Thesis.

"Clinical and Pathological Observations on Cases of Prostatic Enlargement (so-called), with its Complications; and on Carcinomata of the Prostatic Gland, simulating Enlargement. With incidental Remarks on Treatment."

By

Andrew Scott, M.B., C.M. (1893)

April, 1899.
This paper deals with four illustrative cases of so-called enlargement of the prostate gland, and the complications arising therefrom, eliciting different symptoms and calling for different treatment. Also with a case of progressive carcinomatous of the prostate gland, simulating enlargement of the same.

A brief reference is made to some points of our present day knowledge of the anatomy and physiology of the urinary and reproductive systems.

Then follows some observations on the differential diagnosis of prostatic enlargement.

The function of the normal prostate gland, the pathology of its enlargement, and its sequelae (as elicited from the cases cited) is next discussed.

A list of references is appended.

A microscopical section of growth removed from one of these cases, by suprapubic prostatectomy, with a microphotograph of same, accompanies this paper.
Case I.

J.W., age 38. Clerk.

Was called suddenly one morning to see him because of inability to pass urine. Eight or nine years ago, he stated, he had consulted a doctor owing to "passing water in a small stream, 4 or 5 very frequently - every half hour." At that time his urine was drawn off and was taught to use a catheter. For some time prior to seeing him he passed a fair amount of blood after the passage of the instrument (soft catheter).

Married 25 years - 2 children. Sedentary habits. No malignant history. Neurotic temperament. With the exception of his urinary trouble he is quite healthy.

On Rectal Exam. the prostate was felt to be about the size of a tangerine orange, pre - editing a marked convex protrusion into the Rectum; hard, smooth, tender to touch.


A silver catheter was, with difficulty
passed & his urine drawn off. He was given 10 gr. doses of Boroate of Magnesium every four hours with the object of making his urine quiter & a gr. Morphine tarry. By evening his urine was again drawn off in the evening. Next day the Bladder was washed out with warm Boric Acid, and a Silver Catheter tied in; but the latter irritated him so much that it had to be withdrawn soon afterwards. On the evening of the second day having failed to pass the ordinary prostatie catheter, I aspirated above the pubes, & washed out the bladder with the same lotion.
This Suprapubic tapping and washing out of the bladder continued morning and evening, for about a week; but as the jet did not seem to relieve the impetuous prostatie rhinorrhea, and as the urine continued standing, the repeated washing of the bladder did not become sweeter. Suprapubic Drainage Throat of the bladder from the prostate was considered the only hope of relief for the patient. Dr Chavasse of Birmingham, who saw the case at this time, in consultation, was of the same opinion. The abdomen & pubes having been made aseptic an incision, three inches long, in the
Midpubic line was made, there was a fair amount of adipose tissue. A large vesical vein was held aside with a blunt hook, the Bladder incised. Urine, bloody and foul smelling, immediately escaped. On examining the Bladder with the finger in the region of the prostate a dense circular projection was found to surround the internal orifice of the urethra. A sound was passed for urethra guided by the forefinger internally. The Bladder wall was soft and friable so much so that it was quite impossible to hold it by means of forceps, a silk ligature was equally inefficient.

Owing to the large amount of adipose tissue in the Suprapubic area and the difficulty of keeping the bladder wall near the surface of the wound one had to work somewhat in the dark. The Ostiaké Enlargement was very dense & firm, and could not be removed by the finger alone; but, guided by the sound, the projecting Enlargement was incised with scissors, after which by forcible aid of the finger, two thirds were removed, so that it became level with the base of the bladder. There was considerable hemorrhage.
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An 1 R. drainage tube was inserted along with two long strips of Iodoform gauge, which were left protruding from the wound. One Salmonfell stitch having been inserted at the upper end, the wound was dressed with Iodoform gauge & gauze wool.

Duration of operation 3/4 hour.
The patient stood the operation very well. When seen two hours later he was in great pain & said "he wished to make water". The urine discharged freely from the wound. The temperature never exceeded 99°, but the pulse was all along fairly rapid & tension somewhat high (See Nurse's Chart).

The general treatment as regards diet consisted of Milk & Soda: Barley water: Myidia Meat Juice: Home made B untouched, Chicken & Mutton Broths - small quantities every hour. Also 2 T. doses of Sal. Bormic Ac. were given every hour. The tube was removed in 48 hours.

He ultimately made a good recovery; but the aftertreatment was long & tedious. The constant soaking of the dressings with urine irritated the patient, & at times he was very restless, indeed, almost hysterical.
Without entering into details of the after-treatment I wish to note some interesting points in connection with the drainage of the Bladder in this & similar cases. At first most of the Bladder contents were removed by means of two Jacques gum-elastic Catheters united by a glass tube (see sketch).

The Siphon action was commenced by squeezing the elastic tube so as to cause a vacuum into which the urine passed, after the fashion of a Sprengel Pump without the irrigating flow. This simple but somewhat crude method of drainage was very satisfactory, as much as 15 ozs. of urine passing thro' this contrivance in 6 hours. The disadvantage of this method is that one requires to start the Siphon action at short intervals; but it is very convenient in that by undoing the connection of the
Catheter in the bladder with the glass tube attached thereto to an ordinary glass syringe (without piston). To act as a funnel, the bladder may be emptied out without further trouble. (See Sketch)

I lay no claim to originality in the principle of the apparatus. Mr. H. Fenwick in the Illustrative Medical News - Sept. 29/88 describes a similar method of drainage in Suprapubic Cystotomy with the addition of a simple way of applying the Steenel Pump action by means of a regulated continuous flow of water from a glass vessel raised above the level of the bed and connected with the tube leading from the Bladder (See Rough Sketch).

More recently Dr. Geo. Heaton described a method of "Draining large cavities after surgical operations" in a paper read before the Pathological and Clinical Section of the
Midland Counties Branch of the F.M. Assn.

The principle is similar to that described above, but in order to avoid the mucous membrane of the Bladder being sucked into the tube placed in the Bladder, the tube is enclosed in an outer perforated one (See sketch)

A month after the operation the perineal wound had almost healed, and the patient could pass urine per rectum. The prostate for return was felt to be much smaller, and the tenderness to touch diminished.

About this time a No. 12 Silver Catheter was passed without much difficulty. There was slight hemorrhage.

Three months after the operation he went for a holiday to Blackpool where he stayed a month. There was only slight oozing at the abdominal wound when he left, and on his return it had quite healed. He complained of pain in the hypogastric region: considerable contraction of puckering of the skin surrounding the wound had taken place. On passing urine the stream was small and thin.

