of the urethra, for which he was in the habit of using the common bougie. In the year 1808, being then about seventy years of age, he placed himself under my care. At this time the symptoms of his disorder had become extremely aggravated. He was in a state of continual distress; making water with great difficulty and pain, very frequently, and in small quantities at a time. I found that there was a stricture in the membranous part of the urethra; and after several ineffectual attempts, I succeeded in passing a small gum catheter on an iron stilet, through it into the bladder. About eight ounces of urine were drawn off. After this the catheter was introduced at regular periods, and the size of it was gradually increased, so as to dilate the

stricture. Four or five ounces of urine were always found remaining in his bladder when the catheter was introduced, notwithstanding he had attempted to make water just before. By continuing the use of the catheter, the symptoms have been very much relieved, so that his life is rendered comparatively comfortable; but he has never regained the power of emptying his bladder by his natural efforts; and he still feels uneasiness, whenever more than four or five ounces of urine are collected in it. At present he is able himself to introduce the gum catheter without the stilet; and by doing this several times in the day, he prevents himself from suffering materially from the accumulation of urine in the bladder.

CASE VI.

A MAN, about 30 years of age, became affected with strictures of the urethra, in consequence of the use of astringent injections for the cure of gonorrhœa. As nothing was done for his relief, he became gradually worse; and in the year 1809, when he was 48 years of age, he made water only in drops, with straining and difficulty; occasionally there was a complete retention of urine, and there was always a copious discharge of viscid mucus. On introducing a bougie, a stricture was discovered at the distance of six inches from the external orifice, which yielded to several applications of the lunar caustic, and the bougie passed on to a second stricture, an inch beyond the first. After numerous applications had been made of the caustic to the stricture, he made water in a stream of a moderate size; but still he voided it

frequently, and in small quantities at a time, and the quantity of viscid mucus in the urine, was as great as ever. This led to the suspicion that there was some disease of the prostate gland, as well as the stricture of the urethra. Several attempts were made to pass a gum catheter into the bladder, but without success; at last a silver catheter was introduced, and nearly a pint and a half of urine was drawn off, notwithstanding he had made water just before, and supposed his bladder to be empty. After the introduction of the catheter, he had no inclination to make water for seven or eight hours; but then he again began to make it at short intervals, and in small quantities at a time. The catheter was introduced two days afterwards, and nearly a pint and a half of urine was drawn off. It was found that the frequent use of the catheter brought on inflammation and swelling of the perinæum, and a contraction of the stricture, so as to occasion sometimes a complete

retention of urine. This rendered it necessary to proceed cautiously in the treatment. The catheter was introduced sometimes once in the day; but more frequently only twice or three times in a week, and occasionally at intervals of two or three weeks, or even of a longer period. At present he is able very nearly to empty his bladder by his natural efforts: he sometimes voids a pint of urine at a single evacuation; and the discharge of viscid mucus has nearly ceased; but whenever he is exposed to cold, or makes any unusual bodily exertion, the urine is discharged in a small stream, or only in drops, and the stricture is so much contracted, as to prevent, for a time, the introduction of the catheter.

CHAPTER V.

CASES OF DIFFERENT DEGREES OF ENLARGEMENT OF THE PROSTATE GLAND, IN WHICH THE PARTS WERE EXAMINED AFTER DEATH.

IN addition to the symptoms which are detailed in this Chapter, the appearances which the parts had put on, are illustrated by engravings; by means of these, all the alterations of structure that took place, are made known to the reader, and a more correct notion of the progress of the disease is afforded him, than can be acquired in any other way.

Without this assistance, it would be impossible to point out many of the difficulties which occur in passing instruments into the bladder, or explain how these difficulties are to be overcome.

CASE I.

A MAN, 53 years of age, who had laboured under a difficulty of making water, and a frequent desire to do it, for six or seven years, at last was unable to void more than half an ounce of urine at a time. He attempted to make water every quarter of an hour or twenty minutes, and often only a few drops were passed, and sometimes none at all. The whole quantity voided in the 24 hours, seldom exceeded half a pint. While in this state, he was seized with symptoms of peritonæal inflammation, with which he was admitted into St. George's Hospital. The flexible gum catheter was introduced, and five ounces of urine were drawn off; and the introduction was repeated at regular periods. This treatment entirely relieved the symptoms which indicated affection of the bladder; but he died in a few days after his

admission into the Hospital, of the inflammation of the peritonæum.

On examining the body, the peritonæum was found to be every where inflamed, and about a pint of purulent serum was contained in its cavity. The muscular coat of the bladder was much thicker than natural.

The middle lobe of the prostate gland projected into the bladder of the size of a hazel nut, forming a valve behind the orifice of the urethra. The internal membrane of the bladder was a good deal inflamed.

The appearance of the middle lobe was very similar to that represented in Plate V.

CASE II.

A GENTLEMAN, 78 years of age, who had led a very dissolute life, for many years had considerable difficulty in passing his water, and voided it very frequently. In three years these symptoms had increased, attended with pain, and a yellowish discharge upon his linen. The following year a complete stoppage came on, upon which occasion I was first consulted. I proposed passing a catheter to draw off the water, from a conviction that no other mode of treatment could afford relief. This was with difficulty acceded to. By putting a flexible gum catheter upon an iron stilet with a considerable degree of curvature, I succeeded in getting it into the bladder, and drew off above a pint of urine. The operation was attended with pain and bleeding. The catheter was again introduced the same evening, and three times in the following day.

From this time the catheter was introduced every day regularly at eight in the morning, four in the afternoon, and at eleven at night.

From the time of the catheter being passed all the uneasy symptoms subsided. The patient was able to move about the house, in good spirits, and apparently in as good health as ever. At first the gum catheter could only be passed on a curved iron stilet, but after a few weeks it was frequently passed without any stilet at all. Occasionally the instrument met with a slight degree of obstruction at the neck of the bladder; at these times the little difficulty, which occurred in passing it, was followed by a discharge of ropy mucus, which came away with the urine. The quantity of urine drawn off by the catheter, was about ten ounces in the morning, (after lying during the night in the horizontal position), and eight ounces in the afternoon and evening. He never made water until this quantity was accumulated

in the bladder, and then the overplus was voided in small quantities, but without pain.

Three months after I was consulted, being in company with women, he was seized one evening with a severe rigor, and there was considerable difficulty in passing the instrument. He had no return of the rigor, and in a day or two the catheter was again introduced without any difficulty; but from this time the quantity of urine retained in his bladder increased to about twelve ounces in the morning, and ten ounces in the afternoon and evening. He was now enabled to pass the catheter himself, and continued to do it ever afterwards.

In the following year his bladder became very irritable, so that he experienced uneasiness whenever a small quantity of urine was collected in it. In consequence of this, he used to have the catheter introduced six or seven times a day; but as he continued to get worse under this treat-

ment, I was again consulted. The flexible gum catheter was allowed to remain in the bladder, and he was directed to keep his bed. In the course of a few days the bladder became less irritable; he was able to quit his bed, and the catheter was introduced by his servant three times in the day, as before.

At the end of two years he was seized with what appeared to be an affection of his bowels, of which he died in a few days.

On examining the body after death, the internal membrane of the bladder was found to be inflamed in a slight degree, and the middle lobe of the prostate gland was enlarged, and put on the appearance exhibited in the annexed engraving, Plate V. There was no disease in any other part.

CASE III.

A GENTLEMAN, who had been in the habit of leading a very retired life, had occasional attacks of irritation in the bladder, when exposed to the effects of cold; these he supposed to be symptoms of gravel, and took small doses of sal soda, with a view to their removal. Under this treatment they went off, which confirmed him in the suspicion he entertained of his being liable to gravel, as well as in the efficacy of this remedy for such complaints. In the year 1810, when 70 years of age, he had one of these attacks, accompanied by a severe bowel complaint; the frequency of making water engrossed the whole of his attention, and induced him to consult me upon it, without mentioning the state of his bowels, further than that the straining to make water was so great, as to make him at the same time go to stool.

From the patient's account, I had no doubt of his complaint proceeding from the bladder being loaded with water, and that the quantity voided was not sufficient to do more than prevent a further accumulation. It was with some difficulty that I could persuade the patient that this was really the case, and procure his permission to pass a catheter into the bladder. This, however, he at last submitted to. The flexible gum catheter with a proper curve, which it retained when the stilet was removed, passed with great ease, and drew off twenty ounces of water. In eight hours it was passed again, and sixteen ounces were drawn off. All the symptoms of irritation in the bladder subsided, and next day the water was drawn off twice; the complaint however in the bowels had been, from the patient's concealment, neglected, and the belly had become very much swelled; the bowels being loaded with air, nothing could be made to pass through them. It was now discovered

that he had a rupture, and had worn his truss while the rupture was unreduced, that inflammation had come upon the bowels, and they were so much distended as to lose all power of action; in this state he died next day.

Upon examining the body after death, the bowels were found adhering together, very much distended, and full of air; they also adhered in several places to the peritonæum.

The appearance of the prostate gland and bladder, is represented in Plate VI. There was no gravel met with either in the kidneys or bladder; and there is great reason to believe that the patient never had laboured under that complaint, but had mistaken the symptoms of inflammation of the neck of the bladder, for those of gravel, a mistake which patients are very liable to make.

CASE IV.

A. B. 66 years of age, in the morning of the 19th of September, 1787, found himself unable to void his urine. During the day he suffered great distress, had frequent and violent inclinations to make water, and strained in his attempts to do it, but without success. At five o'clock in the afternoon an attempt was made to introduce the gum catheter, on an iron stilet; but the end of the instrument always stopped in the situation of the prostate gland, and after repeated trials it could not be made to enter the bladder. A bougie was then introduced: it appeared to pass into the bladder, but no urine flowed when it was withdrawn. The prostate gland was examined with the finger in the rectum; and it was not felt to be materially enlarged. I then repeated the

attempt to pass the catheter, directing the point of it with the finger in the rectum. By pushing the point towards the pubes, I at last succeeded in making it enter the bladder, and a considerable quantity of urine was evacuated. In the operation I observed that the catheter appeared to pass close by the rectum, as if the substance of the prostate gland between them was very thin. The bladder was not felt to be much distended, when examined from the rectum, although it was very prominent above the pubes. The catheter was allowed to remain in the bladder, that the urine might be drawn off as often as was necessary. An opiate clyster was administered, and he had a tolerable night.

He continued tolerably well on the two following days.

On the 22d of September, the catheter was withdrawn; but it was found that he had not the power to void his urine, and in the evening the catheter was again introduced, and allowed to remain in the

bladder as before. In the night he complained of great uneasiness in the rectum, which was relieved by opiates.

On the 25th, violent spasmodic contractions of the bladder took place, attended with excruciating pain. As it was supposed that these might arise from the catheter remaining in the bladder, it was withdrawn, but the spasms continued as violent as before, and he was unable to void a drop of urine.

On the morning of the 26th, the catheter was again introduced. When the point of it reached the neck of the bladder, a violent spasm took place, and it appeared to be grasped, so that it could neither be moved backwards nor forwards, till the spasm subsided, and then it entered the bladder, where it was allowed to remain. The spasms continued very violent during the day. They were always relieved by drawing off even a small quantity of urine, and an ox's bladder was in consequence fixed to the end of the catheter, into which

the urine was allowed continually to flow. Towards evening the urine was tinged with blood. He suffered great pain. A pill was given him, composed of one grain of opium, two grains of camphor, and two grains of chia turpentine; and the same pill was directed to be repeated every six hours. He fell into a profuse perspiration, and had a refreshing sleep, which lasted all night.

On the 27th, 28th, and 29th, there was no material change. He took the pill occasionally.

On the 30th, he was very restless; the spasms were extremely violent and painful. The catheter was forced out, and there was very great difficulty in replacing it. On introducing the finger into the rectum, the bladder was supposed to be felt more projecting, and lower down than before. He had a very restless night: the pills were continued.

October 1. He continued to suffer very severely from the frequent recurrence of

the spasm. A considerable quantity of bloody mucous fluid was discharged through the catheter with the urine.

October 2. The same kind of mucous fluid was discharged with the urine, but towards the evening the quantity of it was less. The spasms were frequent and painful. A dram of extract of opium dissolved in an ounce and a half of water, was injected into the bladder. The spasms were immediately relieved, and he passed a quiet night.

October 3. In the morning he was much relieved, and his pulse, which on the preceding day had beat 100 times in a minute, had fallen to 90. In the evening the spasms returned, and he was affected with frequent convulsive startings, which continued during the early part of the night.

October 4. The spasms were very severe. In the morning the injection was repeated in half the former quantity, which relieved him, but not so completely as before. In the evening the injection was

repeated with the addition of two grains of camphor, and six drops of oil of turpentine; but this produced little or no relief.

October 5. He was delirious in the morning, and the spasms were very severe. The injection was repeated, but the spasms were rather worse after it, than they were before.

October 6. He was sensible only at intervals. The spasms continued, and he was convulsed occasionally; and he died at half past one o'clock in great agony.

On examining the body after death, the bladder was found in a contracted state; its muscular coat was much thicker than is natural, and its internal coat was very vascular. The prostate gland generally was enlarged, the middle lobe formed a tumor which projected into the bladder behind the orifice of the urethra, and the membrane which covered it was continued on each side in the form of a transverse fold. On the posterior part of the bladder, there was a cyst about the size of an

orange, situated above the prostate gland, and communicating with the bladder by a small orifice, about the size of a goose-quill. The coats of this cyst were of the thickness of those of an ordinary bladder, and its inner surface was covered with coagulable lymph. From the situation of this cyst behind the bladder, the latter was pushed forward, and this appeared to have increased the impediment to the entrance of the catheter.

The point of the catheter had been forced through the substance of the prostate gland, so that an artificial canal was made, of which one extremity communicated with the urethra near the verumontanum, and the other with the cavity of the bladder, just before the orifice of the cyst. *Vide Plate VII.*

CASE V.

A GENTLEMAN, 70 years of age, who had laboured under a frequent desire to make water, but who had no other symptoms of disease in his urinary organs, went to bed at ten o'clock in the evening of the 18th of October, 1805, apparently in perfect health. At twelve o'clock he attempted to void his urine, but found himself unable to do it; at two o'clock in the morning he repeated the attempt, but without success. This gave him alarm, and I was sent for. At four o'clock I introduced a flexible gum catheter, without the stilet, without any material difficulty, and more than half a pint of urine was evacuated. At eleven o'clock I attempted to introduce the catheter without the stilet, a second time, but failed in the attempt. I then employed the flexible catheter on

a curved iron stilet, but with no better success.

At four o'clock in the afternoon of the same day, I succeeded in introducing a flexible catheter of a larger size on a curved stilet.

On the 20th of October, I was unable to introduce either the silver, or flexible gum catheter.

At eight o'clock on the following morning, I succeeded in introducing a flexible gum catheter, and let it remain in the bladder. In the introduction, the instrument met with an obstruction at the distance of $5\frac{1}{2}$ inches from the external meatus, then moved suddenly on, and entered the bladder, appearing to make a sudden turn upwards under the arch of the pubes. On the 25th of October, as he complained of the catheter giving him pain, it was taken out at three in the afternoon, and replaced in the evening. It was introduced with considerable difficulty, by keeping the point directed upwards. After this, the

instrument was not again withdrawn. His appetite failed him, he gradually sunk, and died on the 31st of October.

On dissection, the body of the gland was found considerably enlarged, and of an unusually soft elastic texture. The form of the enlarged gland was such, that the urethra within it had lost its natural form, being concave on the right side, and convex on the left. The middle lobe of the gland was enlarged, and projected into the bladder so as to form a valve over the orifice of the urethra. The membrane of the urethra was put upon the stretch, in such a way as to form a strong bridle between the verumontanum and middle lobe in one direction : there was also a longitudinal fold extending forwards from the verumontanum, and lost at the bulb. The effect of the membrane of the urethra being thus drawn towards the tumor, was to render that canal shorter, and on measurement it was found that the distance from the external meatus, to the anterior

part of the prostate, was not more than $5\frac{1}{2}$ inches, and the length of the urethra where it was imbedded in the prostate was $1\frac{1}{2}$ inch. It was discovered that in the last introduction, the instrument had perforated the prostate gland laterally in the angle between it and the membranous part of the urethra, and had formed a false passage in the substance of the gland, by which it penetrated the bladder on one side of the enlarged middle lobe.

This case in many respects resembles the preceding one, particularly in the instrument reaching the bladder, by making a passage behind the body of the prostate gland.

The appearance of the prostate gland was so similar to that of the engraving, Plate VII. as to make it unnecessary to give a representation of it.

CASE VI.

A GENTLEMAN, 77 years of age, was seized with a difficulty in voiding his urine, in consequence of an enlargement of his prostate gland from exposure to cold. A flexible gum catheter was introduced into the bladder, and allowed to remain in it for two months, being changed about once in ten days. At the end of that period, he voided his urine without any difficulty, and the use of the catheter was omitted. He afterwards had two more attacks of the same kind, which were relieved in the same manner; but during a fourth attack, three years after the first, he became dropsical, and died.

On examining the body after death, the middle lobe of the prostate gland was found projecting into the bladder, and forming a tumor, which caused the obstruction, and which is represented in Plate VIII.

CASE VII.

A GENTLEMAN, aged 53, had a complaint in his bladder for many years, which had been suspected to be the stone, and this suspicion was corroborated by his passing a small stone about two years before his death ; but although he was examined by several surgeons, by sounding him, and passing the finger up the rectum, no stone was ever felt. He had little or no difficulty in making water while lying on his back, but when standing or kneeling, he was obliged to strain considerably, and hardly brought any urine away. About half a year before his death, he complained of a pain which was situated about half way between the stomach and bladder.

About a fortnight before his death he was sounded by Mr. Hunter, and bore the instrument in the bladder very well, suffering less pain than common : but no stone was felt. The prostate gland was

examined, by passing the finger per anum, and was found to be larger than is natural, although not so large as to appear to be the cause of all the symptoms. The case was now considered to be one of an irritable bladder. A blister was applied to the sacrum, and the next day he was attacked with a purging, but seemed to make water less frequently, and could prevent it from passing, neither of which he could do before. The purging was stopped in the evening, but he was attacked with a considerable degree of fever, for which he took James's powders, and saline draughts: the fever increased for two days, and he was not altogether sensible, so as to give exact accounts of his complaints. The fever was so violent, as to take up the whole attention of those about him; and the blister being neglected, it healed up in about four days from the fever coming on. There was a tension, and pain in the region of the bladder, which was suspected to be the bladder distended, although he passed

water insensibly to himself. The catheter was introduced, and the urine drawn off, which was done every eight hours. The bladder was become so much distended, as not to be able to empty itself through the catheter, it therefore became necessary to press externally upon the abdominal muscles, to force out the water.

The catheter could seldom be passed without some assistance, by means of the finger in the rectum ; and the gum catheter without a stilet could not be introduced at all.

He continued every day becoming less sensible, as it were in a kind of stupor, and in about seven or eight days from the time of the fever coming on, he became convulsed, and died.

On examining the body, the bladder was found enlarged, thickened, fasciculated, and the internal membrane protruded in several places between the fasciculi, forming small pouches : it contained seven or eight stones, which were most

of them of a triangular figure, or nearly so, with their sides adapted in some measure to one another.

The body of the prostate gland had become a good deal enlarged, but the middle lobe was of the size of a large hen's egg, of a pyramidal figure, appearing to come almost to a point a little behind the verumontanum, where it had very much the appearance of the stalk of a pear. From this point it swelled out gradually as it went backwards into the cavity of the bladder, and terminated in a large rounded body, which filled up the whole of the neck, or lower part of the bladder. It was very soft in its consistence, and was covered by a smooth membrane. On each side of this tumor where it was attached to the neck of the bladder, was to be seen the part where the catheter had stopped, it having torn in a slight degree the internal membrane at that part.

This projection of the prostate gland

had prevented the sound coming in contact with the stones when he was searched; especially, too, as he then lay upon his back. This must have been the case, whether sounded on his back, or standing; for to have felt a stone in such a case, he should have first lain on his belly, and then have risen from that position without first turning himself on his back. He must even have leaned forward when sounded, so as to keep the stones in the fore part of the bladder, till felt.

The ureters and pelvises of both kidneys were a good deal enlarged, and the ureters made several convolutions in their passage; that on the right side made a turn upon itself, which was so quick, that the urine could only have come in drops through that part. *Vide* Plate IX.

CASE VIII.