Since then he has resumed his calling. I have only had occasion to see him professionally two or three times during
the past 6 months, owing to the breaking down of the skin wound. The ooze is very slight. By means of a pad of absorbent wool he is able to do his work without much inconvenience.

The urine examined recently had Sp.Gr. 1013, smoky colour, acid reaction, small amount of debris, albumin: Microscopically: Amorpha, pus, epithelial cells.

The part of the gland removed weighs half an ounce after standing until next day. It was very dense and hard, but presented nothing unusual to the naked eye (wh. sec). A microscopic section of the growth was made when it was found that the pelvic tissue was infiltrated with a Schirius Carcinoma.

Microphotograph of section of Drach's gland infiltrated with Carcinoma.
A slight magnifying glass brings out the cancer cells in these microphotographs very clearly. The section from which they are taken is forwarded with this paper.

The chief points in connection with this case may be summarised as follows:

- **Age**: 58.
- **No Malignant History**.
- **Ordinary symptoms of Enlarged Prostate**.
- **Hematuria after passage of catheter**.
- **Cystitis – Septic Infection of Residual Urine from catheterization**.
- **Complete Retention of urine calling for immediate treatment**.

A consideration of the points elicited in the above case is deferred until the other cases have been cited – see pp. 30.
Case II. F. J. age 60. Limestone blinder.

Consulted me owing to his inability to retain his urine for more than half an hour, when asleep had no control whatever over urination. Passes small quantities at a time, after which it dribbles from him. He says that seven years ago it came on quite suddenly, but prior to onset, for a period of eighteen months, he suffered violent pain in the hypogastric region. When the pain came on he passed water like blood. At times clots came, then the pain was severe.

Temperature: no malignant history.

Married 30 years — no family.

On examination found that his clothes had a characteristic ammoniacal smell. So thin and emaciated. Slight rosy flush, no injection — otherwise healthy. Bowels regular.

There is an enlarged gland in the left inguinal region — marked thickening of left spermatic cord. Right testicle very hard — epididymis well pronounced: left softer. After 72 hours no swelling.

During examination passed about 37 wine after great exertion (had passed urine previous to consultation — about half an hour previous). A Riggen catheter passed without much difficulty or pain: considerable resistance
felt through abdominal wall over region of bladder. Peristalsis - intestines enlarged to the size of a fairly large orange, extends as far as the finger can reach. It is smooth & very hard, but is not tender to touch.

Urine. Amount passed in 24 hours = 40 oz. Smoky ; slight deposit ; acid ; Q.P. 1010. Considerable quantity of pus.

Microscopically - numerous pus & blood cells.

Catheterization & washing of bladder with warm boracic lotion was carried out for some considerable time with but little improvement in his condition. For a time he was confined to water & adrenalin given, but this he ultimately discarded. He was adverse to any operation requiring the administration of an anaesthetic, therefore drainage of the bladder was set of the question. And in these cases of Cystitis with Peristaltic Obstruction, owing to the accumulation of pus which occurs in many of them as well as the mechanical conditions of shape & thickness, it is impossible to materially influence the condition of the bladder by the ordinary process of washing it out per anal or urethra. Neither would he listen to any arguments in favour of a possible relief from Cystitis: but after much persuasion he allowed the
to perform a double Vasectomy with the hope of influencing the growth of the Prostate and thereby the condition of the Bladder. The Operation was done without an anaesthetic after the manner described by Maclean. About 1/8 of each cord was removed. The wounds healed by First Intention. After months of careful watching my expectations of the benefit to be derived from this simple procedure were not realized; there was absolutely no difference in his urinary troubles.

The chief points in this case are:

- Age 60
- No malignant history
- Duration 7 years.
- Almost constant retention (overflow)
- No relief from Catheterization, twisting of Bladder for urethra.
- No relief from Double Vasectomy.
- Cystitis.
- No Retention.

For criticism of the above see pp. 30 etc.
Case III.

J.H. at 83. Iron Master.

This patient while cutting a "corn" on his big toe with a pen knife passed rather deeply & so caused the part to bleed. Next day he walked to 1 from his work - a distance of one mile - and continued to do so for 2 days, after which his toe became red and inflamed, his foot swollen, and an erysipelas rash appeared on his leg. It was evident that he was suffering from blood poisoning as a result of cutting his "corn". At this time he did not complain of any urinary trouble, but after the second week his general condition gradually became worse notwithstanding that the local vesical complaint was quickly subsiding. The urine was found to be ammoniacal, to contain a fair amount of pus. As there was gradual increased drowsiness, headache, & malaise; the condition of the urine became worse - the consistency so great that the "pot" could be turned upside down without the Defecation falling out - his Bladder was catheterized, & washed out with warm Boracic Latex every 12 hours. The Residual Urine amounted to 6 ozs. at this time.
The general condition improved under this treatment, his urine became acid, but still contained 
\textit{rancid spiss} and the amount of Residual Urine was reduced to half its 
original amount.
The Prostate Gland was still the size of an 
\textit{Orange}.
This treatment of his Bladder was continued 
for six months, after which the patient 
gave it up, it would not pass a catheter himself.
He still continues at his work, and can 
eat his \textit{Big Sausage, Pork lubricate his 
Whisky, with impunity.}
Prior to this illness with his toe he 
had never been troubled with his urine, 
\textit{and never had a Catheter passed.}
The chief points in connection with this 
\textit{case are} (\textit{1}) the age of the patient, 83 years. 
(\textit{2}) that he had had Residual Urine, as much 
as 6 ozs., but that until the onset of 
\textit{blood poisoning from his injured toe} he 
\textit{had had no urinary trouble; the instruments} 
\textit{had been passed into his Bladder which} 
\textit{might have started the Cystitis.}
With the washing out of the Bladder the 
\textit{Acute Cystitis passed into the Chronic form - the} 
\textit{inflammation of the Bladder never entirely}
recovering itself, although the condition gave
him very little trouble.

It is evident that in this case the work of
rescuing the poison which had been thrown
upon the Kidneys & Bladder had, as time
went on, failed - that the Bladder from
the prostate enlargement had contained
an fair amount of healthy Renal
urine which suddenly became septic from
the ptomaines in his circulation.

For further criticism of this case see
Observations on Cystitis, pp. 56.
Case IV. G.H. at 84. Retired Merchant.

This patient came under my observation some time ago because, as his friends said, "he was breaking down." On inquiry it was found that he was constantly leaving the room owing to pain over the Bladder, the desire to micturate; and that he had to pass urine every hour. An examination revealed a fairly large Prostate Gland - about the size of an Apple, smooth & not tender to touch.