A GENTLEMAN, 65 years of age, was so circumstanced as to be prevented for several hours from making water, and when at last he attempted to do so, he was unable to void it. A catheter was introduced, and the bladder was emptied; but afterwards he never was able to pass any urine without the assistance of the catheter. For the first year the catheter was introduced with so much difficulty, that it was found necessary to leave it in the bladder, changing it occasionally. Afterwards the instrument was introduced more readily: but it was always necessary that it should have a particular curve, otherwise the introduction was difficult. Five years after he was first affected with this complaint, he died of a complaint in his bowels. On examining the body after death, the prostate gland was found much enlarged; it

was of a firm texture; and a process of it projected into the bladder, forming a tumor above and behind the internal orifice of the urethra. At the lower part of this projecting process, there was an orifice forming a direct communication between the urethra and bladder, having rounded edges, of the size of the catheter. It would appear that this orifice had been formed in consequence of the catheter having been forced through the tumor in the early period of the complaint, and that the catheter had ever afterwards entered the bladder through this, instead of the natural passage; but on examination of the preparation, and laying the canal open to the bladder, the instrument was found not to have forced a way through the gland, but to have pierced the transverse membranous fold between the middle and lateral lobes. *Vide Plate X.*

CASE IX.

A GENTLEMAN, for several years previous to 1803, had been troubled with a difficulty in making water, only doing it effectually when at the water closet. The origin of this complaint he considered to have been drinking a glass of soda water, which immediately created uneasiness in the bladder: for these symptoms he passed bougies by the advice of his surgeon, but received no benefit from their use. About March, 1803, a complete retention of urine took place, which occasioned my first being consulted. A very large flexible gum catheter passed into the bladder, on the point being raised up by a finger in the rectum. This was retained there, and in ten days withdrawn; and the urine regularly drawn off twice a day, for about six weeks, when it no longer became necessary, the water passing naturally, although always with

more or less pain, particularly on the left side just at the neck of the bladder. These symptoms increased; and in March, 1806, a stone was discovered in the bladder. The operation was performed. The stone when extracted, was found to be formed upon a nodule of sand. He recovered from the operation in five weeks. In the course of four months there was a return of some of the former symptoms: these gradually increased; and six months after the operation, with a view to ascertain the cause of those symptoms, I examined the bladder, both by means of a gum catheter in its flexible state, and a sound; but no stone was felt. These symptoms were occasionally more severe, and at the end of two years became violent. In March, 1809, in drawing off the water to ascertain whether there was any return of the disease in the prostate gland, so as to prevent the urine from being completely evacuated, I felt a stone. About the end of August, while out on an airing, he had an

epileptic fit, which lasted about two hours, half an hour of which he was completely insensible. For two or three days he was easier in his bladder. On the 20th of October, he had another fit of shorter duration about nine o'clock in the morning; was very restless all day, and had another in the evening. For the next two days he was not perfectly collected; but on the third day completely so, and the pain in the bladder became more severe; so much so, as to induce him to wish to know whether there was a stone; and if so, to submit to the operation. On the 31st of October I performed the operation: the hæmorrhage was unusually small. The shape of the stone was very uncommon; one surface was convex, the opposite had two concave portions, and a middle ridge. On being put to bed his whole frame was much agitated, the urine came readily through the wound, and in half an hour he passed water three times; the last time, his breathing became laborious, with a sense

of suffocation: this was followed by an inability to speak, and he expired.

On opening the body, all the viscera in the abdomen were in a natural state; the kidneys and ureters had their cavities enlarged, but were not otherwise diseased.

The bladder was thickened in its coats, diminished in its capacity, and inflamed on its internal surface.

The prostate gland was not only enlarged, but had extended itself into the cavity of the bladder, both by means of the left and middle lobe; and when the stone was placed in the bladder immediately behind these prominent parts, it fitted so exactly, that there could be no doubt of its having acquired its particular form by being retained in that situation; the surfaces with which the stone had come in contact, were in a state of excoriation, the first stage towards ulceration.

This state of the prostate gland explained the symptoms which followed after the

first operation; and the formation of the second stone arose from a small deposit of urine always remaining behind the projecting parts; the aggravation of the symptoms took place from the stone pressing and constantly irritating those tender parts; and had the patient survived, the symptoms that followed the first operation must have again occurred. *Vide Plate XI.*

CASE X.

A GENTLEMAN, who had resided above twenty years in Portugal, when 68 years of age, had a retention of urine. After suffering severely for many hours without passing a drop of water, a catheter was with difficulty introduced, and the water drawn off: it was retained in the bladder for several days. This was in 1805, and from that time he had an unusual frequency in making water, but was free from any severe attack for two years; in which interval he returned to England. In the end of the year 1808, he put himself under my care, with symptoms of an enlarged prostate gland. He was unable to empty his bladder without the assistance of the catheter, and whenever the introduction of this instrument was delayed beyond eight hours, he experienced great uneasiness. He was instructed in the use of the catheter, and went into the country, a few miles

from London. He continued using the catheter three times a day, but without any diminution of the quantity of water which was retained in the bladder. On the 11th of March, 1810, he failed in introducing the catheter, on account of an obstruction to the instrument at the neck of the bladder. He sent to a surgeon in the neighbourhood, who introduced a silver catheter with considerable difficulty. He returned to town on the same day, and put himself again under my care. On the evening of his return he was unable to void any urine, and suffered a great deal from the distension of his bladder. A flexible gum catheter without the stilet was introduced without any difficulty, and drew off nearly a pint of urine tinged with blood. The flexible gum catheter was introduced regularly three times a day: he experienced no inconvenience; and in less than a fortnight after his arrival in town he was able to introduce the catheter himself, as formerly.

In the beginning of April, he observed the urine to be of a dark colour from an admixture of blood; he felt great uneasiness whenever a few ounces of urine were collected in the bladder, and was under the necessity of employing the catheter four or five times in the 24 hours. He was directed to use a glyster of thin starch with sixty or eighty drops of laudanum, twice in the 24 hours; but he experienced from it no relief. The symptoms just mentioned increased daily. Whenever more than three or four ounces of urine were collected in the bladder, it contracted spasmodically with great pain, and without expelling any urine. The urine continued dark, and there was a sediment in it apparently of dissolved coagulum. His bowels were kept open by laxative medicines; the catheter was introduced more frequently, and the starch glysters were continued with an increased proportion of laudanum.

On the 10th of April, he had become

so much exhausted that he was under the necessity of keeping his bed. His bladder was more frequently affected with spasmodic contractions, whenever a small quantity of urine was collected in it. They commenced within two hours after each introduction of the catheter, recurred at short intervals, until the instrument was again introduced, and were attended with excruciating pain. To prevent their recurrence, frequent attempts were made to keep the catheter in the bladder, but the distress it occasioned rendered it impossible ; and once or twice, the patient in a paroxysm of irritation withdrew it himself. Fomentations were applied to the belly, and he used the warm bath ; but these gave only a slight temporary relief. On the 14th, all the symptoms were aggravated. It was necessary to introduce the catheter every hour and a half or two hours. The spasmodic contractions of the bladder commenced an hour after the catheter was introduced, and if the introduction was

delayed beyond two hours, they were attended with the most excruciating pain. His pulse, which at first was not affected, became frequent, and his tongue was furred. On the 18th, eight ounces of blood were taken from his arm. The blood was sizzly, and the coagulum was contracted and cupped; but he experienced no relief from the bleeding. On the 19th, he gradually fell into a comatose state, and died.

On examining the parts in the dead body, the muscular coat of the bladder was much thickened. The internal membrane was of a very dark colour, in consequence of the small vessels being very much loaded with blood. The prostate gland generally was increased in size. The middle lobe, and left lateral lobe, were both much enlarged, the former being of the size of a walnut, and the other still larger; they formed tumors projecting into the cavity of the bladder behind the orifice of the urethra. The surfaces of these enlarged lobes were everywhere of

a dark colour, and in a state of ulceration.
In the bladder was a small calculus, about
a fourth part of the size of an ordinary
pea.

The appearances are shewn in Plate
XII.

CHAPTER VI.

ON THE EFFECT OF DIFFERENT KINDS OF INJECTIONS INTO THE BLADDER UPON THE SYMPTOMS OF THIS DISEASE.

IT is natural to believe that in an irritable state of the bladder, applications made to the parts affected, will be more beneficial than any other; and therefore, before the cause of irritation in the present disease was distinctly made out, I had recourse to such injections into the bladder, as appeared most likely to be attended with good effects; but my success was by no means equal to my expectations. I have however thought it might be useful to state the different injections I have used, as it will shew the degree of relief they occasionally afford to particular symptoms, although little is to be expected from them in the cure of the disease.

CASE.

A GENTLEMAN, 65 years of age, on the 16th of October, 1787, was first seized with a difficulty of making water. He voided it, tinged with blood, in small quantities at a time, and never without great straining, and severe pain. These symptoms daily became worse.

On the 26th of October the catheter was introduced, and several ounces of urine were drawn off, tinged with blood. This gave him temporary relief. The operation was repeated on that day, and twice on the following day; at the same time ten drops of oil of turpentine were given to him every six hours.

On the 28th of October, the desire to make water recurred more frequently, and it was found necessary to introduce the catheter three times in the day. The urine was still tinged with blood.

November 1. The urine in the morning was free from blood, but in the evening it was much tinged with it, and contained a small coagulum.

On the 2d of November the urine was more bloody, and the desire to void it returned more frequently. An elastic gum catheter was introduced, and allowed to remain in the bladder, that the urine might be drawn off as often as was necessary.

November 3. The urine was more tinged with blood; and notwithstanding the catheter was allowed to remain in it, the bladder contracted frequently and spasmodically, with excruciating pain. A dram of olive oil was injected through the catheter into the bladder. This seemed to produce relief, for the spasms did not recur for an hour. The oil came away mixed with coagulated blood. At one o'clock in the afternoon two ounces of olive oil were injected, which remained in the bladder for two hours and a half, and then came away with some urine, which was slightly

tinged with blood, but without any that was recently effused. At eight o'clock in the evening some urine had passed by the side of the catheter. The spasmodic contractions of the bladder were frequent and painful. The instrument was withdrawn. He remained easy for four hours, but without making water. At the end of that time the catheter was introduced. The bladder was emptied, and two ounces of oil were injected into it. During the night the spasms were very frequent. Some urine was voided, which came away partly through the catheter, and partly by its side.

November 4. In the morning, two ounces of olive oil were injected into the bladder. The oil came away with some urine in about an hour, when the catheter was withdrawn. He voided no urine, but continued free from pain till two o'clock, when the catheter was again introduced, and four ounces of urine were drawn off. The emptying the bladder brought on a violent spasm. Three ounces of olive oil were

injected, and the spasm was relieved. The catheter was withdrawn, and in four hours the oil came away without the catheter; and at six or seven different times, small quantities of urine were voided by natural efforts, at first with little or no pain, but in each succeeding effort with more pain. At ten o'clock in the evening the catheter was introduced, and three ounces of urine were drawn off. Three ounces of oil were injected, and the catheter was withdrawn. During the night, he passed about three ounces of urine by various efforts, without much pain or spasm.

November 5. At eight in the morning the catheter was passed, and seven ounces of urine were drawn off with two ounces of oil. The emptying the bladder brought on a violent spasm, which was relieved by injecting three ounces of oil. The instrument was withdrawn, and in about two hours afterwards some of the oil came away, and afterwards several ounces of urine at various times. At four in the

afternoon the catheter was introduced, and ten ounces of urine were drawn off, with some oil. The bladder was free from spasm. Two ounces of oil were injected.

November 6. There was no alteration in the symptoms. The urine was drawn off, and the oil injected three times.

November 7. The bladder was more affected with spasm, and there was a difficulty in introducing the catheter. There was no alteration in the treatment.

November 8. He began taking five grains of extract of hemlock, three times in the day, and two ounces of oil were injected three times as before. In the morning there was an unusual degree of heat and irritation in the bladder, but this was much abated in the evening. He voided a large quantity of urine by natural efforts.

November 9. In the morning, on introducing the catheter, only two ounces of urine were found in the bladder, with some oil. The catheter was not introduced again till the evening, when the urine in the

bladder was found to be double the usual quantity, and there was considerable soreness and sense of heat in the region of the bladder. He took thirty grains of extract of cicuta in the course of the day.

November 10. He took forty-five grains of extract of cicuta in the course of the day. An opiate clyster was administered, which came away again; but a second clyster with sixty drops of laudanum, remained, and relieved his bladder a good deal; but it affected his head, producing headache, and some degree of delirium. The oil was injected three times.

November 11. He had passed a better night, with fewer efforts to make water. In the morning only two ounces of urine were found in the bladder when the catheter was introduced. He took a dram of extract of cicuta in the course of the day. From four in the afternoon to eleven at night there were nineteen efforts to make water.

November 12. He took a dram of the

extract of cicuta in the course of the day. In the morning half an ounce of camphorated oil, with an ounce and a half of simple oil, were injected into the bladder, and the injection was repeated at four in the afternoon. All the symptoms were aggravated; and when the catheter was introduced, a larger quantity of urine than usual was found in the bladder. In the evening the olive oil was injected into the bladder alone.

November 13. He continued the cicuta. In the morning and afternoon the usual quantity of oil was injected with the addition of twenty-five drops of laudanum; but he appeared to be rather worse, in consequence of straining violently to make water, but voiding very little. In the evening, when the catheter was passed, the quantity of urine drawn off was very small, and tinged with laudanum; after it was drawn off, the oil was injected as before, and an ounce and a half of urine was discharged.

November 14. He left off the cicuta. The urine was tinged with blood. In the morning and afternoon, the olive oil was injected alone; in the evening, equal parts of olive oil and fresh drawn linseed oil were injected.

November 15 and 16. The spasms were very violent if the urine was not discharged as soon as the desire took place. The same treatment was continued.

November 17. The linseed oil was omitted, and the olive oil was injected alone. A small blister was applied behind the *os sacrum*.

November 18. The same treatment was continued, with this addition, that he took a mixture of oil and mucilage of gum arabic, and a pill of five grains of James's powder three times in the day.

November 19. The James's powder was left off because it purged him. He was very restless from the blister, which was allowed to heal.

November 20. The injection of the oil

was continued ; and he took the mixture of mucilage and oil, as before. He was no better.

November 21. The mixture was left off; the injection of the oil was continued.

November 22. The injection of the oil was discontinued. In the morning, warm water was injected into the bladder, but with no good effect. In the afternoon, three ounces of warm water, and a dram of tincture of opium, were injected. He appeared to be easier than usual afterwards. In the evening three ounces of warm water with two drams of tincture of opium were injected : he retained it an hour ; and slept better, and was easier than usual during the night.

November 23. The injection of the warm water and tincture of opium was continued. In the morning the latter was increased to three drams ; in the afternoon to six drams ; and in the evening to an ounce. He passed a much better night.

November 24. The injection of warm

water and tincture of opium was continued ; but a violent smarting remained after the injection, in consequence of which it was determined to leave off the tincture.

November 25. In the morning he had a glyster of warm water, which appeared to give him ease. Twenty-four grains of extract of opium dissolved in two ounces of warm water were injected.

November 26. In the morning the same injection was used as on the preceding day. It remained for an hour and a quarter without irritation, when a desire to void the urine came on, and a few drops were passed. On introducing the catheter four ounces of fluid were found in the bladder.

In the course of the day the injection was repeated, first in the same quantity, and afterwards in double the quantity ; but it did not produce relief for a longer time than before. In the evening, from seven to eleven o'clock, the desire to make water recurred more frequently than in the whole preceding night.

November 27. He had been easier during the night. The same treatment was continued.

November 28. There was no alteration either in the symptoms or treatment.

November 29. The same treatment was continued ; with this difference, that he went twice into the warm bath, and found relief each time for an hour afterwards.

November 30. The same treatment was employed as on the preceding day. He made less water. Mucus was deposited by the urine.

December 1. There was no alteration.

December 2. The same treatment was continued. He had had a worse night, but was less affected with spasm during the day.

December 3. The quantity of mucus was increased, about half an ounce being formed in 12 hours ; it was thick and viscid ; it was discharged with difficulty, and with violent spasms. The same treatment was continued.

December 4. In the morning, on the catheter being passed, only two ounces of urine were found in the bladder. Warm water was injected into it, with the view of washing it out, and directly drawn off, so as to leave the bladder empty. After this, the use of the catheter, and of the injections was omitted. He used the warm bath twice in the day, and was as easy as usual.

December 5. The urine was small in quantity, and tinged with blood, otherwise there was no alteration.

December 6. He was much the same. The mucus was somewhat less.

December 7. He began taking three grains of sal martis in mucilage of gum arabic, and continued the warm bath.

December 8, 9, 10. There was no alteration.

December 11. A bougie four inches long was introduced into the urethra, smeared with equal parts of balsam copaiyi and olive oil, with the view of

exciting a discharge of matter from the urethra. The salt of steel and the warm bath were continued. The same treatment was continued on the three following days.

December 15. The bougie was smeared with the pure balsam copaivi, which occasioned a soreness of the urethra, but no discharge.

December 16. The soreness was so great, as to occasion the discontinuance of the bougie. The bougie produced no discharge, and no good effect.

December 17. He began taking the extract of cicuta a second time.

December 20. The cicuta was increased to seventy pills, of five grains each, in the course of the day, without any disagreeable effects being produced. The spasms were more frequent.

December 21. He continued the cicuta. A bougie was introduced smeared with lard and red precipitate.

December 22. The same treatment was

continued. The bougie produced soreness, but no discharge; and it was therefore determined to omit it. In the evening he had a rigor, which lasted an hour, and then left him tolerably composed.

December 23. He took small doses of Dover's powder, and went into the warm bath in the evening.

December 24. A bougie was introduced smeared with basilicon ointment, which excited inflammation, but no discharge, and it was not repeated.

December 25. There was no alteration.

December 26. He began taking three pints of decoction of uva ursi, in the course of the day.

December 27. There was a constant gnawing pain extending along the whole urethra, but referred chiefly to the parts near the glans penis. A bougie was introduced smeared with the extract of opium, but it gave him no relief.

December 28. The decoction of uva ursi was made stronger. The urine when

first voided was of the natural colour, but on standing it acquired the colour of the decoction. The urine was secreted in larger quantity, and contained less mucus. The bougie was introduced, as on the preceding day.

December 29, December 30. There was no alteration in the symptoms or treatment.

December 31. The bougie was left off. He continued the decoction, and the warm bath at night.

January 2, 1811. The same treatment was continued; in addition to which, electricity was had recourse to: sparks were drawn from the region of the bladder and perinæum.

January 8. The decoction occasioned nausea. The spasms were more frequent, and painful, and the difficulty of voiding the urine was increased. The decoction and electricity were left off. In the evening the irritation in the bladder was so great that the catheter was introduced

Four ounces of water were drawn off, which relieved him. There was a difficulty in passing the instrument, which led to the belief that there was a fresh attack of inflammation of the prostate. A small blister was applied to the perinæum. In the night he took six grains of opium; but still he suffered severe pain, with frequent desire to make water.

January 9. The blister had risen, but had produced no good effect. The catheter was passed at two o'clock in the morning, and again in the afternoon. He continued the opium.

January 10. He took musk julep. The first dose produced a purging, which continued during the day.

January 12. He left off the musk, and resumed the use of the opium, of which he took sixteen grains in the course of the day. He now began to sink very rapidly, becoming very feeble, and his mental faculties being disordered.

January 14. Scarcely any thing re-

mained on his stomach except the opium. He continued to sink, and died on the 23d of January.

Permission was not obtained to examine the body.

CHAPTER VII.

ON THE ENLARGEMENT OF ONE OF THE
LATERAL LOBES OF THE PROSTATE GLAND,
PRODUCING PAINFUL SENSATIONS IN THE
RECTUM.

IT has been already stated that the different portions of the prostate gland, are liable to swell independently of one another; and that the left lateral lobe has been found to project into the cavity of the bladder, when on the right side no such effect has been produced: this is shown in Plates X. XI. and XII. In these cases no symptoms occurred to lead to the belief that there was any considerable pressure upon the rectum, the enlargement having taken place principally in one direction.

The subject of the present Chapter, is an enlargement of one of the lateral lobes,

but in such a direction, as to press backwards upon the rectum, without affecting the orifice of the bladder, and unaccompanied by any swelling of the middle lobe. When this disease is examined in the living body, the projection is distinctly felt by a finger passed up the rectum ; it is confined to one side of the gland, and the opposite side is smooth and flat.

This disease is of rare occurrence ; only two cases of it have come under my observation. The lobe projecting into the rectum, which lies immediately in contact with it, gives this disease a close resemblance to the swelling of the middle lobe into the cavity of the bladder ; and, as in both diseases the symptoms will be found to arise from the interference that takes place with the functions of the cavities into which the swelling protrudes, the two complaints throw considerable light upon each other.

When the parts are not disturbed, no symptoms take place ; but the act of going

to stool, by pressing the membrane which lines the intestine between the enlarged lobe and the contents of the bowel, brings on uneasiness. The same effect is produced by walking, exercise, and any other bodily exertion; this effect of fatigue does not however immediately follow it, but comes on several hours afterwards; so that it is not uncommonly experienced in the following night. That the symptoms arise from the pressure on this part, is clearly ascertained from similar uneasiness being brought on by pressing the finger upon this particular spot; and even then it is entirely referred to the intestine, not to the gland itself. In all these respects this disease corresponds with what takes place in the enlargement of the middle lobe; nor is there any reason to believe that in either case the symptoms are much aggravated by an increased sensibility of the internal structure of the gland itself.

The symptoms are, great distress in the act of going to stool, followed by the most

painful kind of tenesmus, which is increased in violence by the efforts it almost compels the patient to make in straining, still further to empty the intestine. When these exertions are no longer made, an aching uneasy feeling continues in the parts for some hours. These symptoms very much resemble those in the bladder brought on by the enlargement of the middle lobe, in the act of making water, and after a small quantity is voided. In one case, they misled the surgeon into a belief that there must be a stricture in the rectum, and the use of large bougies was recommended, and actually adopted; nor did the facility of passing them make the practitioner see his error; but the pain they occasioned made it impossible for the patient to persevere in their use.

In this disease, as in the other, the principal treatment I have to recommend, is to relieve the parts from pressure by every possible means; and it is very satisfactory to be able to state, that by a perseverance

in such treatment both the patients in which this disease has occurred have got well; the symptoms not only yielded, but the swelling which projected into the rectum subsided.

The establishing this fact in the present disease, where the parts are within reach of being examined, strengthens every thing that has been advanced in favour of the gradual diminution of the middle lobe, respecting which we have no mode of judging of the progress but from the removal of the symptoms.

In this disease we are enabled to make applications more nearly to the part affected, which is a great advantage.

The applications which appear to me to be attended with the greatest benefit, are, suppositories of extract of hemlock, either with or without the addition of the extract of opium. Glysters of warm water, both as a tepid bath to the bowels, and a means of procuring regular evacuations without disturbance to the part affected.

The use of the tepid hip bath with salt water once in the 24 hours, at the temperature of 92° , or a degree or two higher, as may be found grateful to the feelings of the patient.

This practice was attended with success in the following case.

CASE I.

A. B. 36 years of age, in the year 1803, first felt a violent throbbing pain in the rectum ; this came on in irregular paroxysms, and occurred more commonly in the night : after going to stool, there was a sense of tenesmus, of the most distressing kind ; it was brought on by the necessary effort that he made in emptying the bowels, which he had occasion to do every morning, and lasted the greater part of the forenoon. The sensation was so uneasy as to render him unable to attend to business. Several internal medicines were employed, without any beneficial effect. Glysters of lime water were retained all night in the quantity of two ounces, but were of no use. Sedative liniments, and fomentations were applied to the perinæum, but gave no relief. Bougies were passed up the rectum, but aggravated all the symptoms.

After the complaint had continued for a year, I was first consulted, and on examining the rectum, found a prominence upon the prostate gland: by pressing on this, I brought on the symptoms to which the patient was liable from the disease; there could therefore be no doubt that it was the seat of the complaint. I recommended the use of suppositories composed of extract of opium, and extract of hemlock. The quantity of opium was 2 grains to four or five hemlock. I directed a glyster of a pint of warm water to be injected every morning to procure a stool, and the tepid salt water hip bath to be used every forenoon for ten minutes, at 92°. In the course of fourteen days, the tumor was evidently diminished in size, and the uneasy sensations considerably relieved, but as the opium was found to affect the head, and made the patient very uncomfortable, its use was omitted. He persevered in the use of the extract of hemlock alone, and increased the temperature of the hip bath to 94° for

fifteen minutes. In the course of six months his symptoms were entirely removed, and when the parts were examined by the finger, little or no swelling could be felt.

This gentleman has had no return of his symptoms since the year 1805, till 1810, when they were felt in a slight degree, but the attack was so mild as not to induce him to take up any mode of treatment.

CASE II.

A GENTLEMAN, aged about 36, who had for six months laboured under symptoms very similar to those which I have described, but in a still greater degree, being less able to walk without bringing on pain, consulted me in the year 1808. Upon examining the rectum by passing up the finger, an enlargement of the left lobe of the prostate gland, in the same degree as in the last case, was very distinctly to be felt. I explained to the patient the nature of the disease, that the recovery would be slow, but that I had no doubt of his getting well. The plan I laid down for him to follow was the use of the suppositories of extract of hemlock and of opium, the warm water glyster every morning, and the daily use of the tepid salt water hip bath. He went into the country, and I have since been informed, that he followed the

instructions which I had given him; the extreme pain and irritability gradually subsided, and though he could not perceive any difference in short intervals, yet after a few weeks he found himself considerably better. After some time, from catching cold, or inattention to diet, the painful symptoms returned, but not with their former violence. In the summer 1809, he tried tepid bathing at the sea, continued the warm water glysters, and applied nine blisters in succession to the perinæum, which he thought gave him relief, and he was much better when he returned from the sea side. A seton was kept for some time in the perinæum, which produced a copious discharge, but did not appear to have given him any relief. Since that time, by attention to his diet and general habits of life, he has had no relapse, and continues tolerably well.

CHAPTER VIII.

ON THE INFLAMMATION OF THE VERUMONTANUM.

As the verumontanum is the spot where the seminal vessels open, and is everywhere surrounded by the substance of the prostate gland, I have thought this a more proper place for the consideration of the present disease, than along with strictures in the urethra, although it does not strictly belong either to the one or the other.

It is a disease brought on by a variety of causes, and when once it is established, few complaints in these parts are more distressing or more difficult of cure.

The symptoms which it produces are principally confined to the nerves of the part, but not extending commonly to any distance from the central point of the veru-

montanum ; the sensations are at times of the most painful kind, and suddenly change to the most tormenting, itching, and worrying sensations ; the description, which individual patients give of them would fill a volume, and they vary according to the peculiarities of each individual constitution. They are always increased by sitting and standing, and relieved by lying in a horizontal posture, although not removed.

I had determined for many years to avail myself of any opportunity of examining the parts after death, in a patient who laboured under this disease at the time he died ; but although the disease is by no means uncommon, it is one that rarely proves fatal, and I have never, till very lately, had the opportunity of doing so. The following is the history of the case.

CASE.

A. B. from the time of his being 12 years of age, made water in a small stream, and was longer in emptying his bladder, than other boys. When he arrived at the age of 35, this symptom became much increased, and led him to apply for surgical assistance. He was directed to use bougies, and could pass one of a moderate size into the bladder, but was not materially relieved. After having used bougies for some time, a new set of symptoms came on; there was a straining to make water, and considerable quantities of a gelatinous glary mucus were voided with the water, he had a constant heat and uneasy sensation, which he referred to the urethra, just at the neck of the bladder; this was increased after making water, and left so distressing a feeling in the parts that he could not, while it lasted, attend to

any business. This gradually increased, notwithstanding a variety of means were employed to remove it; none of them had the smallest effect except opiate glysters, which gave temporary ease, but when the pain returned, it was unabated, and he rather thought more violent. After suffering from this complaint entirely confined to that part of the urethra for seven years, getting gradually worse, he died in consequence of an attack upon his bowels. Having had frequent opportunities of seeing him, and considering his complaints, which I could neither remove, nor perfectly understand, I was desirous of ascertaining in the dead body the cause which produced them.

On examining the parts after death, I found no enlargement of the body or lobes of the prostate gland, no disease in the bladder. At the verumontanum, there was an appearance of a membrane, the consequence of inflammation covering the orifices of the vasa deferentia, and not

extending beyond that part. The urethra was free from stricture. As this was the only part which had undergone any alteration of structure, it is reasonable to conclude, that the disease was an inflammation of the verumontanum, that an exudation of coagulable lymph had been thrown over that surface, and the parts had never recovered themselves, but the surface had always continued in an irritated state.

So slight an alteration of structure, after the continuance of a malady for seven years, shews that a slight affection of this part occasions symptoms of a serious nature, and long continuance.

In every case of this kind which I have met with, the disease has continued for years ; it has existed in very different degrees of violence. The slighter cases, in young people, by moderation, and avoiding every thing that produced uneasiness, have got well, but in general the parts do not recover themselves.

The symptoms are brought on by

different causes: in the case first related, the use of bougies was the immediate cause. The most frequent cause from which I have seen it arise is the use of injections for the cure of gonorrhœa in men advanced in life.

In one case it was brought on by a gentleman having an emission of semen while trotting on horseback in the park.

In another, in consequence of being in company with women for a considerable time, and teased with constant erections of the penis.

In a gentleman, who had from the effects of an accident, an obstruction in the seminal ducts of both testicles, this complaint was brought on after a long ride on a hot day.

In a gentleman who had an enlargement of the prostate gland, this complaint came on, and appeared to arise from an extension of inflammation along the surface of the membrane of the middle lobe of the prostate gland to this part.

This disease is often supposed to be the effect of stricture in the urethra, in consequence of the whole canal being disturbed by it, and spasmodic contractions occasionally brought on about five inches and a half from the external orifice, which resist the passage of a bougie. This is an unfortunate mistake whenever it is made, for in every instance in which I have seen the bougie used, the symptoms have become more violent than they were before. Blisters to the perinæum continued for weeks together sometimes, though rarely, give relief.

Cold applications to the perinæum, and glysters of iced water, palliate the symptoms, but do not cure the disease.

Opiate glysters and opiate suppositories, in this disease, as well as in most other local nervous affections, give the most immediate and permanent relief, but the symptoms return as soon as the effects of the medicine go off.

So little benefit has been derived from

local treatment, and the use of internal medicines, in these cases under my own observations, although persevered in for years under different practitioners as well as myself; and the patient has so frequently returned to me worse in all his symptoms from the trials which have been made to remove them, that I am led to believe that no very active treatment should be adopted.

This may be considered as too imperfect an account of the disease, and of the mode of treating it, to be laid before the public; and were it not that the disease has been mistaken very commonly for an enlargement of the prostate gland, by some practitioners, and for a stricture in the urethra by others, from both of which it is important that it should be distinguished, I might not be justified in the step which I have taken.

While the symptoms are believed by the patient to arise from either of these complaints, he is in constant pursuit of

relief, by going from surgeon to surgeon, and is made miserable by a succession of disappointments, but when he is convinced that the whole of his distressing sensations arise from an inflammation extending over a small spot in the urethra, that part of the symptoms belonging to the mind is removed, and those of the part become much more easily endured, and very often gradually, although very gradually indeed, subside.

CHAPTER IX.

ON ABCESS IN THE PROSTATE GLAND.

THE prostate gland is liable to have an abcess form in its substance, which commonly breaks in the situation of the verumontanum, or rather immediately behind it.

The disease in its progress produces many symptoms in common with the inflammation upon the verumontanum already described, irritation at the neck of the bladder, pain and difficulty in voiding water, uneasiness in going to stool, and tenesmus, frequent rigors, and the feeling of general indisposition.

When the abcess breaks, there is discharged along with the urine, matter mixed with mucus, and after the last drops of urine are voided, there is a stinging pain which lasts for a few minutes, or for

a much longer period, according to circumstances. There is in some cases more or less blood mixed with the discharge, and I have known a considerable hæmorrhage take place. There is also a pain in the glans penis, as if a burning coal was applied to it.

This disease, when it occurs, which it does less frequently than many others of this gland, is often mistaken for inflammation and ulceration of the bladder itself, to which undoubtedly it bears a very close resemblance in its symptoms, and after the abscess breaks, it becomes an ulcer at the neck of the bladder. In those cases which have come under my observation, the abscess had broken before I was consulted, and the only means I have had of discovering the exact nature of the case has been by feeling the ulcerated part at the orifice of the bladder, the point of the catheter readily going into it, and being with difficulty guided over that part into the cavity of the bladder; this circumstance,

joined with the history of the disease, has enabled me to trace the progress of the symptoms.

In one instance, the cavity formed by the abcess, was so large that different surgeons had been unable to pass an instrument beyond it, and it required several trials before I could get the catheter into the bladder, and draw off the urine. This case had been mistaken for stone, in consequence of the patient suffering the most excruciating torture from the last drops of urine getting into the ulcerated cavity and being retained there, and having frequent darting pains in the upper part of the glans penis ; nor could the real nature of the case be explained till there was an opportunity of ascertaining that the cavity, into which the point of the instrument was received was not the cavity of the bladder, but one which had been formed in consequence of disease, and this could only be done by conducting a catheter into the bladder, and drawing off the urine.

The treatment of this distressing disease consists in soothing the parts by means of suppositories, and internal medicines of the narcotic kind ; of these opium, hemlock, Dover's powder, and hyoscyamus are most to be depended on. The salt-water hip bath at a low temperature gives temporary relief. Exercise on horseback should never be used, and indeed no violent exertion of any kind should ever be attempted. The urine should be kept constantly in a state of dilution, by means of watery mucilaginous drinks.

These are the only remedies which I have found to be of any material service. To enumerate many cases of this description will be little instructive, since I have no particular mode of treatment to propose that is peculiarly adapted to the patient's relief ; I shall therefore content myself with giving one example.

CASE.

A. B. aged 51, had been liable to piles for 30 years, and of a costive habit, in 1809, had, in addition to his complaint, a protrusion of the piles when walking, which was so distressing to him, and attended with so much discharge from the rectum, that his life was uncomfortable. In this distress he, in a kind of despair, applied a strongly astringent liquor to the piles, which in a week completely stopped the discharge, and prevented their coming down. After this he was taken ill with symptoms that were supposed to belong to a low fever, which lasted for six weeks; at the end of this period, whenever he got up, rigors came on, but subsided upon his keeping a horizontal posture. These rigors returned several times; and at the end of two months, from the coming on of the

febrile symptoms, a stinging pain was felt in the neck of the bladder, and a considerable discharge of glary fluid flowed out with the urine, attended with great pain, which lasted for some time after the water had ceased to flow. From this account it appears that the fever and rigors were symptomatic of matter forming in the gland. The rigors only came on upon bodily exertion, and went off when in a tranquil state, and this continued till the abcess burst into the urethra. Different means were tried for his relief; he went through a course of mercury, which appeared to mitigate the symptoms, but they returned again upon his using exertion. In the present state of the case, in passing an instrument the broken surface at the neck of the bladder can readily be felt, and the point of the catheter can be carried over it into the bladder. From employing opiate glysters, the tepid bath, and the internal use of cicuta, little real benefit has been derived; but the symptoms have not in-

creased for many months; and by quietness and management they may gradually diminish, if not ultimately subside.

This is a mild case of this particular disease.

CHAPTER X.

ON ULCERS IN THE PROSTATE GLAND.

THE body of the prostate gland, when a wound is made in it near the verumontanum, does not in general readily recover itself, and an ulcer is formed. This backwardness to heal most probably arises from the urine getting into the wound, and keeping up an irritation; and when once a part of the glandular substance has been destroyed, the ulceration readily spreads to some extent in the body of the gland.

Under other circumstances wounds in the body of the prostate gland heal as readily as in any of the neighbouring parts, even where the gland has been considerably enlarged, and in a diseased state; of this we have abundant proof in the operation for the stone. Wounds in the anterior

part, where they are oblique, so that there can be no lodgment of the urine, are attended with no bad consequences.

The symptoms that are produced by such an ulcer, are, an increased secretion of very viscid mucus mixed with matter, a frequent desire to make water, and more or less of a stinging pain, in proportion to the degree in which the lodgment of urine takes place. This pain is referred to the neck of the bladder whenever the irritation is very severe ; it is also referred to the glans penis, exactly in the same way as in cases where a calculus lies in the orifice of the bladder.

This disease is produced most commonly from one of two very different causes. The one, small irregular pieces of gravel escaping from the bladder, but entangling themselves just behind the verumontanum ; so that the sharp points wound the membrane, and by degrees sink deeper into the substance of the gland, and become fixed in that situation.

The other is the incautious use of instruments, more especially of the metallic kind, in attempts to pass them into the bladder; when these are required to be employed, the parts are in a diseased state, and they more readily give way when the point of the catheter is pressed with any degree of force against them. From the same cause the ulceration when once begun is more disposed to extend itself into the substance, than if the parts were in a natural state.

These are very unmanageable cases. The mode of treatment which is best adapted to the patient's ease is seldom pursued, which arises from the nature of the malady not being understood, the symptoms being referred to the bladder, and not to the prostate gland. When the patient has also an enlargement of the middle lobe of the gland, the symptoms produced by the ulcer are attributed to that disease.

The best distinguishing mark which I

have learned from experience, of a diseased state of the prostate gland, is the viscid mucus mixed with the urine. This mucus, I am convinced, is produced entirely from that gland, and is met with whenever its functions are much disturbed. The occasional appearance of this mucus is a consequence of every attack of inflammation from whatever cause; but when it continues, without abatement, whatever mode of life the patient follows, and whatever medical treatment is adopted, and lasts for months, there is no doubt of a permanent disease having taken place in the gland; either an ulcerated state of the surface of the middle lobe, of one of the lateral lobes, or an ulcer in the substance of the gland.

In all cases where this symptom is permanent, the treatment should be directed to palliating the effects of ulceration. This is best done by preventing the urine from coming upon the surface of the ulcer, which can only be effected by keeping a catheter in the bladder.

In a case of enlargement of the middle lobe, where great violence had been used in attempting to pass the catheter, but without success, a new set of symptoms came on; great local irritation, a severe pain after passing the water, a sense of burning heat in the glans penis, and a copious discharge of viscid mucus. At the time these symptoms were believed to arise from the aggravated state of the original complaint; and as there was difficulty in passing the catheter, it was kept in the bladder, and while it remained there all the above symptoms went off; but as soon as it was taken out they returned, and continued till the patient, who was near 80 years of age, was worn out; for unfortunately he was unable to bear the instrument more than a short time in the bladder. After death an ulcer was discovered in the prostate gland, and the injury committed by the injudicious passing of the instrument was distinctly seen, which explained the relief the patient had received while the cathe-

ter was retained in the bladder, for during that period the urine could not come in contact with the ulcer.

In the following case, where the ulcer was formed by irregular pieces of gravel, the urine was prevented from getting into the cavity formed by ulceration; the pieces of gravel shutting up the orifice, and little or no pain was felt after making water; the principal symptom was the discharge of viscid mucus from the gland, which took place in a very unusual degree.

CASE.

A GENTLEMAN, 59 years of age, who had passed many irregularly formed portions of gravel, and some of them with great difficulty, their form retaining them several days in the urethra, was attacked with a discharge of glary mucus, attended with frequency in making water, which in no way could be accounted for; the quantity of mucus increased, and it became more tenacious, nothing that was administered checked it in the smallest degree; it went on for a year and half, and at the end of that time he died of another disease. Upon examining the parts after death, two portions of gravel of very irregular forms were found imbedded in the prostate gland, hardly perceptible in the urethra, only one small point projecting beyond the surface of the membrane; when these were re-

moved there was a cavity nearly the depth of the thickness of the gland, containing an imperfectly formed matter, with which the calculi were surrounded.

In this case, it was impossible during life to ascertain the cause of the symptom, nor could any means of relief have been administered, had it been known.

OBSERVATIONS ON THEM.