After he had urinated a Catheter was passed & about 1 oz. of Residual Urine drawn off. The urine was acid & contained a small quantity of pus. The Bladder was washed out with warm Boric Acid twice a week for a time, then he commenced "Catheter Life," using a No. 7 Stegmeier Catheter. In a short time he could retain his urine for five or six hours, and has continued to do so.

His urine examined on the 25th Nov. '98 was pale in colour, slightly acid, Sp.gr. 1018; small deposit of mecon + No albumin.

When he commenced "Catheter Life," a case withlock key was got for him. It contained Carbolic oil in which he was ordered to keep the Catheter when not in use. I have found
this a very excellent plan for keeping Catheters for continual use in an aseptic condition; but this patient disobeyed these particulars, because he thought it made the Catheter "swell up". His line of procedure is as follows:—
He obtains a perfectly new B&F Lequesne Catheter every two weeks—also longer use of one, he says causes it to "swell up", then he has a difficulty in passing it. After its use he washes it with Carbolic Soap, then wraps it up in a clean cloth—just before passing the Catheter he dips it in the best olive oil.
He has never had a Night of anything pointing to Sepsis.
Since the commencement of this treatment he has picked up wonderfully well: is very energetic for his time of life. He walks 2 or 3 miles each day, looks as if he would live for many years yet. His appetite is excellent: he can drink beer with impunity, but if he takes Whiskey he has to pass the Catheter every 2 hours.

He is unable to pass urine voluntarily—that is without the Catheter: when he goes longer than 6 hours the urine begins to dribble away.

The points of interest in this case are:
Age 84.

Constant Drinking.
Beneficial result of Catheterization.
No Cystitis.

Inability to pass urine voluntarily since the commencement of "Catheter Life."

This case is referred to under the Pathology of the Symptoms & Physical appearances found in cases of Prostatic Enlargement.
Case II. J.K., aged 66. Mining Engineer.

Was called to see this patient one morning at 4 o'clock because he was in great pain and could not pass water. His Bladder was markedly distended. In Reclining the Prostate was found to be the size of a very large apple—smooth & tender: if there was one.stonewerly file.

None of the ordinary Silver Catheters could pass beyond the prostatic portion of the Ureters, and it was found necessary to aspirate above the Pubes. Three days afterward, a No 14 Prostatic Catheter passed easily. After the attack the prostate subsided a little, but is always abnormally large.

Prior to the first attack mentioned above, he used to pass urine every half hour, but had some difficulty in passing urine at night.

He is a small robust man who has never been ill excepting for his urinary troubles. He is temperate + of regular habits - rises at 6 a.m., during the day in pursuing his calling he walks about 10 miles above ground + 20 miles under ground. Exercise seems to make a considerable difference to his power of retention. This is brought out very clearly by the following
Statement, viz. - He leaves off work at 2 o'clock on Saturday afternoon and takes the same diet on the Sunday as on the week day, nevertheless if he does not walk 3-4 miles on the Sunday he is unable to pass his urine & requires the use of an Instrument to relieve himself.

During the past year he has used a soft Catheter; it passes readily under ordinary circumstances. His ideas of sepsis do not extend beyond washing his Catheter after use in ordinary water, before use smearing it with balsam. Still he has kept in excellent health, his urine is in a healthy condition. Although he always carries his Instrument (soft B. Catheter) with him he does not require to use it oftener than, on an average, once a week. As a rule he requires to use it on Sunday especially when he speaks as a local preacher; he finds that he has the desire to use it prior to speaking. He finds occasionally that after he has passed the Catheter himself, if he pushes the Catheter a little further into the Bladder more urine is passed.

At the present time the amount of Residual Urine is 3 ozs. : it is clear, clear amber-coloured.

Syr. 1016 contains no abnormal ingredient.
To summarize the points:

Age 66.
Almost constant urination.
Periodic attacks of complete retention.
Effect of mental emotion & physical fatigue.
Residual urine.
Catheterization.
Absence of cystitis.

This case is likewise referred to later.

Some points of our present day knowledge of the anatomy & physiology of the urinary and reproductive systems.

In order to comprehend the relationships of the prostate gland to the urinary system - the bladder, urethra chiefly - in disease, and to understand clearly the views held as to the pathology of the prostatic enlargement, it is necessary to remember the normal condition of these several parts. This may affect superfluously, but to my mind one can only grasp the pathological conditions by having a thorough knowledge of the normal state of affairs. This, I think, as
far as possible, epitomized from standard works, interspersed with some original observations.

The Bladder is the reservoir of the urinary tract. It contains, under ordinary conditions, about a pint. "The base or fundus is directed downwards and backwards. In the Male it rests upon the second portion of the Rectum, from which it is separated by a reflexion of the Rectovesical fascia. In the Female the base of the bladder lies in contact with the lower part of the Cervix Uteri; is adherent to the anterior wall of the Vagina, and separated from the upper part of the anterior surface of the Cervix Uteri by a fold of peritoneum." (Gray's Anatomy - 13th Ed.)

"The so-called neck of the Bladder is the point of commencement of the urethra; here it, however, no longer forms part which would constitute a true neck, but the Bladder suddenly contracts to the opening of the urethra. In the Male its direction is oblique in the erect posture, but is surrounded by the Prostate Gland. In the Female its direction is obliquely downwards and forwards." (This)

The Bladder is composed of four coats - serous, muscular, submucous & mucous. The muscular coat consists of three layers of unstriated muscular fibres. The fibres of the Ex. Long. layer arise from the posterior surface of the Diaphragm and pass, in both sexes, to the neck from the adjacent part of the Prostate Gland to expand. They pass in a more or less longitudinal manner ... where they become attached
to the prostate in the male, and to the front of the vagina in the female. The middle circular layers are very thinly and irregularly scattered on the body of the organ... Towards the lower part of the bladder, round the arch of commencement of the urethra, they are disposed in a thick circular layer, forming the sphincter vesica, which is continuous with the muscular fibres of the prostate gland.

"Two bands of oblique fibres, originating behind the trigone of the bladder, converge to the base part of thebladder and are inserted, by means of a fibrous process, into the middle lobe of that organ" (ibid)

Thus we see that the bundles of muscular fibres do not form a continuous layer, but that the bladder is often marked by diamond-shaped depressions, which may form in time pouches or sacculi if any obstrucion to the exit exist.

"The mucous coat is connected loosely to the muscular coat by a layer of mucous tissue."