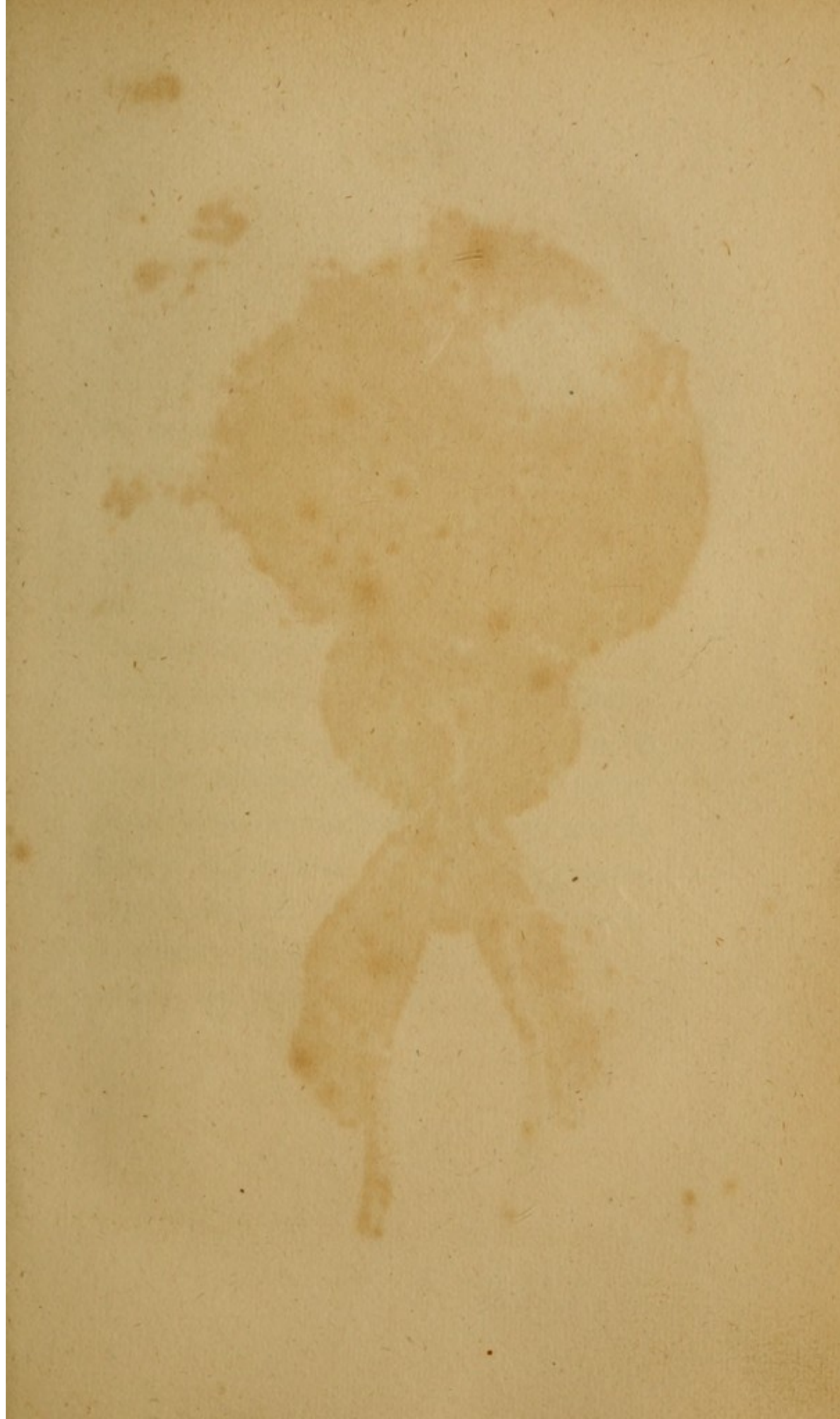
The engravings which are to be described form a tolerably complete series of representations of the changes which the middle lobe of the prostate gland undergoes in the different stages of its disease and enlargement: they are all made with unusual fidelity, being designed and engraved by the Conservator of the Hunterian Museum, who is not less skilled in anatomy than he is excellent in the art of making anatomical drawings. The morbid parts from which the engravings were made are deposited in the Hunterian Museum, and the histories of most of the cases are accurately

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detailed in the foregoing pages, all the patients having been under my own care, and, from the nature of the complaints, required particular attention being paid to them.

To make this series of appearances more clearly understood, I shall not content myself with the usual short description of the different plates, but give a more extensive and connected catalogue of the whole.



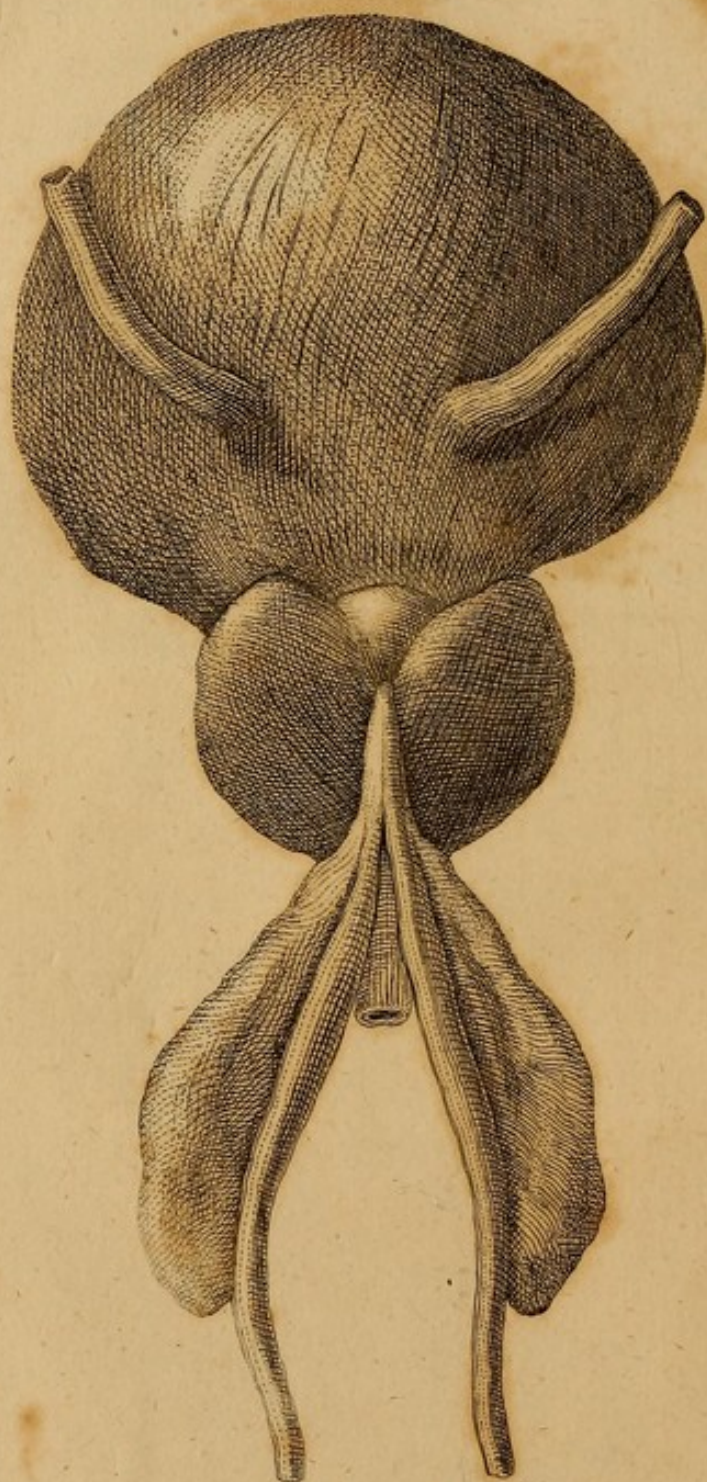


PLATE I.

THIS Plate shews the external appearance of the middle lobe when the vesiculæ seminales and the vasa deferentia under which it is situated have been removed. Although it is connected firmly on each side with the lateral lobes, it is distinct from them at the posterior part, and evidently a separate lobe of a rounded form.

The prostate gland varies more in its size in different men, than many other parts of the human body; and this middle lobe is liable to do so in a still greater degree than the body of the gland, being frequently smaller than it is here represented, and sometimes of a larger size.

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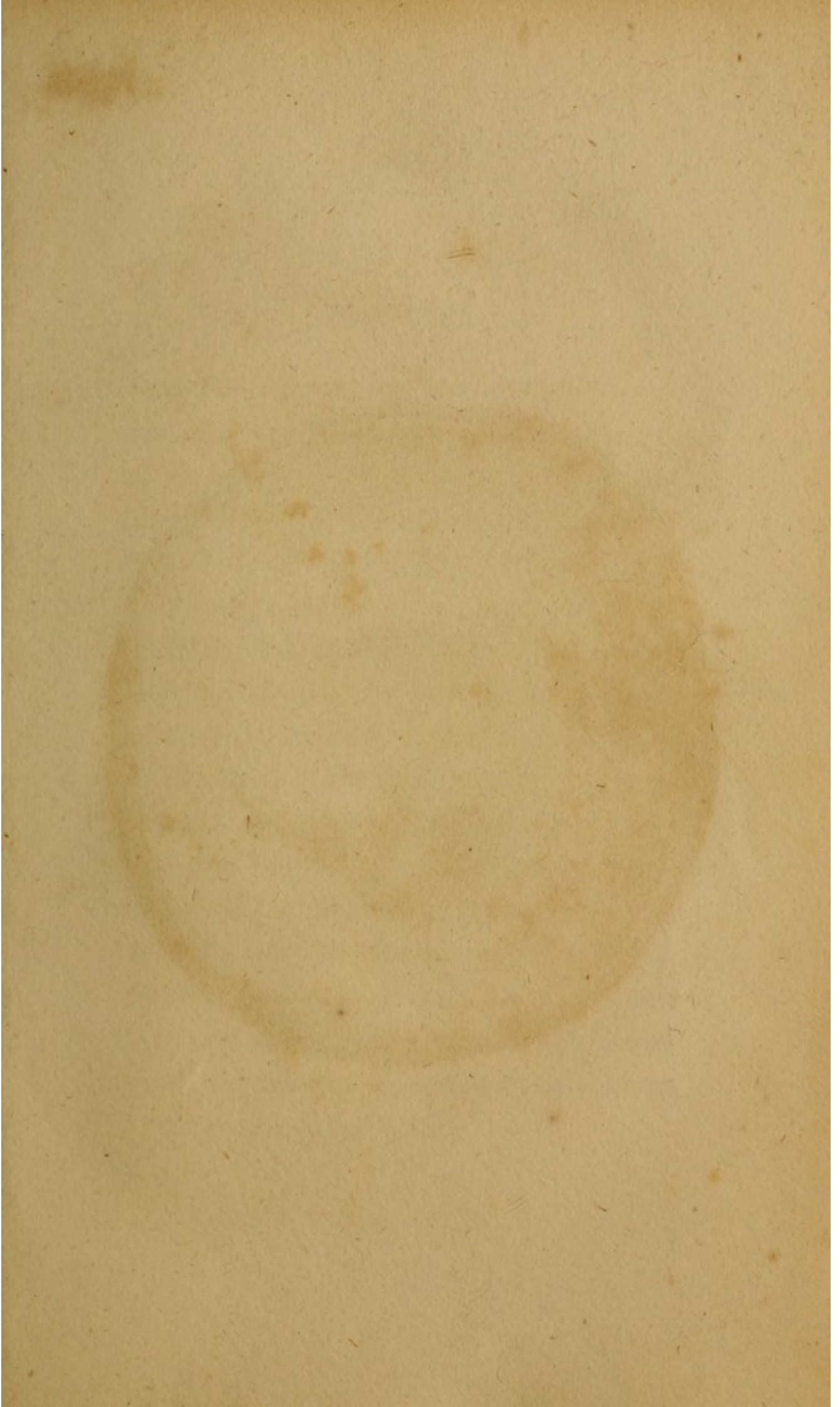




PLATE II.

THIS Plate represents the middle lobe of the prostate gland in an incipient state of its enlargement, putting on a nipple-like appearance, and pushing the internal membrane of the bladder before it, which everywhere adheres to the projecting parts, and forms a covering to it. In this view, the fundus of the urinary bladder is removed, so as to expose the orifice of the bladder. This in a natural state resembles the narrow part of a funnel, but here the projecting middle lobe is so situated, that whenever the bladder contracts to expel its contents, the middle lobe is pressed forwards directly upon the orifice ; and although it could not completely shut it up, must have formed an obstruction to the passage of the urine.

PLATE II.

This Plate represents the middle lobe of
 the prostate gland in an inflated state
 of its enlargement, being on a single
 like appearance, and passing the internal
 membrane of the bladder below it, which
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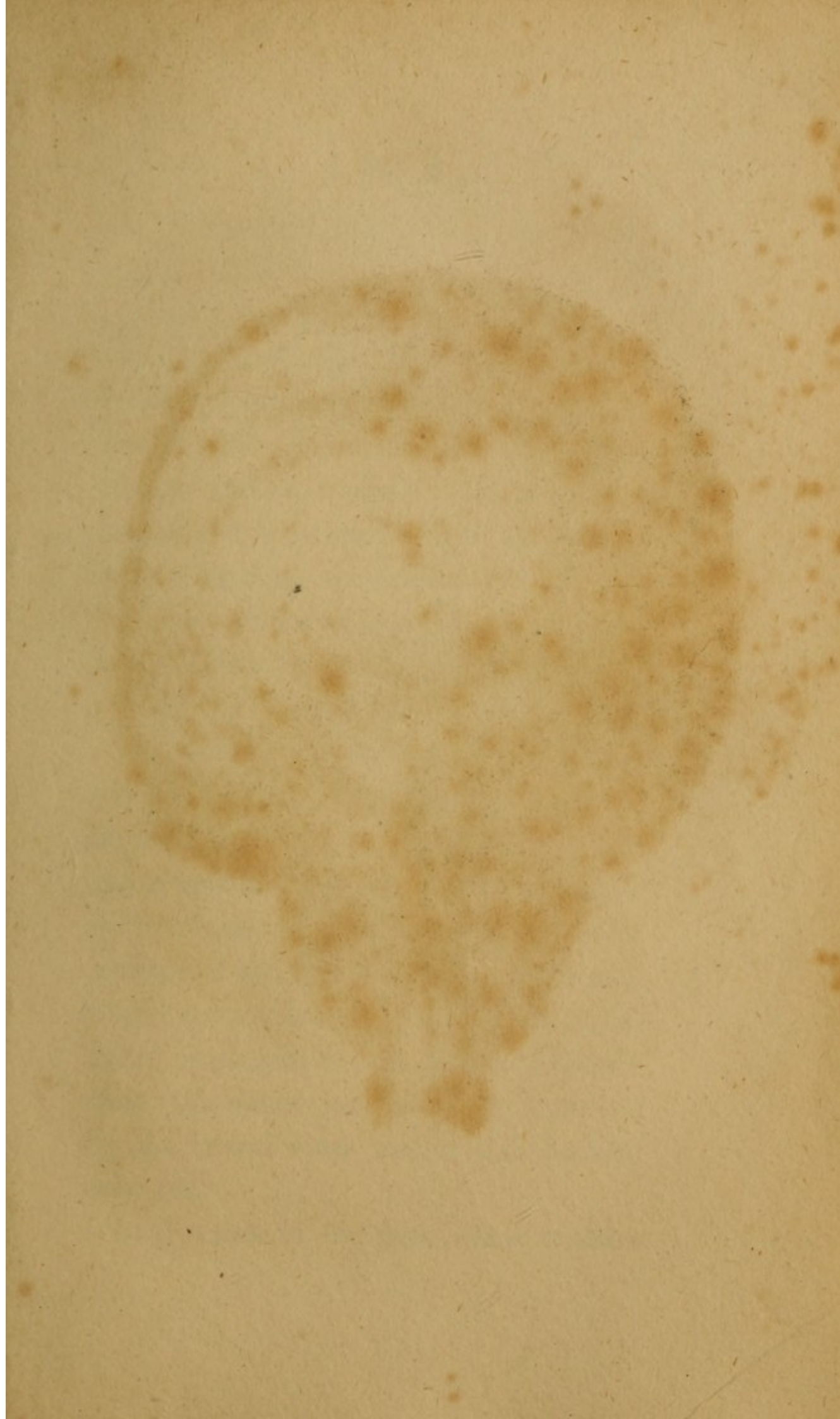




PLATE III.

Is taken from the same parts, but the enlarged lobe is seen in relation both to the bladder and the urethra. The membrane covering it is put so much on the stretch, as to drag down the orifices of the ureters towards the tumour, so that the intermediate space forms a double projecting ridge, instead of a concave surface. In the opposite direction the loose membrane of the urethra, as far as the verumontanum, is so much elevated, as to form a bridle of some breadth, and considerable strength, by which the enlarged lobe, and the verumontanum are drawn nearly close to each other; and the hollow between them is rendered much deeper than it is in its natural state; this hollow is considerably increased by the lateral lobes having also become enlarged.

In this state of the parts, there is some

difficulty in passing an instrument into the bladder, since the point will be readily entangled in the bottom of the hollow. The best mode of doing it, is to pass the catheter in a horizontal direction either towards the right or left side; but in general the right side lies more conveniently to the hand of the surgeon, and when the point has arrived at the verumontanum, to turn the handle upwards by a gradual sweep, while the point is still moving; and in this way it is directed into the space between the middle and lateral lobes, where there is nothing to obstruct it, and depressing the handle is all that is necessary to make it enter the cavity of the bladder.

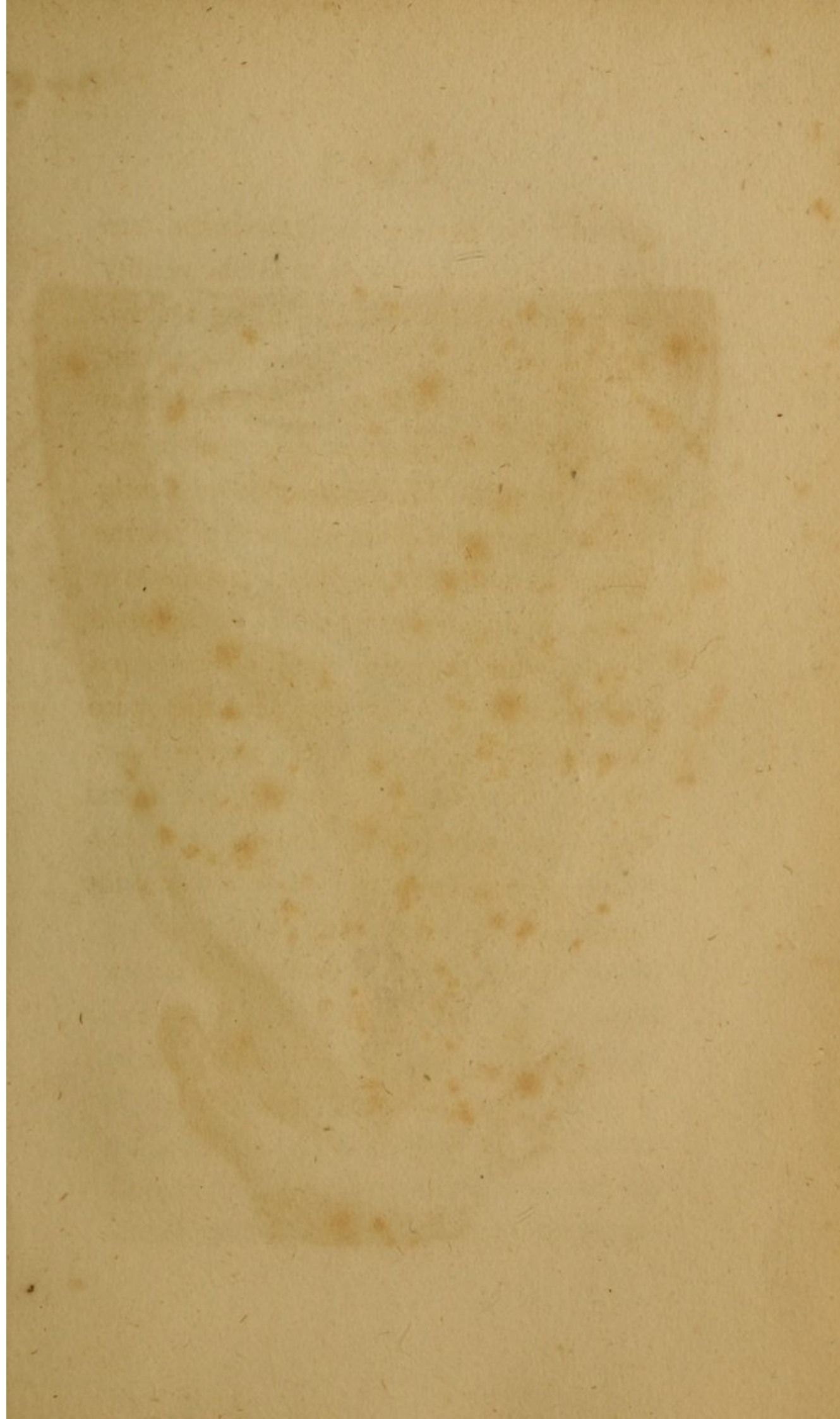




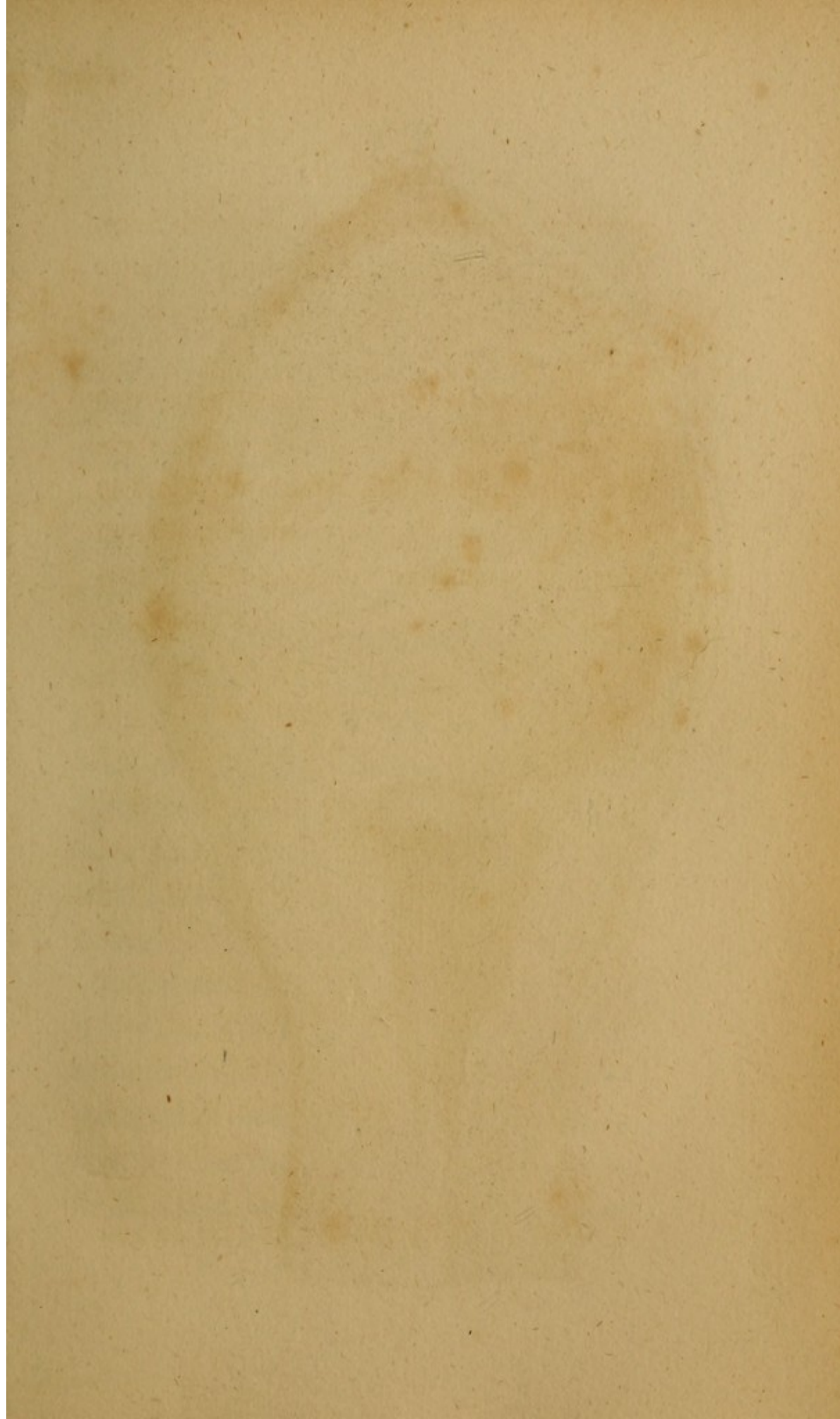
PLATE IV.

IN this representation the enlargement is scarcely greater than in Plate III. but is under very different circumstances, and instead of having the form of a nipple is extended laterally, so as to form a ridge.

In this case the bladder had been for many years disturbed by the passage of the urine being obstructed in consequence of strictures in the urethra ; so that before the enlargement of the middle lobe took place, the muscular coats of the bladder had acquired great strength, and an uncommon degree of thickness ; the internal membrane had been formed into sacculi, and was so much thickened, that its fibres were unusually distinct. The openings of the ureters had become so patulous, as to admit of regurgitation of the urine. Under these circumstances many of the effects that had taken place in the repre-

sensation Plate III. are not met with here. The ureters are at their usual distance from the lobe; the verumontanum is equally so.

The stretched state of the membrane of the bladder over the middle lobe, is remarkably distinct, and is seen to extend as high as the openings of the ureters in one direction, and to the verumontanum in the other.



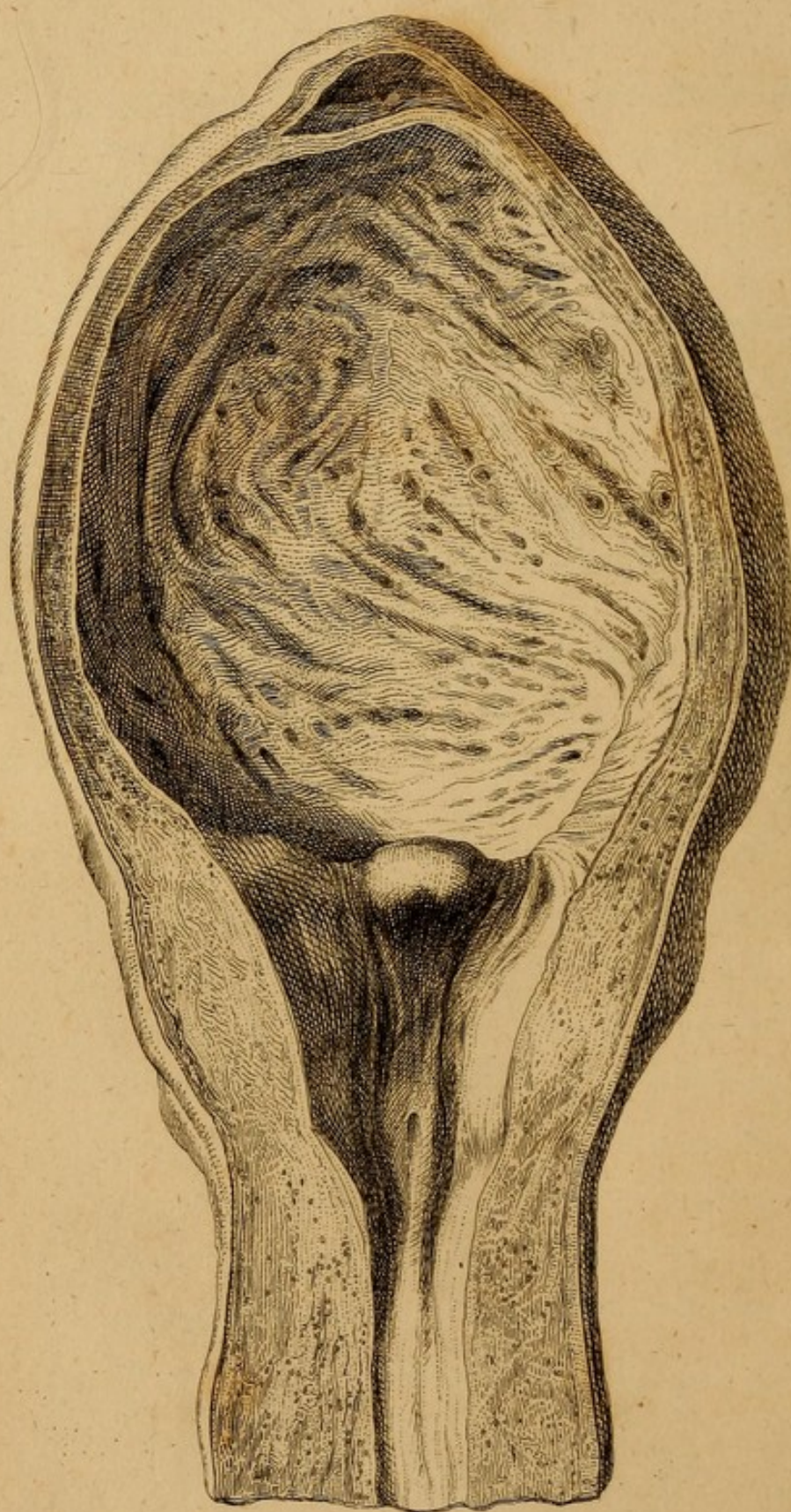


PLATE V.

IN this representation the middle lobe is more prominent than in the last, and there is an appearance not met with in the former Plates; this is a transverse fold of the membrane of the bladder between the middle and lateral lobes; it is a part which merits particular attention, since it increases the obstruction to the passing of the urine, by preventing it from getting round the sides of the protuberance. This fold is particularly well seen, the drawing having been made while the parts were in a natural state before they had been immersed in spirits, which coagulates them, and takes off all distinction in the appearance between this fold, and the lobe itself; this is so much the case that no examination of preparations in spirits can give an adequate idea of what the appearances really were in the living body. In this representation

they bear a close resemblance to the human uterus, and the lateral ligaments.

The internal membrane of the bladder has a sacculated appearance ; at the fundus there is a sac formed by the internal membrane, protruding between the fasciculi of muscular fibres. There is a cavity behind the ridge formed by the enlarged lobe, and the transverse fold of the membrane ; and another on the opposite side, between it and the verumontanum.

It is evident, that, when the disease has arrived at this stage, the bladder can never empty itself completely, since, before any urine can pass out, the cavity behind the ridge must be full ; and the pressure of the liquid which it contains must force the tumour forwards, so as to shut the orifice of the urethra ; but when a larger quantity of urine is collected in the bladder, the internal membrane being put upon the stretch, and the tumour pulled backwards from the orifice of the urethra, a certain portion is allowed to flow. The same

ridge, which prevents the bladder from emptying itself, forms an obstacle to the point of the catheter when an attempt is made to pass it into the bladder to draw off the urine. In the middle line where the lobe itself is situated, there must be great art in directing the end of the instrument over it; but laterally, where there is only a folded membrane which can be pressed before the instrument, and which does not rise so high, the catheter may be more easily directed into the bladder. The bridle extending from the verumontanum to the lobe being only a narrow band, the end of the catheter cannot rest upon it, but descends into the space on one side of it, and is conducted into the bottom of the cavity before the lobe, where it is very probably entangled, so as with difficulty to be extricated, unless the catheter is curved at the point.

ridge, which prevents the bladder from emptying itself, forms an obstacle to the point of the catheter when an attempt is made to pass it into the bladder to draw off the urine. In the middle line where the lobe itself is situated, there must be great care in directing the end of the instrument over it; but laterally, where there is only a folded membrane which can be pushed before the instrument, and which does not rise so high, the catheter may be more easily directed into the bladder. The ridge extending from the verumontanum to the lobe being only a narrow band, the end of the catheter cannot rest upon it, but descends into the space on one side of it, and is conveyed into the bottom of the cavity before the lobe, where it is very probably entangled, so as with difficulty to be extricated, unless the catheter is curved at the point.

When a catheter is introduced into the bladder, it is necessary to be careful not to push it too far, as it may be injured by the friction of the instrument.



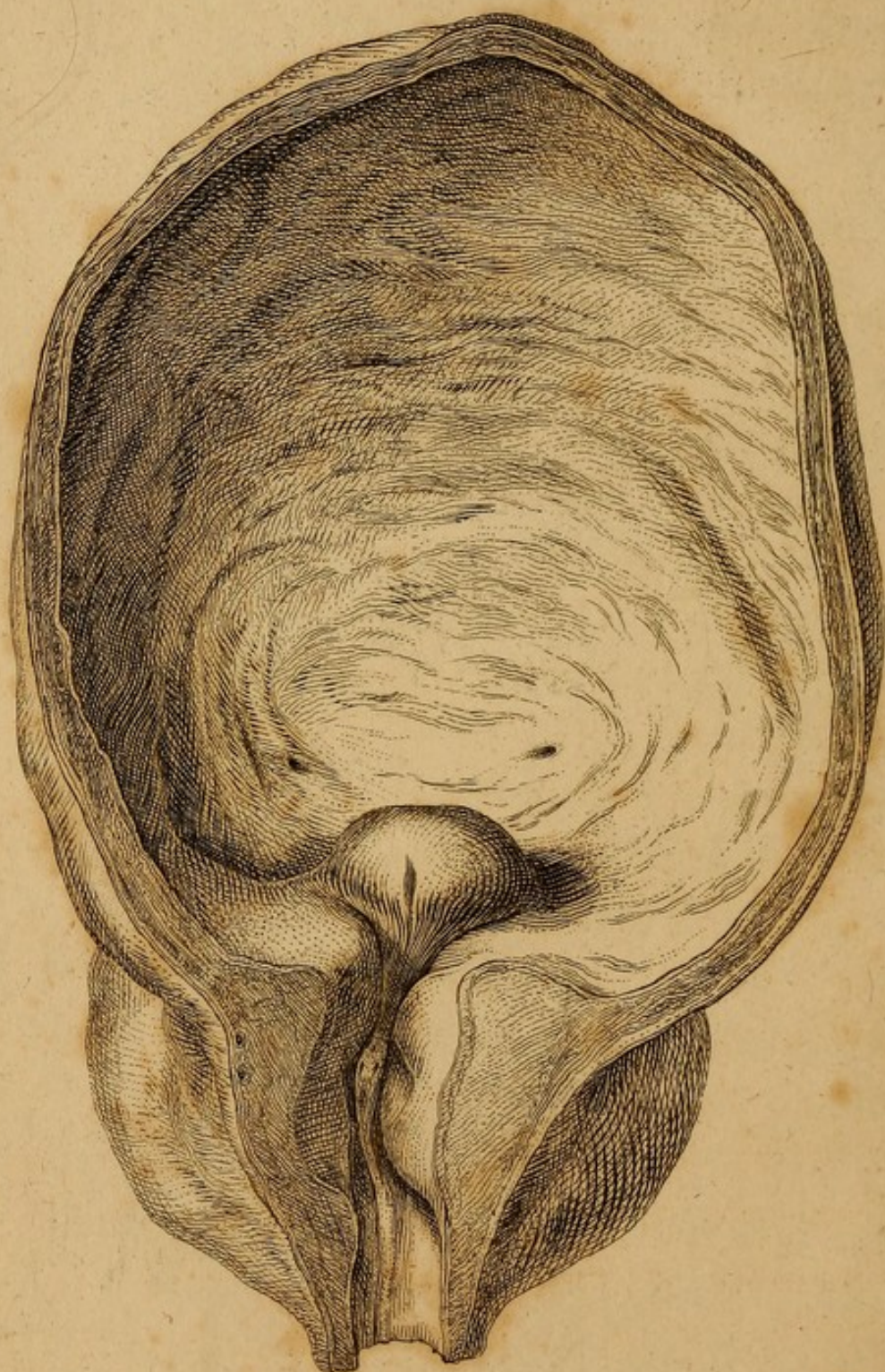


PLATE VI.

THE middle lobe is in this instance still larger than in the last; the lateral fold of the membrane on each side is very distinct, and as the prostate gland itself is increased to a great size, the cavity before the middle lobe is very deep, and the left portion of the gland having swelled more than the right, it has put on a convex form towards the urethra while the opposite surface is concave, so that the canal of the urethra through that part, instead of being straight, forms a curved line; wherever this is the case, there is great difficulty in conducting the point of the catheter into the bladder, for when it arrives at the prostate, the handle of the instrument is always turned round, and the point forced downwards and to one side, and goes on in that direction till it is entangled in the fold of the membrane close to the root of the

projecting portion of the middle lobe. To counteract this resistance to the right course of the catheter is both difficult and requires a good deal of force, and when it has been accomplished, the point comes against the anterior surface of the enlarged lobe, and in this plate is the mark of a wound which had been made during life, in the unsuccessful attempts to draw off the urine. The coats of the bladder do not appear much thickened, but when it is known that the cavity was much distended, it will be seen that they are thick in proportion to that state of the viscus.





PLATE VII.

IN this plate the middle lobe is not very prominent, but it extends laterally, and the transverse fold of the membrane of the bladder is unusually thick, so that they form together a very complete valve to the orifice of the urethra; the lateral portions of the gland are not much elongated but are considerably swelled, so that the hollow between the middle lobe and the verumontanum is of unusual depth. The resistance to the passage of the urine was so great in this instance that not a drop could be passed, and the efforts of the muscular coats of the bladder to expel the contents were so great, that they occasioned the inner membrane to protrude just between the openings of the ureters, and a large cavity or reservoir was formed there capable of containing above half a pint of urine, while the cavity of the

bladder became preternaturally contracted. In this case every attempt to pass an instrument into the bladder proved ineffectual. The point of the instrument could not be raised over the top of the nearly perpendicular ridge, which was opposed to it, but became entangled at the bottom of the hollow, and generally came against the right side, and was stopt there. In the engraving, three impressions made by the catheter in these attempts, are distinctly seen on this side, one just beyond the verumontanum, another a little farther on, the third against the membranous fold of the side of the projecting lobe: there is also a similar mark on the opposite side of the urethra, but only one. After several ineffectual trials, I judged it expedient to puncture the bladder, but before proceeding to that operation, by making use of more force, the catheter was pushed into the bladder, but not along the natural canal, as it was afterwards found to have pierced the urethra at the place marked in

the engraving by a bristle, and to have gone between it and the middle lobe, and to have entered the bladder just where the communication had been formed between that cavity and the cyst behind it, which is also pointed out by the bristle.

This bladder is engraved in Dr. Baillie's valuable work on Morbid Anatomy, but the view which is there given of the parts is not exactly the same that is here represented. I have therefore engraved it anew, to illustrate the case which is given at length in the preceding pages, and which has not before been laid before the public.

the engraving by a artist, and to have it
gone between it and the middle label, and as
to have entered the picture just where
the communication had been intended to
between that entry and the eye behind it,
which is also pointed out by the artist.
This label is engraved in a style which is
valuable work on a middle authority, and
the view which is there given of the picture
is not exactly the same that is now before
us. I have therefore engraved it anew,
to illustrate the case which is given, and
length in the preceding pages, and which
has not before been laid before the public.

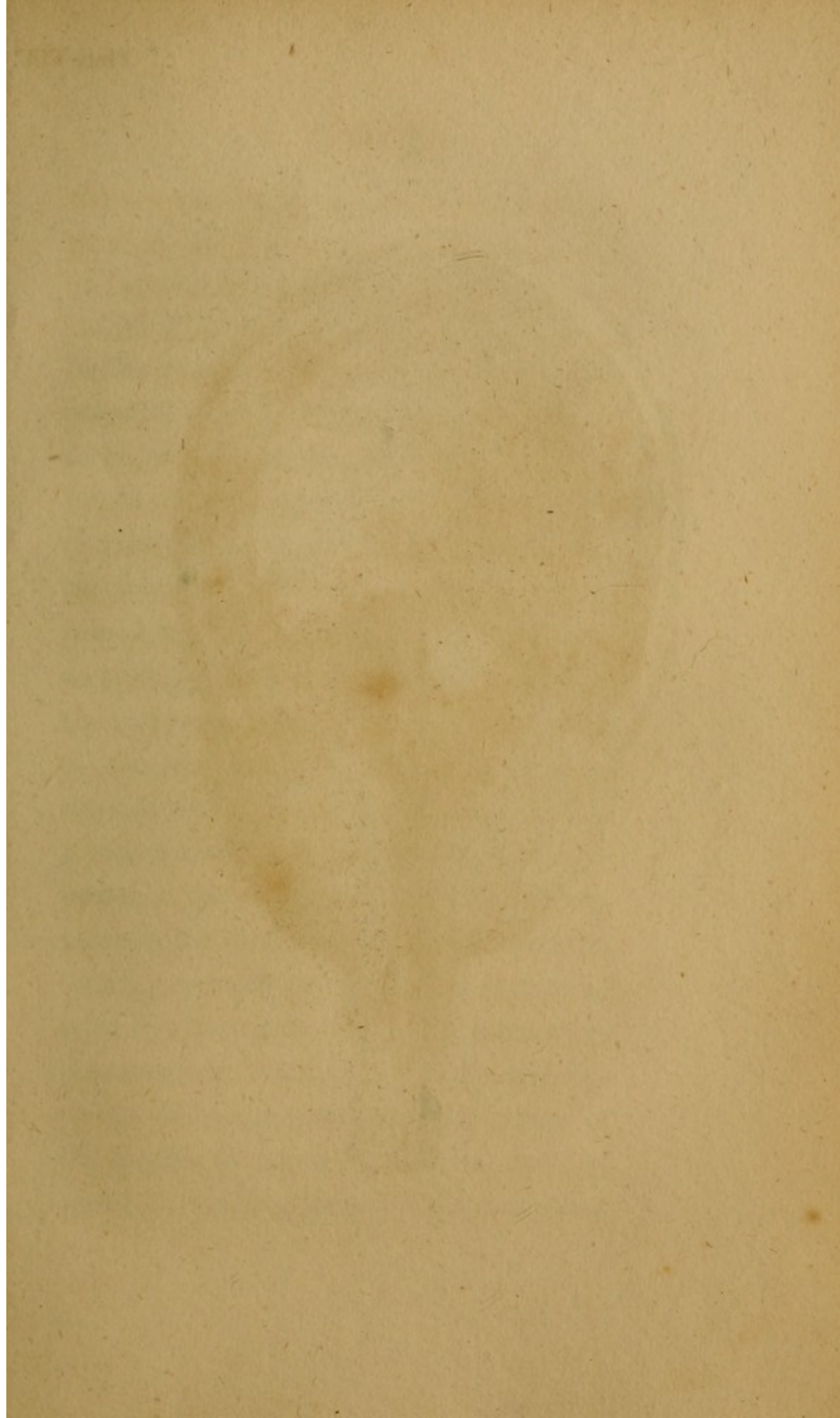




PLATE VIII.