"The epithelium of the bladder is transitional arranged in several strata: all the cells are connected with each other by cell bridges as in the epidermis. In the normal state there are no glands in the bladder; occasionally some of the mucous glands of the prostatic portion of the bladder may be detached from it and extend beyond the neck of the bladder itself." (ibid)

"The male urethra is divided into three portions, the
prostatic, membranous, &amp; Grisly. The prosthetic portion is the widest and most dilatable part of the canal. It passes through the prostate gland, from its base to its apex lying nearer its upper than its lower surface. Above the floor of the canal is a narrow longitudinal ridge, the two Montanum or Caput Gallinaceum formed by an elevation of the mucous membrane of its subjacent tissue. On each side of the Verne Montanum is a slightly depressed area— the Prostatic Sinus, the floor of which is perforated by numerous apertures, the orifices of the prosthetic ducts. At the foot of the Verne Montanum, in the middle line, is a depression, the Sinus Prostaticus (vesicule prostatae): and upon or within its margins are the Stitular openings of the ejaculatory ducts. It has been called by Weber, who discovered it, the Urethra Masculina, from its being developed from the united end of the rudimentary Müllerian Ducts, is therefore homologous with the Urethra in the female. (Gray)

Otie has pointed out that the author is capable of great dilatability, so that, excepting through the external meatus, an instrument corresponding to 18 English Gage (29 French) can usually be passed without damage.

The Prostatic Gland is like a chestnut in size and shape. It is an oval glandular body placed behind the base of the Symphyses Pubis, posterior to the Deep Perineal
fascia and lies upon the Rectum. This relationship to the Rectum enables one to examine the gland with regard to its size, consistence, etc.

It is held in position by the anterior ligaments of the Bladder (Pubo-prostatic) : by the posterior layer of the Deep perineal fascia: by the anterior portion of the Levator Ani muscle (levator prostatæ), which passes down on each side from the Symphysis Pubis, to the anterior ligament of the Bladder, to the sides of the Prostate.

It consists of two lateral lobes + a middle lobe. The two lateral lobes are of equal size.

The middle or Middle lobe is a small transverse band, occasionally rounded or triangular in prominence, placed between the two lateral lobes, at the posterior part of the organ." (Sted.)

The prostate gland is perforated by the urethra and ejaculatory ducts, and weighs from 4·5 to 4·75 Drachms according to Thompson.

It consists of glandular substance and muscular tissue enclosed in a thin but firm fibrous capsule, which is separated from the deep layer of the deep perineal fascia by a sheet of veins. The muscular tissue constitutes the proper stroma of the gland: the connective tissue is very scanty and forms thin trabeculae in which the vessels intervene.
There is little or no gland tissue above the urethra, the muscular tissue there being dense; but below the urethra it is widened and loose and spongy-like towards the apex of the gland.

The Glandular Substance is compact of numerous follicular pouches, opening into elongated canals which join to form from 12 to 20 small secretory ducts.

As regards Motricity: In a healthy person the contraction of the bladder itself with little or no other help is able to expel its normal contents. Alternate waves of contraction and relaxation coming down the ureters, spread from them over the bladder. Being in a constant state of contraction (tonic) the muscular coat of the bladder keeps up a continuous degree of pressure on its contents, but as the amount of urine present fluctuates, so the pressure which is slight never remains the same for any length of time.

Ashdown states that every slight change in the character or reaction of urine affects it; and Griffith has pointed out that all kinds of mental emotions and physical efforts influence it. This is well brought out in case I where under the mental emotion prior to speaking at a meeting it is necessary for him to pass a Cather; and again, if he remains without exercise on Sunday the
Invariable result is Retention of Urine.

Now this tonic contraction enables the Bladder to rapidly 
readily adapt itself to the continual variations in the 
quantity of urine.

As a voluntary act abdominal & other respiratory 
muscles come into play, thus the expulsion of 
the contents, the Sphincter muscles being at the 
same time relaxed. By Reflex involuntary 
action the Bladder muscle itself comes into 
play, & the completion is accomplished by the 
accelerator urine quickening the stream expelling 
the last drop from the urethra.

The Existing cause of this reflex action is Ovoid 
tension of the Bladder, or a few drops of urine 
passing into the Urethra - the efferent impulse 
producing inhibition of the Sphincter contraction 
of the necessary muscles.

The nervous centre, which exists in the lumbar 
region of the spinal cord, can also be inhibited 
by the will.

The Average daily amount of urine is 50 ozo. 

when normal is acid in character, the specific 
gravity varying from 1015 to 1025.

Chemical Substance & Anatomical Elements may 
appear in urinary deposits - the latter may consist 
of Blood corpuscles, masses, pus, epithelial cells, 
Spermatozoa, casts of urinary tubules, fungi, K
Entozoa - all of which, with the exception of a small quantity of mucus, are pathological. We have already seen (see folio 25*) that there are no cells in the Bladder - neither goblet cells nor mucus-secreting cells, so it follows that the mucus present in the urine comes from the surface & its accessory structures, not from the Bladder itself.

Some observations on the differential diagnosis of Prostatic Enlargement (Hyper trophy), and Progressive Carcinoma of the Prostatic Gland.

Harrison* has pointed out so recently as two years ago the difficulty in many cases of distinguishing between Hypertrophy or Chronic Enlargement of the Prostatic and progressive Carcinoma of the same. Although the age was more favourable to Carcinoma in Case I yet the History, Symptoms, & physical appearances were those usually associated with chronic enlargement of the gland, & it was only the subsequent microscopic examination which showed the true nature of the growth.

The age of the patient, in preference to the urine where relief of symptoms is sought for, is an important point: for adult oblates is no longer looked upon
yet

as a cause of prostatic enlargement, there is a tendency to associate it with advancing years & to regard it in the light of being a "natural" change. If we did not from the time when the symptoms of the patient (Case I) became so urgent that he was compelled to seek relief, the years during which he had urinary trouble, the age is little over fifty. And although Thompson gives it as his opinion that enlargement of the Prostate never occurs before fifty - three years of age, yet several writers - Mbfel, Moullie, White, Belfield - have published well authenticated cases where the ages range from thirty, five to fifty years. Indeed it is the exception to find enlargement of the Prostate - at least symptoms of it - calling for relief - in men of old age. In an address delivered before the American Surgeons' Association Dr. White says: -

"It may be said that there is accumulating evidence that prostatic hypertrophy begins much more frequently than was formerly supposed during middle life, that the statistics on which we have been accustomed to rely, based on museum specimens from the experience of surgeons to whom the patients applying only when distinct subjective symptoms have developed are, too scanty, unreliable."