IN this representation, the middle lobe has acquired a larger size than the lateral lobes, so that it appeared at first to be a tumor of an irregular form belonging to the body of the gland taking this particular direction; but after having been examined more accurately, it was found to be an enlargement of the middle lobe only; the transverse folds of the inner membrane of the bladder connected with it, were distinct when the parts were examined in a recent state. In this specimen, the increase in the size of the lateral lobes was more in the direction towards the bladder, which produced an effect, the reverse of what has been met with in the former representations, since here the distance between the verumontanum and orifice of the bladder is increased, and the canal of the urethra is lengthened. On this account,

and on account of the great size of the tumor in such cases, not only a very long catheter is requisite to draw off the urine, but the catheter must have an unusual degree of curvature. In this particular instance, I employed a flexible gum catheter on an iron stilet very much curved, and when the point of the instrument met with the obstruction at the neck of the bladder, I withdrew the stilet a little, the doing which threw the point of the catheter forward, and enabled it to be passed over the projection of the tumor into the bladder. In this way only, was I ever able to succeed in drawing off the patient's urine, and the impressions which are seen on the surface of the tumor were made by the point of the instrument in these operations. I should now prefer using a very large catheter rounded at the end with a leaden stilet, which would escape from being entangled in the irregularities of the surfaces, and do less injury to the parts over which it passed. In consequence of the base being in a great

measure concealed by the surrounding parts, the tumor appears to have more of a pyriform shape than it really has. The inner membrane of the urethra being very much on the stretch, a longitudinal fold of it is seen extending beyond the verumontanum into the membranous part, and the verumontanum itself is pulled upwards towards the bladder.

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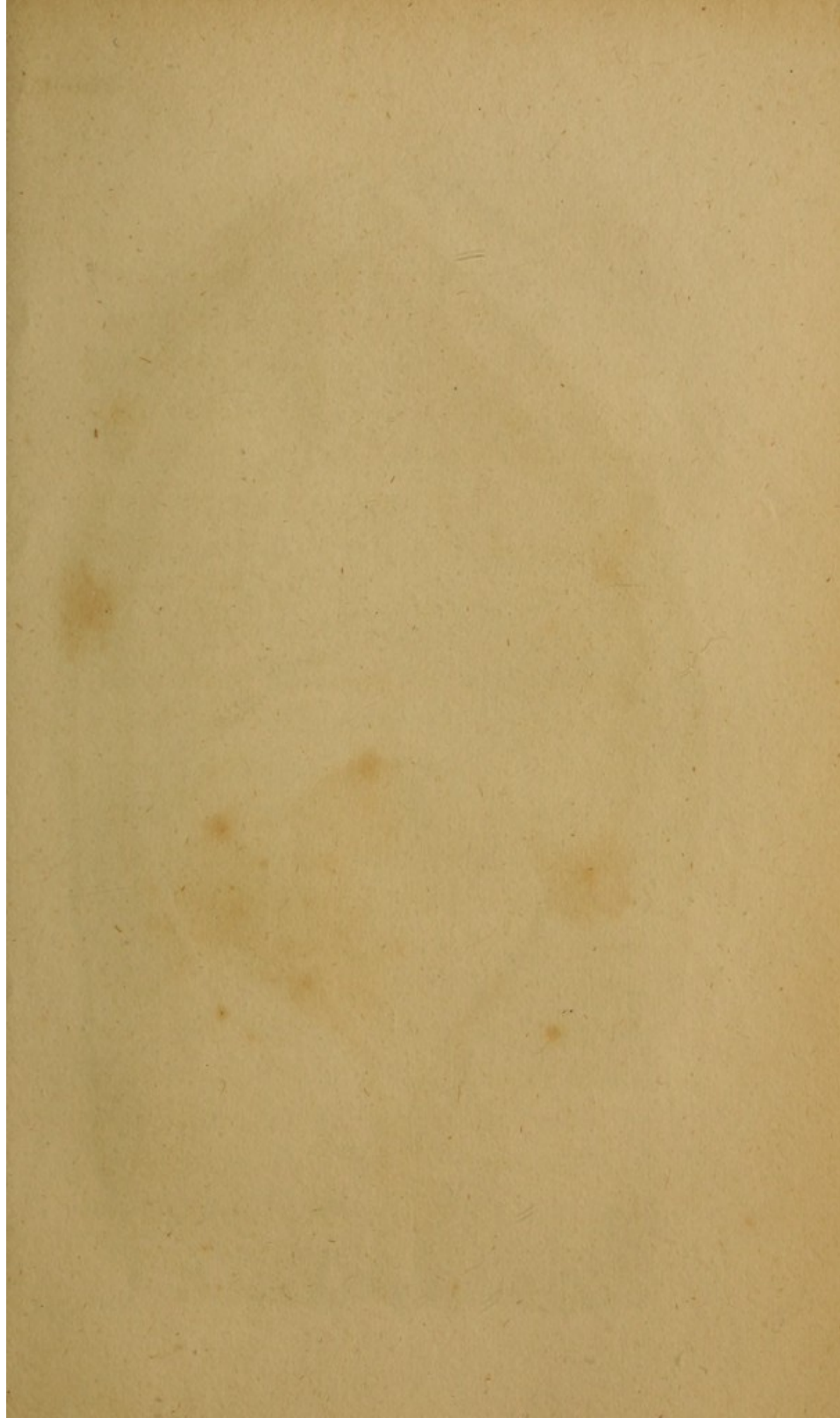
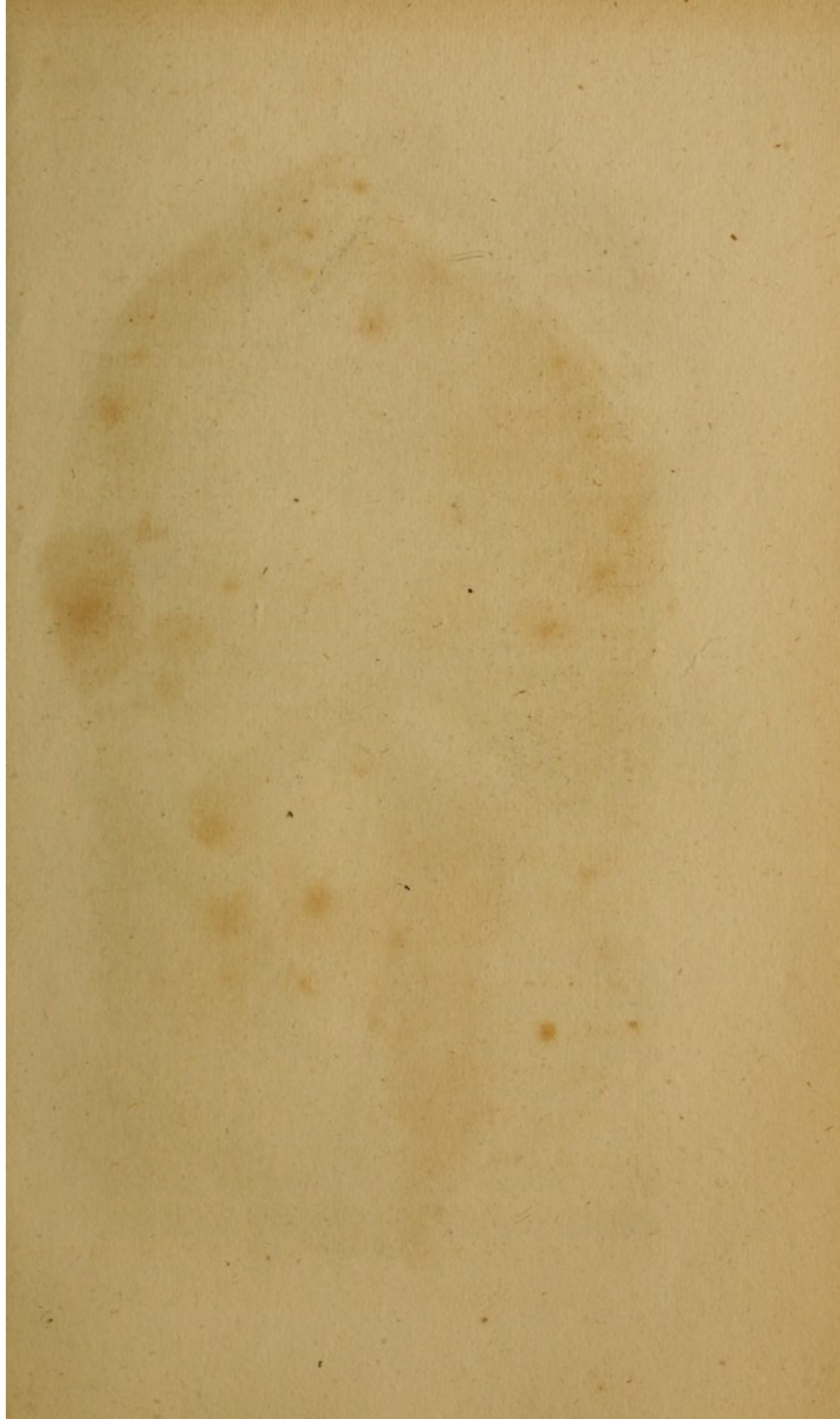




PLATE IX.

THE appearance of the middle lobe in this plate, bears a close resemblance to that in the preceding, except that it is still larger. Indeed it is the largest specimen of this lobe which I have ever met with. In this instance the attempts to introduce a catheter gave so much pain, that the patient preferred death to submitting to the repetition of them. The cause of so much sensibility could not at the time be explained, but it was afterwards found to be the consequence of inflammation of the external surface of the tumor. There are impressions seen denoting the places where the point of the instrument stopped in the unsuccessful attempts, which were made to introduce it, four on the right side, and one on the left side. I found that I succeeded more frequently in introducing the instrument when the point took the first

of these two directions, and the line in which the instrument passed can be distinctly seen. After inflammation had come on, the fold of membrane had become more thickened, and the point of the instrument never afterwards could be made to pass beyond the last of the orifices marked in the engraving. These marks made by the point of the instrument are very instructive to the practical surgeon, since they explain satisfactorily the causes of failure in the attempts to introduce it ; and instead of the failures exciting astonishment, it will rather appear remarkable, that any attempts should have been successful, particularly as the obstruction was two inches beyond the part at which the cavity of the bladder is usually met with. I have no doubt now, that even in this case a very large catheter might have been passed, had such a one been employed.



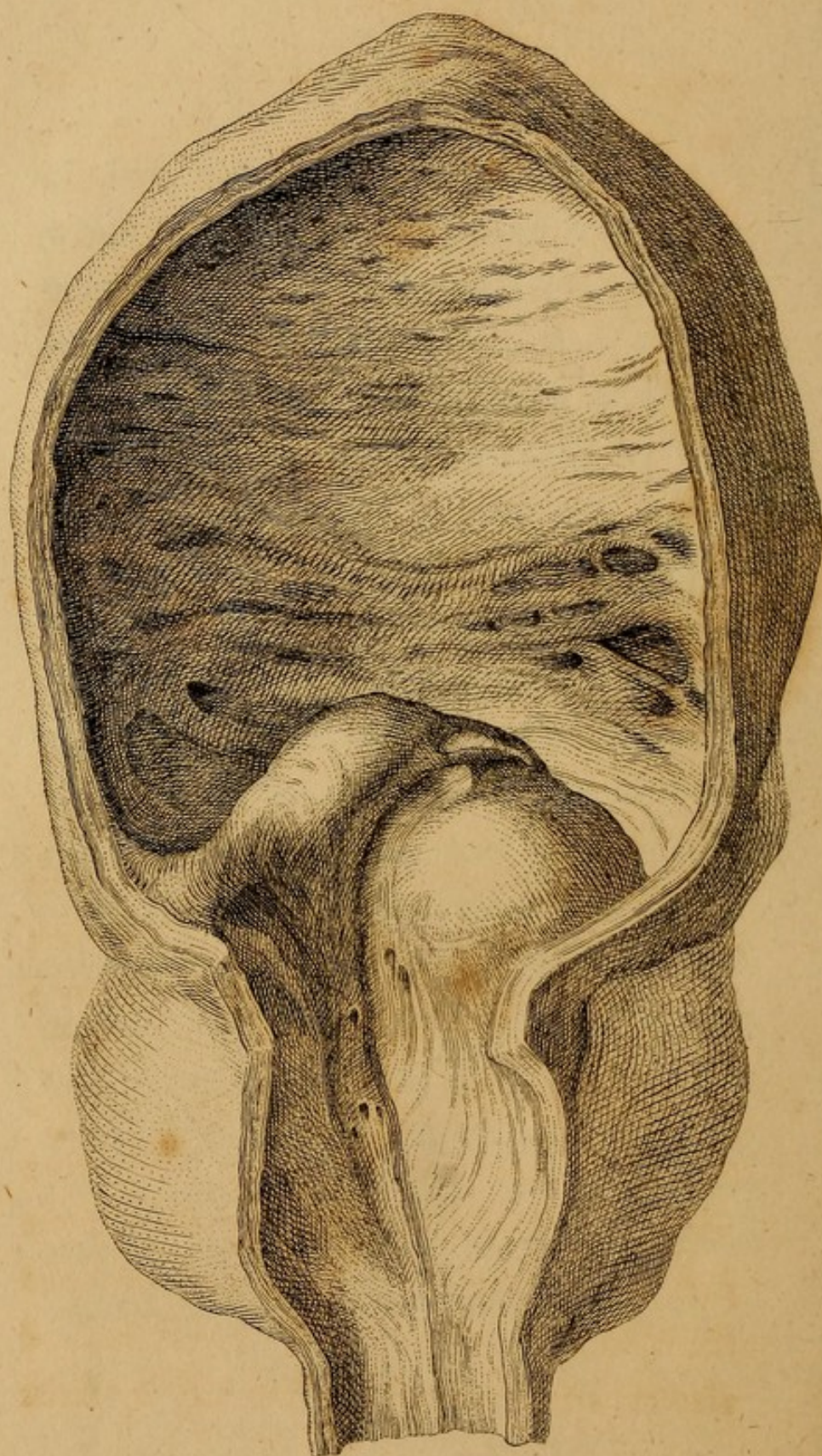


PLATE X.

IN this instance the middle lobe itself has not acquired so great a size as in some of the others, but the left lateral lobe is very much enlarged, and what is unusual, forms a prominent tumor in the bladder, by which the middle lobe is thrown towards the right side. From the mode in which the enlargement has taken place, the orifice of the bladder and urethra is enlarged to an uncommon degree, as is also a portion of the urethra itself, so that instead of being a canal, it has at this part the appearance of an oval cavity. This is a very unusual appearance, and is principally produced by the left lobe in its enlargement having extended itself to the same length in the direction of the membranous part of the urethra, as it has done towards the bladder in the opposite direction, and also in an equal degree laterally towards

its opposite lobe, making that side convex, and the surface of the right lobe, concave.

The middle lobe in this instance might not have been recognised as a distinct part, had we not traced it through all the varieties shewn in the former specimens. It is connected to the enlarged lateral lobes by a broad fold of the internal membrane of the bladder, and the longitudinal fold or bridle which extends from it to the verumontanum and membranous part of the urethra, is particularly distinct.

The mere inspection of these parts is sufficient to shew that no urine could have been voided by the spontaneous efforts of the patient. In the attempts to introduce an instrument, a false passage was made through the membranous fold on the right side of the middle lobe; as great difficulty had been met with in getting this instrument into the bladder, it was allowed to remain there, and after several days, when it was taken out, another very readily followed the same course. The catheter,

when withdrawn, had a particular curve, which it had acquired by remaining several days in the bladder; and it was found that any catheter to which that exact shape had been given could be readily passed, but if that precaution had been neglected, all attempts to pass it were ineffectual. The patient, who lived for five years, never afterwards made water in a natural way; and as some management was requisite to introduce the instrument, it was only withdrawn weekly for the purpose of being changed, and then it was left out till the first inclination to make water came on, in order that an opportunity might be afforded of observing how far the parts had recovered themselves. The effort to void the urine always proving ineffectual, the instrument was again introduced.

The case being in many respects so remarkable, great pains were taken after death, to preserve the parts in such a way, as could show them to the greatest advan-

tage. The bladder and urethra were distended with spirits, and in that state the bladder was cut into, so as to expose its cavity, and the tumor projecting into it. The false passage made by the instrument was readily discerned, and a bougie introduced into it went without difficulty into the canal of the urethra, and appeared to go completely through the substance of the tumor. That a canal of some inches in length, having a smooth internal surface, should have been established through the substance of the gland without exciting more disturbance, was so curious and unexpected a circumstance, that the parts were preserved with the view of shewing this fact; a bougie being introduced into the artificial passage, the ends of it were seen projecting, one into the bladder, and the other into the urethra.

In this state the preparation remained for twenty years; and upon the strength of the evidence it appeared so unequivocally to contain, I have in a former work

asserted, that the substance of the prostate gland is of so indolent a nature, that great violence may be committed upon it with impunity; which opinion was corroborated by the circumstance of the prostate gland so readily healing, even when in a very enlarged state, after the operation of lithotomy.

When I began the present work, and examined this and the other preparations from which the drawings by which it was to be illustrated, were to be taken, I could not ascertain whether the whole tumor in the bladder was formed by the middle lobe or not; nor could I understand the appearance of a division across the middle of it, which was not met with in any of the other preparations. I, therefore, thought it right to expose the whole of the passage from the urethra to the bladder, to enable me to clear up these points. In doing so I was much surprised to find that the catheter had not gone through the substance of the gland, but

only through the fold of the thickened internal membrane between the middle and lateral lobes. The assertion, that the substance of the prostate gland is insensible to any violence committed on it, therefore, receives no support from this individual case, and is contradicted by other evidence.





PLATE XI.

IN this Plate the appearance of the disease in the prostate gland, both in the middle and lateral lobes, is similar to that in Plate X. but the parts are enlarged in a still greater degree; the lateral lobe of the left side projects in the same manner laterally into the urethra, and into the bladder, and the middle lobe is pushed to the right side, but the left lobe is considerably more prominent; and the external surface of that part, as well as of the middle lobe, has lost its smooth appearance in consequence of inflammation, and is ulcerated to a small extent. The left lobe does not extend towards the membranous part of the urethra, as in the last Plate, forming an oval cavity, but the width of the urethra where the membranous part begins is dilated to an uncommon degree. In this case the retention of urine was equally complete, as in the former, and all

attempts to relieve it by means of an ordinary sized catheter, were ineffectual ; but by making use of one of an unusually large size, very much curved, I succeeded in introducing it into the cavity without injury to the neighbouring parts, and never after had difficulty in passing the instrument. When it is considered that the passage in this case is very much wider than natural at the neck of the bladder, it will be readily understood how a large rounded instrument passed more easily than a smaller instrument, as it was less likely to be entangled by the tumors or in the hollow below them. In this engraving the middle lobe is equally distinct from the lateral, as in any of the others. It is deserving of remark that in this, as in Plate VI. and Plate X. the lateral lobe of the left side projects more into the urethra than that of the right, and in Plate X., and the present much more into the cavity of the bladder. This I have found to be the case in all the other instances in which there has been a

difference in the size of the two lobes, several of which I have met with. I mention this as a thing to be attended to in practice, since it explains the necessity of the surgeon using a catheter of a large size, and of considerable curvature; and points out the particular direction which he should endeavour to give the instrument.