In a very able paper recently published by Henry Forsewick some much needed timely
remedies are made on Digital Exame. per Rectum.
He points out that "no question of urinary
Surgery are opinions so apt to differ as upon
the condition of the Prostate Gland as estimated
by Digital Exame. of the Rectum", and this
must be admitted when we remember that the
sense of touch varies most in acentrics of all the
senses in different individuals; that the Prostale
varies according to the state of the Bladder, of the
position of the body at the time of examination.
Still I should not care to admit that I think
the same Prostate, after Examation when the
Bladder is empty, the patient standing on a conch,
Examined while the patient lies on his back with
his legs separated, will lie found in the latter position
"higher up in the pelvis, its elasticity diminished into
the decreased" (6th).
Hemorrhage damaged by a sound on catheter, prostatic carcinoma do not bleed much nor cleanly: there is seldom either sudden or complete retention. In case I there was haematuria as well as sudden retention.

In the absence of a postmortem to clear up the doubt I am inclined to think that Case II is more of the nature of a prostatic carcinoma than the so-called hypertrophy (prostatic). This would account for the failure in the treatment, although Dr. C. boldly concludes that "castration" (therefore in a minor degree, castration) "is of but little use in myomatous and fibrous prostates."

In the diagnosis of tumours of the prostate, especially in estimating their consistence, there is an important physical sign, viz. that the finger in the rectum can easily feel the point of a metal bougie in the prostatic urethra, if much tissue intervene it is an evidence of the thickening of the gland.

Dr. Griffiths (Cambridge) in a paper read before the Clinical Society (London) has given it as his opinion that in ordinary hypertrophy of the prostate the enlargement involves the posterior central part, that a catheter is not obstructed until it reaches the neck of the bladder; whereas in general enlargement, as from sarcoma, the urethra...
is displaced opposite the Verm Montanum.
In a case of Osphrinos Carcinoma of the Prostate
reported to the Birmingham + Midland Branch
B.M. Ancoats by Dr. Keaton (13) at which the Prostate
Bladder + Rectum were shown there was a
considerable irregular enlargement of the
lateral lobes of the Prostate projecting chiefly
into the Rectum where it formed a large smooth
tumour ; it also showed numerous small
Secondary Deposits in the pelvic lymphatic glands.
During life the main symptoms in Dr. Keaton's
patient were "progressive enlargement of the
Prostate - too rapid for ordinary hypertrophy
- too rapid emaciation". There was neither
Haematuria, nor retention; but Suprapubic
Cystotomy had to be performed for Retention.

From a consideration of cases I + II and
several others which I have met in practice
I am inclined to believe that slowly
progressive Carcinomata of the Prostate
Gland, simulating being mistaken for, the
more ordinary forms of Hypertrophy, is far
more common than is generally believed to
be the case.
The Function of the Normal Prostate Gland —

As to its function there is considerable diversity of opinion. So far as I have been able to make out from
the few written opinions on this subject, the majority
of the writers hold to the view that it is
"entirely inert". Still, judging from cases in
practice bearing upon the function of the prostate,
there is a good deal to be said in favour of the other
view viz. that the chief use of the prostate is to
"act as a support to the Bladder"

Monllouët 7 as representing one group of writers
holds that the anatomy & physiology of the gland
gives no proof that the normal prostate has
any influence upon the function of micturition
except as a mechanical support to the urethra.
Micturition is not impeded by its absence, as is
shown by the fact that it is not present in
children or women, nor is it developed in bunuchs.

A study of the comparative anatomy & embryology
of the glands leads one to connect it with the
genital rather than the urinary system, for it
is not until puberty that it develops, it grows
and degenerates in importance & size, pari passu,
with the testicles. Griffiths 8 has shown that,
as with other sexual organs & animals, the
size & function of the prostate gland rise & fall
with the breeding season.
A form of prostatic enlargement giving rise to symptoms, similar to that found in man, is met with in animals which maintain the horizontal position, such as dogs; and the treatment by castration has long been known to veterinary surgeons.

Harrison, in upholding the other view, admits that the existence of the prostate is not limited to man but is not aware that it undergoes a change analogous to the seminal enlargement observed in the human species. He does not deny that it is connected with the genital function but believes with D. Handfield Jones that its function relative to the sexual act is "in supplying a vehicle which enables the ejaculating fluid to act with greater certainty over a larger area, whilst at the same time it supplies a muscular buttress against which the ejaculatory muscles of the urethra may advantageously act in the emission of the semen." To this extent only does Harrison believe that it is a compound organ; whilst at the same time he holds that its chief function is a sphincter muscular one in relation to the bladder.

In wounds of the prostate gland, as occurs in various operations, where the prostatic ring is extensively interfered with, incontinence of urine follows;
and in his book Harrison cites a case where after removal of the gland for malignant disease the patient recovered completely from the operation and followed an active and laborious life, but the control over the bladder was lost. A similar case is recorded by Dr. T.W. Barker of Bedford where, after the removal of a large prostatic calculus by perineal incision the patient was unable to retain more than one ounce of urine at a time. Where there has been considerable destruction of tissue, as in chronic abscesses of the prostate, one finds that the power of retention is interfered with; and many cases of incontinence in male children may be due to an arrested development in the prostatic gland, although the majority of them are traceable to reflex causes.

Thus, it is difficult to reconcile Dr. Griffith's views that the muscular power of the prostate is exaggerated, with much ease drawn from actual practice.

Taking these cases as examples we have seen some of the effects of this enlargement of the prostatic gland, in the retention of urine, temporary or permanent; in the constant irritation demanding the habitual use of the catheter with the probable loss of power of voluntary evacuation; the serious
condition of cystitis - acute & chronic - with, in
some cases, its resulting pyelonephritis sets
danger to life; not to speak of the worry & the
mental effects, such a condition entails, on the
life of the sufferer.

How numerous theories have been put
forward from time to time to account for this
abnormal state of the prostate gland, but the
majority of these have been disproved. Considerable
support, however, is given to the theory that the
prostate undergoes enlargement similar to the
fibroid enlargement met with other organs,
such as the uterus. Belgrave, White &
Sir H. Thompson support this view. According
to these writers, in their mode of growth, structure
& situation there is considerable resemblance between
the prostate & the uterus. They are both fibrous
tumours, sometimes attaining a size much larger
than the prostate or uterus from which they
spring. The prostatic growth may become pronounced
& project into the bladder just in the same way as the
polypoid growth of the uterus project into its cavity.
If the length of sexual life is taken into consideration
then the age at which the growth is most frequent is
about the same for both sexes. This view is based
upon a wrong concept of the homology of these
two organs, for we have seen (Ch. 26) that the
prostatic vesicle is the homologue of the uterus in
the female, and it is an independent structure and takes no active part in humour formation or general enlargement of the prostate. Then again, the enlargement of the prostate is mostly glandular in structure; whereas uterine growths are usually fibromyomatous. It is true that the prostate bears a similar relation to the cheeks that the uterus does to the ovaries. John Hunter observed that in the male the prostate gland in winter was "hardly discernible, but in the summer becomes very large, filled with masses." Hunter again was the first to note that while the prostate of the perfect bull is soft, flabby, that of the castrated animal is "small, flabby, tough fibromyomatous." Griffiths contributes original observations on castration of the dog test where like changes supervene, the prostate becoming transformed into a mass of fibrous connective tissue containing the remains of the once active tubules with a small number of atrophied muscle fibres. Gruber observed marked atrophy of the prostate in a man aged 65 who had been castrated in youth: Bicharc confirmed Gruber's observations; whilst Felice says that the Prostates in Bunnuchs are about the size of those found in children.

Upon this view is based a form of treatment for the prostatic enlargement analogous to that for uterine...
fibroids, viz. - Orchidectomy or the removal of the ovaries for uterine fibroid; & Castration or the removal of the Testis in prostatic enlargement. Still this does not prove a relationship to each other.

Of the relationship of prostatic enlargement to the sexual function we have to admit our ignorance. We know that it may cause unnatural sexual excitability the associated with sterility. Berkeley Hill has pointed out that persons who have suffered from a congested prostate are liable to too speedy speculation during copulation, that this may be so rapid & frequent as to be ineffective that effective coitus is impossible. But the true relationship of the growth to the period of functional activity is entirely unknown.

Another view which is strenuously advocated by Reginald Harrison is that the enlargement of the Prostate is compensatory to a primary change in the Bladder. He refers to the Prostate as a "muscle containing a tolerably large proportion of glandular or secreting tissue embedded in it"; and believes that the enlargement of the Prostate is an example of muscular hypertrophy. It is difficult to verify this because of the isolated manner in which the Prostate has been studied; as Harrison points out the organ is considerably
changed after death, being contracted like a "Spanish chestnut." Whilst during life the muscular fibres of which it is so largely composed are spread out like a fan and do so as to furnish a contractile support for the bladder & its varying contents.

In his own words: "Assuming that from any cause such as long detention of urine, habit, position of body, or the obliquity connected with advancing years, the floor of the bladder sinks lower than the pelvis, relatively to the prostatic, so as to offer some difficulty in expelling the last portion of urine, the effect will be frequently resisted efforts in all the muscles immediately adjacent to a part of the bladder which by reason of its connections structures has but little power of contracting. This will eventually lead, as I have endeavoured to show, to the development of an strong muscle buttress between the orifice of the ureters & also I believe to similar changes in the muscular tissue so largely entering into the prostate & principally affecting its posterior segment." "Quantity is substituted for quality, the age advances structural lubrication is thus provided against." (Stee)

Of course, while the muscular action of the prostate is clearly demonstrated this compensatory view of the enlargement absolutely fails. When
we study compensatory hypertrophy in other parts of the body, as for example, in the heart, we find that there is an increase in the muscular fibres of the organ or organs; but this is not the case with the prostatic enlargement, for it consists of imperfectly formed gland tissue in the older part of dense fibroid stroma.

To sum up in a few words this theory of compensation - I quote from Barlow: -

1. The prostate in connection with its associated parts has an arrangement muscular function which are not sufficiently recognized.

2. "Hypertrophy is to be regarded as a provision against structural dilatations in adjacent parts arising for the most part out of renal degenerations."

3. "These changes are mainly compensatory, while in others they are excessive and hurtful."

4. "That in the latter respects it resembles other provisional hypertrophies."

Dr. J. W. H. D. has said that "Sufficient regard is not paid to the distinction between constructive and destructive processes." He believes that just
as the body grows & decays as a whole during a term of years so we may see the two processes of production and destruction going on in its several parts, when subjected to any special stimulus; but, admitting that the prostate has to do with menstruation it is difficult to understand that because it is called into use six or eight times in the 24 hours that each a stimulus would be sufficient to account for its (the prostate) overgrowth. Neither is there sufficient evidence that there is a primary sinking of the posterior part of the bladder; nor when it does so that there is a compensatory hypertrophy of the prostate.

The least satisfactory of all the theories is that advanced by the French School, as represented by Guyon. They believe that it is not a purely local condition, but that the enlargement of the prostate forms part of a general atrophy, beginning in the vascular system, affecting the genito-urinary organs in particular. They argue that the glandular part of the prostate is substituted for fibrous tissue: that the bladder, kidney, testes undergo a similar change by the overproduction of fibrous tissue; that "enlargement of the
Prostate never occurs without general atrophy.

If we accept this view, then treatment does not get beyond the palliative stage. But we have seen in case III that enlargement of the prostate may exist in a person in perfect health, and without its existence being known. Many people, with enlarged prostates, enjoy life with no indication of vascular degeneration further than that which accompanies healthy old age: whose bladders, as regards capacity and power of expulsion of urine, show no structural defect; who, with proper precautions, do not develop prostatic trouble likely to shorten their lives.

Reviewing these theories, one must admit that the one suggesting an analogy between the prostate atrophy, with reference to the Testicular atrophy respectively, is capable of giving greater possibilities in Diagnosis and Treatment; whereas if we accept the views held by the French School, to clone or transplant - the Compensatory Theory of Avarice, we yield ourselves to the inevitable except very little from treatment, operative or otherwise. That there is an intimate relationship, as regards growth, work, between the Prostate Gland & the body is undeniable. It has been proved (supposing this...
that if the direct influence of the Testes be removed by castration or castration the prostate gland shrinks following glandular change; but although in the works of Mary Robinson the fashion has
for a time lusted from prostatectomy to castration” among lengthy observation of cases is required before we can confidently say that
the Testes has a direct influence upon the breast condition of the prostate (as illustrated
by case II).

Our knowledge of the connection between
one organ or tissue and another is somewhat
limited. We know that the Thyroid Gland
is capable of influencing other parts of the body
from bringing about considerable structural
alterations. We have it on the authority of
Penton, Annandale, that of

35) that the
removal of the ovaries for Cancer in the
female breast has had some influence upon
the breast condition “although complete cure has
not been the result”; And so it may be that
some stimuli originating in the Testes causes
the prostate gland to increase in growth.