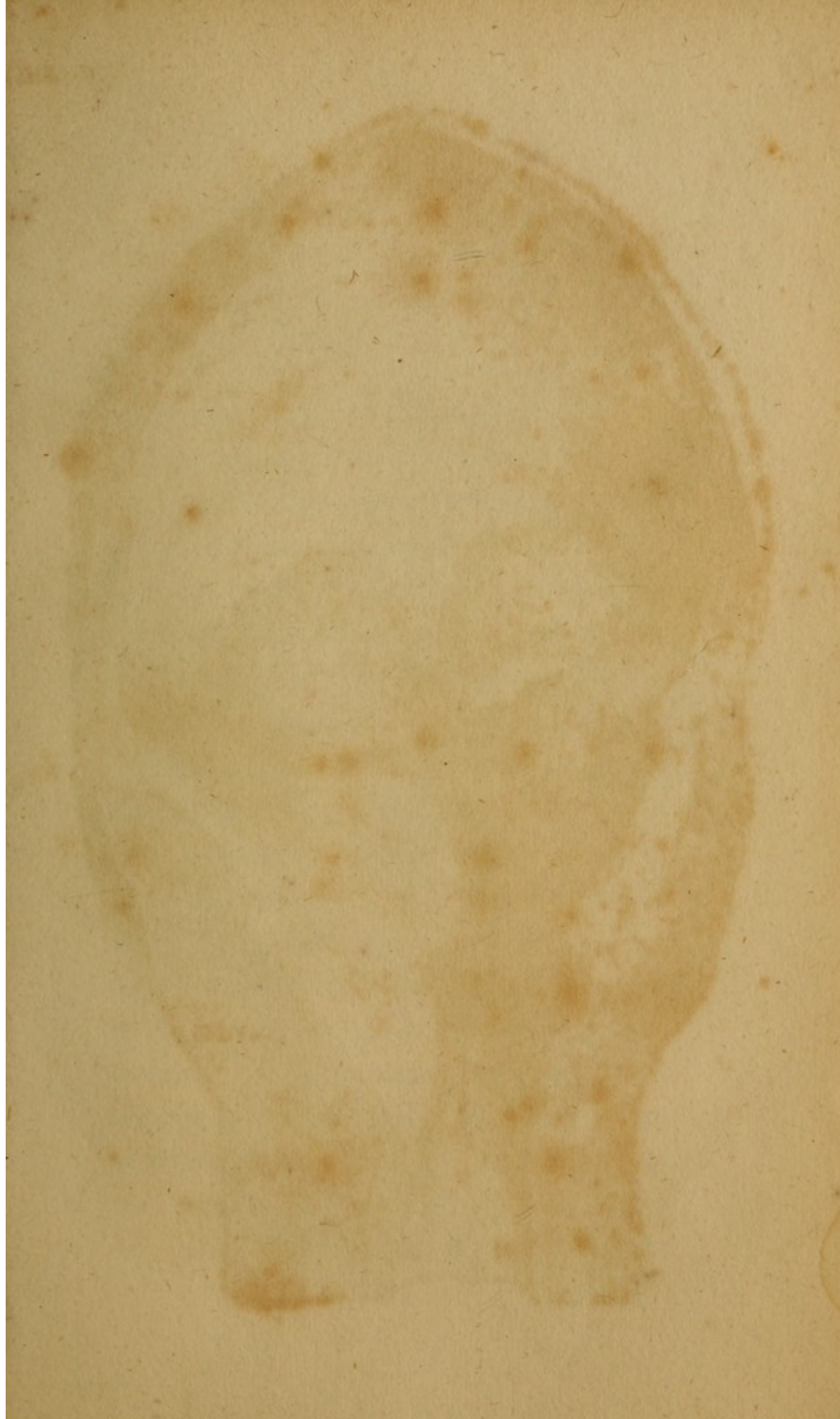




PLATE XII.

THIS represents the middle and left lobe of the prostate gland in a state of ulceration. This is of rare occurrence, since it is the only instance I have met with of it, with the exception of that represented in Plate XI. ; but here the ulceration is much more extensive. In this instance the left lateral lobe forms so large a tumor projecting into the bladder, that the middle lobe is pushed on one side, and forms a less complete valve over the orifice of the urethra, than it would otherwise have done, which probably is the reason that the patient was less liable to retention of urine in the earlier periods of the disorder, than in some other instances where the actual enlargement was less, and where there was less difficulty in the introduction of the catheter. The enlargement of the left lobe also extends further into the

membranous part of the urethra, than in Plate XI.

The left and middle lobes had become ulcerated on their surface, and had thrown out a fungus excrescence, which was extremely sensible to pressure, and produced symptoms of the most distressing kind, and ultimately death. This explains the account of the disease of which the late Dr. Fothergill died; a drawing of the parts was made from memory, and is published in Mr. Hunter's Work on the Venereal Disease: the exact nature of the tumor was not then understood, but there can be no doubt of its being similar to the present case, as I always understood the symptoms were very much the same.

In this case the difficulty in passing a catheter into the bladder, was not so great as in the last described, yet it required more skill than those who are not in the constant habit of using those instruments usually possess.



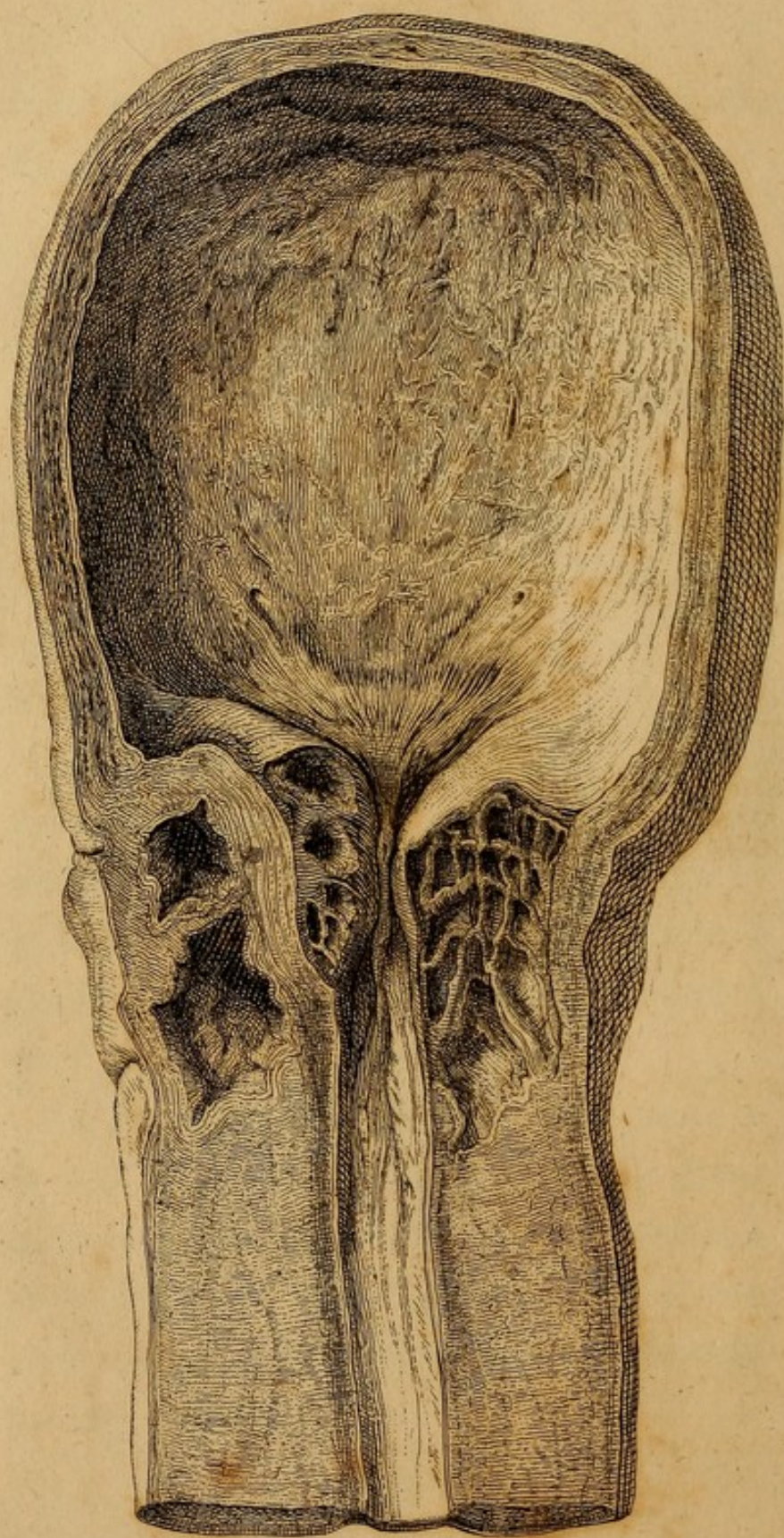


PLATE XIII.

THIS engraving represents the substance of the lateral lobes of the prostate gland, in which suppuration and ulceration had taken place with little or no increase of their size, and no apparent affection of the middle lobe. This state of the prostate is, I believe, too often brought on by the improper or unskilful use of instruments; and therefore it is a subject which cannot be too familiarly known to every practitioner in surgery. It is induced by wounding the urethra which passes through the gland. The verumontanum is seen in the engraving exactly in the centre of the ravages committed by the ulceration. When the substance of the gland is lacerated by the point a of catheter or bougie, the urine, readily insinuating itself into the lacerated orifice, brings on ulceration, and establishes an incurable discharge. In

many cases, however, probably from the wounds being oblique and not very deep, and not directly opposed to the current of urine, that fluid does not readily drop into them; and from the parts not being particularly disposed to disease, the wounds heal, and little or no inconvenience ensues from the gland being lacerated.

APPENDIX.

APPENDIX.

APPENDIX.

THE following Tables, taken from patients who laboured under a disease in the prostate gland, and therefore required the water to be drawn off, are intended to show the irregularity of the secretion of the kidneys, in what may be considered a state of health respecting these organs.

Opportunities of making correct tables of this kind rarely occur, and they are inserted in this place, that they may be consulted by those who are disposed to make inquiries into subjects with which they are connected.

17	—	12	13	—	6
08	—	22	07	—	7
18	—	32	00	—	8
22	—	42	10	—	9
07	—	52	00	—	10
07	—	02	02	—	11
18	—	12	10	—	12
27	—	22	22	—	13
07	—	32	30	—	14
00	—	02	32	—	15

TABLE I.

The following Table contains the quantity of urine voided in twenty-four hours, for six successive months. The person during the whole of that time was in good general health, was sixty-five years of age, stout and lusty, and although he laboured under an enlargement of the middle lobe of the prostate gland, and required to have his water drawn off, was in the habit of walking in the open air for two or three hours every forenoon.

1804.			1804.		
Sept.		Oz.	Sept.		Oz.
1	—	37½	16	—	55
2	—	53	17	—	44
3	—	48	18	—	40
4	—	45	19	—	63
5	—	43	20	—	79
6	—	45	21	—	77
7	—	70	22	—	80
8	—	66	23	—	81
9	—	61	24	—	53
10	—	69	25	—	70
11	—	59	26	—	70
12	—	49	27	—	81
13	—	55	28	—	73
14	—	56	29	—	76
15	—	57	30	—	65

1804.			1804.		
Oct.		Oz.	Nov.		Oz.
1	—	51	1	—	74
2	—	54	2	—	63
3	—	65	3	—	68
4	—	54	4	—	62
5	—	58	5	—	67
6	—	76	6	—	72
7	—	64	7	—	58
8	—	53	8	—	69
9	—	68	9	—	57
10	—	66	10	—	62
11	—	59	11	—	61
12	—	49	12	—	63
13	—	55	13	—	46
14	—	56	14	—	49
15	—	57	15	—	37
16	—	55	16	—	56
17	—	44	17	—	37
18	—	40	18	—	47
19	—	63	19	—	44
20	—	76	20	—	40
21	—	77	21	—	63
22	—	69	22	—	50
23	—	64	23	—	64
24	—	75	24	—	68
25	—	74	25	—	43
26	—	68	26	—	76
27	—	58	27	—	53
28	—	77	28	—	51
29	—	54	29	—	55
30	—	80	30	—	48
31	—	61			

1804.			1805.		
Dec.		Oz.	Jan.		Oz.
1	—	59	1	—	55
2	—	51	2	—	43
3	—	51	3	—	50
4	—	50	4	—	55
5	—	58	5	—	49
6	—	45	6	—	55
7	—	51	7	—	49
8	—	51	8	—	54
9	—	59	9	—	67
10	—	64	10	—	68
11	—	62	11	—	67
12	—	55	12	—	60
13	—	47	13	—	54
14	—	45	14	—	48
15	—	45	15	—	55
16	—	57	16	—	67
17	—	59	17	—	57
18	—	68	18	—	49
19	—	66	19	—	59
20	—	59	20	—	63
21	—	47	21	—	59
22	—	55	22	—	61
23	—	54	23	—	61
24	—	58	24	—	64
25	—	55	25	—	59
26	—	47	26	—	67
27	—	46	27	—	56
28	—	56	28	—	50
29	—	57	29	—	59
30	—	51	30	—	59
31	—	49	31	—	59

1805.			1805.		
Feb.		Oz.	Feb.		Oz.
1	—	53	13	—	45
2	—	62	14	—	57
3	—	59	15	—	52
4	—	87	16	—	58
5	—	61	17	—	68
6	—	62	18	—	68
7	—	66	19	—	52
8	—	48	20	—	56
9	—	59	21	—	59
10	—	66	22	—	75
11	—	60	23	—	52
12	—	63			

1805.			1805.		
July.		Oz.	July.		Oz.
1	—	53	1	—	45
2	—	62	2	—	57
3	—	59	3	—	52
4	—	87	4	—	58
5	—	61	5	—	68
6	—	62	6	—	68
7	—	66	7	—	52
8	—	48	8	—	56
9	—	59	9	—	59
10	—	66	10	—	75
11	—	60	11	—	52
12	—	63			

TABLE II.

This Table is taken from a patient sixty-seven years of age, who during the period contained in it was confined to the house entirely, and never went out of the same suite of apartments. His natural habit was that of taking small quantities of liquids, including all kinds of fluid nourishment, rarely so much as sixty-four ounces in twenty-four hours.

1803.			1803.		
July.		Oz.	July.		Oz.
8	—	35	25	—	57
9	—	39	26	—	76
10	—	46	27	—	48
11	—	60	28	—	55
12	—	36	29	—	79
13	—	48	30	—	54
14	—	45	31	—	70
15	—	57	August.		
16	—	39	1	—	33
17	—	59	2	—	68
18	—	55	3	—	89
19	—	51	4	—	30
20	—	35	5	—	28
21	—	40	6	—	62
22	—	24	7	—	28
23	—	35	8	—	89
24	—	35			

TABLE III.

This Table is taken from a patient eighty years of age, who lived principally in the same suite of apartments, drinking daily more than a pint of wine.

1807. Jan.	Hours.	Oz.
17	8	$8\frac{1}{2}$
	4	6
	11	6
		<hr/>
		$20\frac{1}{2}$
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	11	5
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	11	4
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	4	8
	11	6
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		23

1807. Jan.	Hours.	Oz.
22	8	9
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	11	7
		<hr/>
		24
23	8	10
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	11	6
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	11	7
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	11	7
		<hr/>
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26	8	10
	4	9
	11	6
		<hr/>
		25

1807. Jan.	Hours.	Oz.	1807. Feb.	Hours.	Oz.
27	— 8 —	9	3	— 8 —	10
	4 —	8		4 —	$9\frac{1}{2}$
	11 —	6		11 —	$8\frac{1}{2}$
		<hr/>			<hr/>
		23			28
28	— 8 —	12	4	— 8 —	$11\frac{1}{2}$
	4 —	9		4 —	9
	11 —	7		11 —	8
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		28			$28\frac{1}{2}$
29	— 8 —	10	5	— 8 —	$10\frac{1}{2}$
	4 —	8		4 —	10
	11 —	$7\frac{1}{2}$		11 —	$6\frac{1}{2}$
		<hr/>			<hr/>
		$25\frac{1}{2}$			27
30	— 8 —	$11\frac{1}{2}$	6	— 8 —	9
	4 —	9		4 —	10
	11 —	6		11 —	8
		<hr/>			<hr/>
		$26\frac{1}{2}$			27
31	— 8 —	11	7	— 8 —	10
	4 —	$9\frac{1}{2}$		4 —	10
	11 —	8		11 —	8
		<hr/>			<hr/>
		$28\frac{1}{2}$			28
February.			8	— 8 —	$11\frac{1}{2}$
1	— 8 —	$13\frac{1}{4}$		4 —	9
	4 —	12		11 —	$8\frac{1}{2}$
	11 —	7			<hr/>
		<hr/>			29
		$32\frac{1}{2}$	9	— 8 —	10
2	— 8 —	11		4 —	$10\frac{1}{2}$
	4 —	$10\frac{1}{2}$		11 —	6
	11 —	7			<hr/>
		<hr/>			$26\frac{1}{2}$
		$28\frac{1}{2}$.

[xi]

1807. Feb.	Hours.	Oz.
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	4	$8\frac{1}{2}$
	11	5
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		22
11	8	8
	4	$7\frac{1}{2}$
	11	6
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12	8	$9\frac{1}{2}$
	4	$8\frac{1}{2}$
	11	7
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		25
13	8	11
	4	10
	11	$7\frac{1}{2}$
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14	8	$11\frac{1}{2}$
	4	10
	11	8
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15	8	$10\frac{1}{2}$
	4	$9\frac{1}{2}$
	11	$7\frac{1}{2}$
		<hr/>
		$27\frac{1}{2}$
16	8	$11\frac{1}{2}$
	4	$9\frac{1}{2}$
	11	$8\frac{1}{2}$
		<hr/>
		$29\frac{1}{2}$

1807. Feb.	Hours.	Oz.
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	11	9
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	4	$11\frac{1}{2}$
	11	8
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		$31\frac{1}{2}$
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	4	10
	11	7
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	4	$11\frac{1}{2}$
	11	8
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22	8	$13\frac{1}{2}$
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	11	8
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	4	8 $\frac{1}{2}$
	11	8 $\frac{1}{2}$
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	4	12 $\frac{1}{2}$
	11	7 $\frac{1}{2}$
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	4	11 $\frac{1}{2}$
	11	8
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		31 $\frac{1}{2}$
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	11	11
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March.		
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	11	8
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1807. Mar.	Hours.	Oz.
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	4	10 $\frac{1}{2}$
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	4	11 $\frac{1}{2}$
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		33 $\frac{1}{2}$
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	4	10 $\frac{1}{2}$
	11	9
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	4	10
	11	8
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	4	9 $\frac{1}{2}$
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1807. Mar.	Hours.	Oz.
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	11	7
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	4	9
	11	6
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	4	$9\frac{1}{2}$
	11	7
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14	8	$11\frac{1}{2}$
	4	10
	11	7
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	4	10
	11	$7\frac{1}{2}$
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16	8	$9\frac{1}{2}$
	4	9
	11	6
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1807. Mar.	Hours.	Oz.
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	11	6
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	4	$10\frac{1}{2}$
	11	6
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	4	12
	11	7
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	4	$10\frac{1}{2}$
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22	8	$10\frac{1}{2}$
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23	8	12
	4	$12\frac{1}{2}$
	11	8
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1807. Mar.	Hours.	Oz.
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01	4	12
0	11	9
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		31
26	8	13
01	4	12
0	11	9
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		34
27	8	11 $\frac{1}{2}$
01	4	9 $\frac{1}{2}$
0	11	7
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		28
28	8	10
01	4	10 $\frac{1}{2}$
0	11	9
		<hr/>
		29 $\frac{1}{2}$
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01	4	11
0	11	8
		<hr/>
		29
30	8	8
01	4	11
0	11	7
		<hr/>
		26

1807. Mar.	Hours.	Oz.
31	8	9
01	4	10
0	11	7 $\frac{1}{2}$
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		26 $\frac{1}{2}$
April.		11
1	8	9 $\frac{1}{2}$
0	4	11
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		8
02		28 $\frac{1}{2}$
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0	4	10
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		8 $\frac{1}{2}$
03		28 $\frac{1}{2}$
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0	4	14
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04		37 $\frac{1}{2}$
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0	4	12
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05		30
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0	4	11
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		9
06		29
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0	4	12 $\frac{1}{2}$
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		7
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		29