In leaving this controversial part
of the subject one must reluctantly admit
that so far as the cause of the enlarged growth
is concerned we are not much further advanced
than Syne 19) was when he wrote in 1836 —
"The cause of the disease (Enlarged Prostate), as might be expected, seems to be excitement of the gland, either directly or through some sympatry with the neighbouring parts; but, on the other hand, the line of treatment pursued, with on the whole, its beneficial results is much further advanced than it was when the above was written, for to quote from the same book we read—"It has been proposed to cut out the enlarged prostate, but this proceeding is so inconsistent with the dictates of rational Surgery, that the objections to it need not be taken into consideration."

The Changes in the Bladder:

Briefly these are due to the enlarged prostate preventing the complete emptying of its contents—a mere mechanical obstruction; to the change in the vesical circulation caused by pressure on the prostatic veins; to the septic infection of the vesical urine.

It has been previously noted that in many cases of Prostatic Enlargement no symptoms calling for interference arise; and also, when treated in time, as exemplified in cases IV & E, many men go on enjoying life without further trouble. But in others, as in cases I &
In all these cases "frequent micturition" is the common initiating complaint. We have already seen that the act of micturition begins with overdistention of the bladder, or a few drops of urine passing into the prostatic urethra, which sets up an afferent impulse and produces inhibition of the sphincter or contraction of the necessary muscles. We know that in passing a bongie there is often a keen desire to micturate just as the instrument is entering the bladder, which passes off as soon as the instrument is in the bladder. This is comparatively the most sensitive part of the bladder; it is most liable to become congested in cases of prostatic disease, consequently feelingly sensitive. And this early frequency of micturition is due to an increase in the irritability of the lining membrane of the neck of the bladder and the prostatic portion of the urethra. As time goes on the mucous membrane becomes inflamed, the more contact of the urine with the inflamed surface is sufficient to cause the onset of micturition.
Of course frequency of micturition is likewise a common complaint with persons suffering from vesical stone which acts as an irritant on the neck of the bladder. At night this symptom almost entirely subsides in the patient with vesical calculi because in the recumbent posture it does not come into contact with the neck of the bladder. On the other hand, it is said that in prostatic disease micturition is more frequent at night, but I cannot verify this statement. My own experience has been that these patients micturate so often during the day — very often or otherwise — that they lose count of the number; but that during the night they take more notice, and consequently think that they have done it oftener than during the daytime — in other words, they are impressed more during the night.

This increased frequency of micturition is not to be confounded with that of "overflow" as noted in case II. Here the vesical urine had increased until the capacity of the bladder diminished. As a result micturition is almost continuous: the bladder is quite full, so as more urine enters from the bladders, more urine leaves for urination. During sleep, when the
Sphincter is not under control, involuntary micturition takes place.

Now in these cases of frequent micturition (IV & V) great benefit is derived from catheterization; even when the patients are most careless—judging from the crude form of asceptis which they practice—cystitis does not follow so often as one would suppose. But what more frequently happens after a long course of catheter life is that, as in case IV, voluntary evacuation is lost. This is said to depend upon whether Cystitis has been present or not. If there has been considerable inflammation, as a consequence a destroying of vesical muscular fibres the resulting loss of tone of the bladder must be different from that resulting from mere disease. In the one case the power is generally lost—but instances are on record where after catheter life for six years recovery has taken place.

In the other case (V), as has been noted, catheterization was of no avail.

The Prostate enlarged acts, as already stated, as a mechanical obstruction to the outflow of the vesical contents: consequently more work is thrown upon the
muscles in order to empty the bladder of urine. As time goes on, the muscular fibres become fatigued under this increased strain - the work becomes too great - the task of emptying the bladder remains unfinished, a part of the urine is left behind after the act of micturition - forming what is known as Residual Urine.

This condition, of course, is not limited to prostatic enlargement. It occurs wherever there is loss of muscular power, such as follows repeated straining to overcome a urethral stricture. And just the latter may be the initiating cause, so also the prostatic growth may act, towards the end of micturition, as a valve closing the urethral opening too preventing the last of the bladder contents from escaping - in other words leaving some behind as Residual Urine.

The muscular fibres at the lower part of the bladder have the most work to do, and consequently the tone of these is lowered. In this way, as time goes on, the bladder wall gives under the strain, pouches, containing this Residual Urine, are formed. In cases which have existed for some considerable time, the post-prostatic pouch is very large and only...
limited in its capacity by the pressure of the surrounding organs. In such cases when a catheter is passed the urine passes away quietly—there is no expulsion—the pressure of the organs around repels it—in short the tone of the urinary muscular fibres is so diminished that the power of contraction is almost lost.

Now, so long as there is no septic infection of the lining membrane of the bladder, the character of this residual urine is the same as the normal, i.e., in a healthy bladder without residual urine. In fact, as is seen in cases III, IV, V, patients are often not aware that they have this residual urine until it is actually shown them.

There is another condition which is from time to time met with in cases of Prostatic Enlargement, i.e., Retention of Urine. This condition may come on quite suddenly, without any warning, but it is usually preceded by some urinary trouble, such as frequent micturition, as in case IV. In that case the periodic attacks of complete retention requiring Suprapubic aspiration were no doubt due to a sudden increase in the
mixture. For a time the bladder had been acting at a disadvantage owing to an enlarged prostate with its "valve" at the prostatic urethra. Suddenly there was congestion at the neck of the bladder: the mucous membrane of the urethra covering this "prostatic valve" became swollen. The "valve" itself was thereby increased in size & completely closed the orifice. When such a condition occurs, if the patient is put to bed - all stimulant & sources of irritation (medical) withdrawn - as was done in this case - the retention temporarily relieved by a catheter or by supra pubic puncture, the congestion quickly subsides.

This congestion may be due to an irritating condition of the urine from excess in food & alcohol: to exposure to cold: or to any condition which causes an increase in the pelvic circulation, such as constipation & sexual excess, and sedentary habits. In case # I have no doubt the exciting cause was exposure to cold & wet, which, from the nature of his work, he was prone to be: as he led an active life, was very temperate, & did not suffer from constipation.

Again Retention may be
case 1, result from sudden failure in the vesical muscular power; the bladder having been allowed to contain more than its usual amount fails when suddenly called upon to deal with more than the ordinary quantity. The prostatic enlargement has been slowly increasing until the above is the result, and in this case the treatment hitherto used to Retention due to Congestion is of no avail.

Congestion + increased resistance, of course, may act together, as was the case after the first few days, in case 1.

As a result of Retention there is always some temporary injury to the urinary system — the walls of the bladder have been strained, so that there is more residual urine for a time — the secretion of urine is usually affected, showing that the kidneys are to some extent involved by the Retention; they become congested & their secreting power diminished.