1807. Apr.	Hours.	Oz.
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	11	8
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	4	12
	11	8
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		30
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	4	10
	11	$7\frac{1}{2}$
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		$27\frac{1}{2}$
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	4	10
	11	8
		<hr/>
		28
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	4	12
	11	8
		<hr/>
		30
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	4	9
	11	7
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13	8	10
	4	10
	11	$7\frac{1}{2}$
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		$27\frac{1}{2}$

1807. Apr.	Hours.	Oz.
14	8	10
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	11	6
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	4	11
	11	7
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		26
16	8	$10\frac{1}{2}$
	4	10
	11	9
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17	8	$10\frac{1}{2}$
	4	10
	11	$7\frac{1}{2}$
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18	8	$10\frac{1}{2}$
	4	$11\frac{1}{2}$
	11	$6\frac{1}{2}$
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19	8	10
	4	$10\frac{1}{2}$
	11	$7\frac{1}{2}$
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		28
20	8	$11\frac{1}{2}$
	4	$10\frac{1}{2}$
	11	$9\frac{1}{2}$
		<hr/>
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1807. Apr.	Hours.	Oz.
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	11	9
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		$36\frac{1}{2}$
22	8	$9\frac{1}{2}$
	4	9
	11	6
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23	8	$8\frac{1}{2}$
	4	$10\frac{1}{2}$
	11	6
		<hr/>
		25
24	8	8
	4	$8\frac{1}{2}$
	11	6
		<hr/>
		$22\frac{1}{2}$
25	8	7
	4	$9\frac{1}{2}$
	11	$6\frac{1}{2}$
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		23
26	8	$8\frac{1}{2}$
	4	7
	11	7
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		$22\frac{1}{2}$
27	8	$7\frac{1}{2}$
	4	9
	11	6
		<hr/>
		$22\frac{1}{2}$

1807. Apr.	Hours.	Oz.
28	8	9
	4	9
	11	$6\frac{1}{2}$
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29	8	$9\frac{1}{2}$
	4	9
	11	6
		<hr/>
		$24\frac{1}{2}$
30	8	7
	4	7
	11	$6\frac{1}{2}$
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May.		
1	8	$8\frac{1}{2}$
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	11	6
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2	8	$8\frac{1}{2}$
	4	$9\frac{1}{2}$
	11	6
		<hr/>
		24
3	8	9
	4	11
	11	$6\frac{1}{2}$
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4	8	$8\frac{1}{2}$
	4	16
	11	7
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		$31\frac{1}{2}$

1807, May.	Hours.	Oz.
5 —	8 —	9
—	4 —	12
—	11 —	7
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		28
6 —	8 —	8
—	4 —	11
—	11 —	11
		<hr/>
		30
7 —	8 —	8
—	4 —	12 $\frac{1}{2}$
—	11 —	7 $\frac{1}{2}$
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		28
8 —	8 —	9
—	4 —	10
—	11 —	8
		<hr/>
		27
9 —	8 —	9
—	4 —	10
—	11 —	6 $\frac{1}{2}$
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		25 $\frac{1}{2}$
10 —	8 —	8 $\frac{1}{2}$
—	4 —	10 $\frac{1}{2}$
—	11 —	9
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		28
11 —	8 —	10
—	4 —	10
—	11 —	7 $\frac{1}{2}$
		<hr/>
		27 $\frac{1}{2}$

1807. May.	Hours.	Oz.
12 —	8 —	10
—	4 —	10 $\frac{1}{2}$
—	11 —	7
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13 —	8 —	9 $\frac{1}{2}$
—	4 —	11
—	11 —	5 $\frac{1}{2}$
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		26
14 —	8 —	7 $\frac{1}{2}$
—	4 —	7 $\frac{1}{2}$
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15 —	8 —	15
—	4 —	12 $\frac{1}{2}$
—	11 —	9 $\frac{1}{2}$
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16 —	8 —	13
—	4 —	12
—	11 —	8
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		33
17 —	8 —	11 $\frac{1}{2}$
—	4 —	11
—	11 —	7 $\frac{1}{2}$
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18 —	8 —	10 $\frac{1}{2}$
—	4 —	10 $\frac{1}{2}$
—	11 —	8
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		29

1807. May.	Hours.	Oz.
19	8	11
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	4	10
	11	6
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	4	12
	11	$6\frac{1}{2}$
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		$28\frac{1}{2}$
22	8	8
	4	$12\frac{1}{2}$
	11	9
		<hr/>
		$29\frac{1}{2}$
23	8	$10\frac{1}{2}$
	4	$11\frac{1}{2}$
	11	8
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	4	12
	11	8
		<hr/>
		33
25	8	13
	4	12
	11	8
		<hr/>
		33

1807. May.	Hours.	Oz.
26	8	10
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	11	8
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27	8	10
	4	13
	11	8
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		31
28	8	12
	4	14
	11	8
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29	8	$11\frac{1}{2}$
	4	$11\frac{1}{2}$
	11	$7\frac{1}{2}$
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		$30\frac{1}{2}$
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	4	14
	11	9
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31	8	$11\frac{1}{2}$
	4	14
	11	8
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June.		
1	8	10
	4	$15\frac{1}{2}$
	11	$8\frac{1}{2}$
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1807. June.	Hours.	Oz.
2 —	8 —	12
	4 —	16
	11 —	9
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3 —	8 —	11
	4 —	14
	11 —	9 $\frac{1}{2}$
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		34 $\frac{1}{2}$
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	11 —	12
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	11 —	11
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	11 —	11
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	4 —	14
	11 —	11
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1807. June.	Hours.	Oz.
9 —	8 —	11 $\frac{1}{2}$
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	11 —	9
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	11 —	9
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11 —	8 —	11
	4 —	13 $\frac{1}{2}$
	11 —	9
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		33 $\frac{1}{2}$
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	11 —	9
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	11 —	9
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1807. June.	Hours.	Oz.
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	11	8
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	11	7
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1807. June.	Hours.	Oz.
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	11	10
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		$36\frac{1}{2}$
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	11	10
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1807. June.	Hours.	Oz.
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July.	0	13
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01	3	$11\frac{1}{2}$
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01	3	11
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01	3	$11\frac{1}{2}$
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01	3	12
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01	3	12
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1807. July.	Hours.	Oz.
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0	11	13
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9	8	12
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0	3	$12\frac{1}{2}$
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0	3	$8\frac{1}{2}$
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01	11	12
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0	11	10
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		30

1807. July.	Hours.	Oz.
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— 11 —	7	
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— 11 —	6	
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— 11 —	9	
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— 11 —	10	
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— 4 —	11	
— 11 —	9	
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1807. July.	Hours.	Oz.
21 — 8 —	8	
— 4 —	12	
— 11 —	10	
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22 — 8 —	10	
— 4 —	10	
— 11 —	12	
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1807.

Dec. Hours. Oz.

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27

1808.

January.

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		11	—	6

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26

1808.

Jan. Hours. Oz.

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		11	—	9

32

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		11	—	11

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March. Hours. Oz.

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1808. 1808.
March. Hours. Oz.

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1808.
July. Hours. Oz.

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29

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26

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— 11 — 8

26

31 — 8 — 11
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— 11 — 10

29

August.

1 — 8 — 11
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30

1808.
Aug. Hours. Oz.

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— 11 — 10

33

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33

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24

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27

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22

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31

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	11	9
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24	8	11
	4	9
	11	8
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		28

1808. Nov.	Hours.	Oz.
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	11	8
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26	8	10
	4	8
	11	8
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		26
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	4	10
	11	9
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	4	9
	11	9
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	11	9
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		31
December.		
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	11	9
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		33

1808. Dec.	Hours.	Oz.
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	4	6
	7	5
	11	3
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		20

1808. Dec.	Hours.	Oz.
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	7	6
	11	5
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	12	5
	4	6
	7	6
	11	4
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		27

1808. Dec.	Hours.	Oz.
13		4
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		7
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		33
16		5
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		7
		3
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		30

1808. Dec.	Hours.	Oz.
17	—	6
+	—	5
7	—	7
3	—	5
4	—	4
0	—	6
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		33
18	—	6
+	—	7
0	—	4
3	—	5
4	—	4
2	—	4
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		30
19	—	5
+	—	4
0	—	4
7	—	6
3	—	5
0	—	6
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20	—	4
+	—	5
2	—	3
0	—	7
7	—	3
2	—	5
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		30

1808. Dec.	Hours.	Oz.
21	—	4
+	—	3
0	—	3
2	—	2
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13	—	2
0	—	2
2	—	2
0	—	2
0	—	1
0	—	2
+	—	<hr/>
		25
22	—	4
+	—	3
+	—	4
+	—	3
2	—	3
+	—	2
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0	—	2
2	—	3
0	—	2
+	—	<hr/>
		28
23	—	3
		<hr/>
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10	—	3
+	—	4
2	—	4
2	—	3
+	—	2
2	—	2
0	—	2
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1808. Dec.	Hours.	Oz.
24	—	2
	—	4
	—	2
	—	3
	—	1
	—	3
	—	1
	—	1
	—	2
	—	2
		<hr/>
		21
25	—	4
	—	2
	—	2
	—	2
	—	3
	—	3
	—	2
	—	2
	—	1
	—	2
	—	2
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		25
26	—	3
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	—	3
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	—	1
	—	2
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	—	2
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		22

1808. Dec.	Hours.	Oz.
27	—	2
	—	2
	—	4
	—	2
	—	2
	—	2
	—	1
	—	1
	—	1
	—	1
	—	2
	—	1
		<hr/>
		21

From December 11th to the 27th, the hours at which the water was drawn off were not noted, and from the 27th to the 4th of January, 1809, the catheter was retained in the bladder, and no account was kept of the quantity of water drawn off.

After that time the person who continued the diary neglected to specify the hours at which the catheter was passed.

1809. Jan.	Hours.	Oz.	1809. Jan.	Hours.	Oz.
5	—	5	10	—	5
	—	4		—	3
	—	5		—	5
	—	4		—	1
	—	4		—	4
		<hr/>			<hr/>
		22			18
6	—	4	11	—	4
	—	4		—	3
	—	4		—	5
	—	4		—	3
	—	3		—	2
	—	2			<hr/>
		<hr/>			17
		21	12	—	7
7	—	3		—	3
	—	5		—	5
	—	4		—	4
	—	4			<hr/>
	—	3			19
	—	1	13	—	4
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		20		—	6
8	—	2		—	3
	—	2		—	3
	—	4			<hr/>
	—	4			20
	—	3	14	—	4
	—	3		—	4
		<hr/>		—	6
		18		—	2
9	—	4		—	4
	—	2			<hr/>
	—	4			20
	—	3			
	—	3			
		<hr/>			
		16			

1809. Jan.	Hours.	Oz.
15	—	7
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	—	5
	—	3
		<hr/>
		19
16	—	6
	—	4
	—	4
	—	4
		<hr/>
		18
17	—	4
	—	4
	—	5
	—	4
		<hr/>
		17
18	—	8
	—	2
	—	4
	—	5
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		19
19	—	6
	—	4
	—	4
	—	4
		<hr/>
		18
20	—	5
	—	5
	—	3
	—	3
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		19

1809. J. n.	Hours.	Oz.
21	—	8
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	—	4
	—	5
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22	—	5
	—	4
	—	5
	—	5
	—	4
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		23
23	—	5
	—	4
	—	5
	—	5
	—	4
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		23
24	—	5
	—	7
	—	6
	—	4
	—	4
		<hr/>
		26
25	—	6
	—	5
	—	7
	—	5
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		23

1809. Jan.	Hours.	Oz.
26	—	7
	—	5
	—	6
	—	4
	—	4
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		26
27	—	9
	—	5
	—	5
	—	5
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		24
28	—	5
	—	4
	—	5
	—	3
	—	4
		<hr/>
		21
29	—	6
	—	7
	—	5
	—	6
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		24
30	—	6
	—	5
	—	6
	—	4
	—	4
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		24

1809. Jan.	Hours.	Oz.
31	—	7
	—	3
	—	6
	—	4
	—	4
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		24
February.		
1	—	4
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		24
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	—	4
	—	4
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3	—	5
	—	4
	—	4
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		25
4	—	5
	—	4
	—	5
	—	4
	—	6
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		24

1809. Feb.	Hours.	Oz.
5	—	5
	—	6
	—	5
	—	4
	—	2
	—	5
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		27
6	—	6
	—	4
	—	4
	—	4
	—	4
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		22
7	—	6
	—	4
	—	5
	—	5
	—	4
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		24
8	—	8
	—	5
	—	5
	—	7
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		25
9	—	7
	—	5
	—	7
	—	6
	—	4
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		29

1809. Feb.	Hours.	Oz.
10	—	7
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	—	6
	—	5
	—	4
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		27
11	—	6
	—	6
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		29
12	—	5
	—	6
	—	7
	—	4
	—	5
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		27
13	—	6
	—	5
	—	6
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	—	4
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		24
14	—	6
	—	5
	—	7
	—	5
	—	4
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		27

1809. Feb.	Hours.	Oz.	1809. Feb.	Hours.	Oz.
15	—	7	20	—	8
	—	5		—	6
	—	7		—	6
	—	4		—	4
	—	5		—	4
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		28			28
16	—	7	21	—	6
	—	6		—	5
	—	3		—	7
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		26			26
17	—	6	22	—	5
	—	6		—	5
	—	4		—	7
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		25			23
18	—	5	23	—	7
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	—	5		—	5
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		27			25
19	—	5	24	—	5
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	—	5		—	7
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		29			25

1809. Feb.	Hours.	Oz.	1809. March.	Hours.	Oz.
25	—	5	3	—	7
	—	4		—	7
	—	5		—	8
	—	5			<u>22</u>
	—	4	4	—	8
		<u>23</u>		—	6
26	—	7		—	6
	—	6			<u>20</u>
	—	5	5	—	7
	—	4		—	6
	—	4		—	7
		<u>26</u>			<u>20</u>
27	—	6	6	—	8
	—	5		—	7
	—	7		—	6
	—	6			<u>21</u>
		<u>24</u>	7	—	7
28	—	9		—	6
	—	9		—	6
	—	7			<u>19</u>
		<u>25</u>	8	—	8
March.				—	6
1	—	7		—	6
	—	6			<u>20</u>
	—	7	9	—	9
		<u>20</u>		—	5
2	—	6		—	7
	—	6			<u>21</u>
	—	7			
	—	5			
		<u>24</u>			

1809. March.	Hours.	Oz.
10	—	9
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	—	7
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		24
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		23

1809. March.	Hours.	Oz.
17	—	8
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		21

1809. March.	Hours.	Oz.
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1809. March.	Hours.	Oz.
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April.		
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1809. April.	Hours.	Oz.
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1809. April.	Hours.	Oz.
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1809. April.	Hours.	Oz.
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1809. April.	Hours.	Oz.
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1809. May.	Hours.	Oz.
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		27

1809. May.	Hours.	Oz.
12	—	9
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	—	8
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18	—	8
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1809. May.	Hours.	Oz.
19	—	9
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1809. May.	Hours.	Oz.
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31	—	7
1 June.	—	8
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31	—	9
1 June.	—	9
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		28

1809. June.	Hours.	Oz.
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	—	8
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	—	9
	—	12
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		31

1809. June.	Hours.	Oz.
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10	—	11
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	—	11
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1809. June.	Hours.	Oz.
16	—	12
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17	—	9
	—	10
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18	—	11
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	—	8
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22	—	10
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	—	11
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		32

1809. June.	Hours.	Oz.
23	—	10
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24	—	12
	—	11
	—	10
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		33
25	—	12
	—	9
	—	7
		<hr/>
		28
26	—	10
	—	8
	—	7
		<hr/>
		25
27	—	9
	—	10
	—	12
		<hr/>
		31
28	—	8
	—	10
	—	12
		<hr/>
		30
29	—	8
	—	8
	—	12
		<hr/>
		28

1809. June.	Hours.	Oz.
30	—	10
	—	9
	—	13
		<hr/>
		32
July.		
1	—	11
	—	10
	—	12
		<hr/>
		33
2	—	13
	—	11
	—	14
		<hr/>
		38
3	—	9
	—	8
	—	12
		<hr/>
		29
4	—	11
	—	9
	—	14
		<hr/>
		34
5	—	12
	—	7
	—	13
		<hr/>
		32
6	—	9
	—	7
	—	12
		<hr/>
		28

1809. July.	Hours.	Oz.
7	—	14
	—	10
	—	9
		<hr/>
		33
8	—	13
	—	7
	—	11
		<hr/>
		31
9	—	8
	—	12
	—	9
		<hr/>
		29
10	—	10
	—	9
	—	10
		<hr/>
		29
11	—	11
	—	6
	—	9
		<hr/>
		26
12	—	10
	—	5
	—	12
		<hr/>
		27
13	—	8
	—	9
	—	11
		<hr/>
		28

1809. July.	Hours.	Oz.
14	—	10
	—	16
	—	8
		<hr/>
		34
15	—	9
	—	10
	—	7
		<hr/>
		26
16	—	5
	—	8
	—	7
		<hr/>
		20
17	—	6
	—	8
	—	7
		<hr/>
		21
18	—	6
	—	7
	—	7
		<hr/>
		20
19	—	8
	—	10
	—	6
		<hr/>
		24
20	—	9
	—	7
	—	5
		<hr/>
		21

1809. July.	Hours.	Oz.
21	—	9
	—	8
	—	11
		<hr/>
		28
22	—	8
	—	6
	—	10
		<hr/>
		24
23	—	9
	—	8
	—	7
		<hr/>
		24
24	—	10
	—	8
	—	10
		<hr/>
		28
25	—	11
	—	10
	—	11
		<hr/>
		32
26	—	8
	—	10
	—	7
		<hr/>
		25
27	—	8
	—	8
	—	11
		<hr/>
		27

1809. July.	Hours.	Oz.
28	—	10
	—	10
	—	9
		<hr/>
		29
29	—	11
	—	8
	—	10
		<hr/>
		29
30	—	12
	—	7
	—	6
		<hr/>
		25
31	—	11
	—	9
	—	8
		<hr/>
		28
August.		
1	—	9
	—	8
	—	10
		<hr/>
		27
2	—	8
	—	8
	—	12
		<hr/>
		28
3	—	7
	—	11
	—	11
		<hr/>
		29

1809. Aug.	Hours.	Oz.
4	—	12
	—	8
	—	11
		<hr/>
		31
5	—	9
	—	7
	—	12
		<hr/>
		28
6	—	11
	—	8
	—	8
		<hr/>
		27
7	—	10
	—	7
	—	8
		<hr/>
		25
8	—	9
	—	11
	—	12
		<hr/>
		32
9	—	8
	—	6
	—	9
		<hr/>
		23
10	—	9
	—	9
	—	12
		<hr/>
		30

1809.
Aug. Hours. Oz.

11 — — 10
— — — 11
— — — 9

30

12 — — 9
— — — 8
— — — 10

27

13 — — 11
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28

14 — — 12
— — — 11
— — — 8

31

15 — — 11
— — — 11
— — — 10

32

16 — — 12
— — — 8
— — — 9

29

17 — — 11
— — — 9
— — — 12

32

1809.
Aug. Hours. Oz.

18 — — 10
— — — 10
— — — 8

28

19 — — 9
— — — 9
— — — 10

28

20 — — 9
— — — 11
— — — 8

28

21 — — 12
— — — 10
— — — 8

30

22 — — 9
— — — 11
— — — 8

28

23 — — 7
— — — 12
— — — 7

26

24 — — 11
— — — 10
— — — 9

30

1809. Aug.	Hours.	Oz.	1809. Sept.	Hours.	Oz.
25	—	9	1	—	8
01	—	11	11	—	12
8	—	8	9	—	7
		<hr/>			<hr/>
82		28	02		27
26	—	9	2	—	9
0	—	11	9	—	10
01	—	7	01	—	6
		<hr/>			<hr/>
82		27	02		25
27	—	11	3	—	11
11	—	8	7	—	8
8	—	7	04	—	10
		<hr/>			<hr/>
82		26	82		29
28	—	7	4	—	9
01	—	5	11	—	13
8	—	5	8	—	10
		<hr/>			<hr/>
08		17	12		32
29	—	8	5	—	11
11	—	7	11	—	9
8	—	7	01	—	10
		<hr/>			<hr/>
82		22	02		30
30	—	9	6	—	8
81	—	7	8	—	12
7	—	10	9	—	11
		<hr/>			<hr/>
82		26	02		31
31	—	8	7	—	10
01	—	11	9	—	10
9	—	9	81	—	9
		<hr/>			<hr/>
82		28	82		29