When Septic Infection of the Bladder occurs a very serious complication is added to the Prostatic condition.

Inflammation of the Bladder is
Subject to the same conditions that influence the occurrence of inflammation in other parts of the body; anything that impairs the vitality of its several parts, or retards the function of the bladder, predisposes to Cystitis.

In cases where the nervous supply has been interfered with, as is Thyreitis or Paralysis following injuries to the spine, Cystitis is a frequent complication; but the nervous condition — beyond lowering the vitality of the bladder well, interfering with its function of emptying its contents — is not the direct cause of the subsequent vesical inflammation. Like the venous stasis accompanying enlargement of the prostate, Paralysis of the bladder supplies the most favourable conditions for the onset of Cystitis. They are predisposing causes of Cystitis, but alone they are incapable of its production, for Milhoir\textsuperscript{10} has shown that neither cold application to the pubic region, nor the injection of hot or cold water into the bladder are themselves able to produce Cystitis; but if in addition to such predisposing causes an injection of the Bacillus Coli is made into the bladder, then Cystitis is the result. Likewise, Retention of Urine, from whatever cause, is incapable of producing Cystitis.
have seen that in several of these cases cited the knowledge of the presence of Resident Bacteria was unknown to the patient themselves, yet they did not suffer from Cystitis until other & direct causes made their appearance. Guyon (41) has proved that if the urethra of Rabbits is tied the inflammatory condition arises in the bladder provided the direct cause of the inflammation does not spread from the ligature on the urethra.

Notwithstanding Dr Dantock's vigorous but illogical attack on the Modern Theory of Diseases (42) that in the majority of acute diseases the condition is due to the influence of a specific so-called pathogenic organism in which he propounds the Doctrine that "the presence of these various microorganisms is the result, not the cause, of Disease" it has not yet been demonstrated that Cystitis can take place without bacteria being the initiating & exciting cause.

As stated above it has been abundantly proved that conditions of the bladder most favourable to Cystitis may exist for a very lengthy period - until in short microorganisms gain access to the susceptible bladder either directly through the Urethra (as shown in some of the case cited), or indirectly
through the lymphatics or blood stream as simplified in Case III.

In studying this complication of prostatic enlargement it is necessary to remember the relationship between the walls of the bladder and the organisms invading it. The Epithelium of the bladder, though finer and more delicate in structure, is like the Epidermis: it is protective almost as impervious, so long as the surface remains uninjured no absorption takes place in the bladder. Experiments leading up to the latter statement were done by Escrib, Boyer & Guinard, & Bazy who have shown that absorption will occur whenever the vitality of the cells is disturbed or impaired, as when too concentrated solutions are injected, or the effect of alkalis on the Epithelium cells. When the bladder becomes inflamed, the vitality of the epithelial cells is impaired, consequently absorption may take place, lead to the greatest forms of septic poisoning — a condition which becomes still greater when the bladder is incapable of completely emptying itself. On the other hand, when the bladder becomes coated with phosphate of lime & pus, as in chronic inflammation of the vesical epithelium —
the condition of the patient in case III at the present moment - there is practically no absorption.

In his opening address at Edinburgh on "A discussion on the Origin, Effects, Treatment of septic infection of the urinary tract" Dr. Newman summarizes the observations which have been made on the etiology of sepsis of the bladder as follows:

1. That simple Retention of urine does not give rise to septic inflammation.
2. That small cultures of pyogenic microorganisms, such as Staphylococcus pyogenes aureus, Staphylococcus pyogenes albus, or Bacillus coli communis, when introduced into a healthy bladder fail to produce sepsis.
3. That if the mucous membrane of the bladder be injured or diseased prior to the introduction of microorganisms sepsis immediately occur.
4. That if artificial retention of urine is induced from 6 to 20 hours after the introduction of septic organisms into the bladder, supplicative inflammation of the mucous membrane follows.

Thus we find that Cystitis, as we know it the bacterial in origin, resolves itself
into the conditions favourable to their growth.

As to the actual part taken in the production of Cystitis by the different bacteria there is some difference of opinion. But most are agreed that there are two groups of microbes usually found in cases suffering from Cystitis. To quote from Rowing & these are:

1. Those which decompose the urea:

- *Staphylococcus aureus*, *albus*, *pyogenes*,
- *proteus vulgaris*, *various diphteriae* &
- *Staph. bacteria*, which are both
  - *pyogenes* & *non-pyogenes*.

2. Those bacteria which are known under the name of Coli bacilli: Under normal conditions group (1) are found in the urea, when inflammation of the bladder occurs they multiply at a rapid pace, by decomposing the urea causing the urine to become alkaline. The condition for their growth - an alkaline medium - is an almost perfect one: at the same time the product of the decomposed urea, i.e. ammonia, acts as an irritant on the lining membrane of the bladder.

And just as those in group (1) abound...
in the urethra so the Bacillus Coli is found swarming in the intestines, and though harmless while there it readily passes, when opportunity presents, by way of the blood stream lymphatics, even by the urethra into the bladder. Opinion is divided as to the power of Bacillus Coli to decompose urea, as it is often present in suppurative Cystitis with highly acid urine. It may not exercise its power to any appreciable extent while in the bladder.

Rostovski from the bactericidal action of fresh urine on Anthrax, Typhoid, Cholera Bacilli has suggested the idea of destroying the cause of the Cystitis by increasing the acidity of the urine. With this object in view he gave large doses of Camphor and Borneol Acid, and found that the acidity was increased, and though the bacteria were not killed they were diminished in number. He like-wise found that the acid urine did not give the patient such pain or discomfort as the washing out of the bladder.

The treatment, which was given to complete the full history of these cases, is, of course, incidental to the object of this paper.
To augment it, however, in as brief a manner as possible one might quote from an authority on the subject: to say that in dealing with the treatment of such cases the following factors must be borne in mind viz:

1. The predominant part of the growth, whether soft indicating causes of glandular muscular elements, or hard showing advanced fibroid change.
2. The seat of the growth.
3. The presence or absence of local sclerosis.
4. The infection of the vesical mucous.

When the function of the bladder is interfered with by the enlarged prostate, then treatment becomes necessary, and resolves itself into:

1. **Habitual Catheterisation**.
2. Removal, by operation, of the obstruction.
3. The formation of a new passage for the urine.
4. **Castration**.

As to the relative importance or merits of these methods, with regard to results, more especially of Prostatectomy & Castration, a more lengthy period of observation is required before a definite opinion can be given. Here are pros & cons for each
method; but the number of cases treated as yet, is so limited, that neither the one nor the other can be looked upon as the strictly orthodox plan of procedure.

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