The anatomy and diseases of the prostate gland / by John Adams.

THE PROSTATE GLAND.

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THE

ANATOMY AND DISEASES

OF THE

PROSTATE GLAND.

By JOHN ADAMS,

FELLOW OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND,

SURGEON TO THE LONDON HOSPITAL, AND LECTURER ON ANATOMY,

CONSULTING SURGEON TO THE TOWER HAMLETS' DISPENSARY, AND THE ROYAL INFIRMARY FOR ASTHMA AND DISEASES OF THE CHEST,

AND PRESIDENT OF THE HUNTERIAN SOCIETY.

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PREFACE.

THE Diseases of the Prostate Gland have been so fully investigated by so many able Surgeons, and their symptoms and treatment have been so well elucidated, that it appears almost presumptuous to introduce a Work on the subject, which can scarcely lay claim to any novelty either in pathology or practice. The Works of Sir Benjamin Brodie, Guthrie, Coulson, and others, are too well known to the Public to require any commendation from me: and I should have hesitated to trespass in a region so well explored, had I not been impressed with the idea that a brief account of the diseases to which this important part of the body is liable would be acceptable to those who wish to take a comprehensive view of the subject. Such is my apology for offering this work to the Public.

4, SAINT HELEN'S PLACE,
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CHAPTER I.

DESCRIPTION OF THE PROSTATE GLAND.

THE prostate is a glandular body surrounding the neck of the bladder and beginning of the urethra of the male, deriving its name from its position in front of the vesiculæ seminales. It is situated in the anterior part of the pelvis, behind and below the level of the symphysis pubis, posterior to the triangular ligament of the urethra, with which it is connected by a continuation of the latter with its capsule. It has the membranous part of the urethra in front of it, and somewhat below its level, and it rests upon the anterior surface of the middle of the rectum. The prostate is perforated by the urethra, two-thirds of the gland are below this canal; it inclines obliquely downwards and forwards from behind, its apex being situated rather below the base.

In shape the prostate resembles a Spanish chestnut, or the ace of hearts on playing cards, and presents a base behind and an apex in front; it is compressed from before backwards; its sides are convex, and its base is notched. From base to apex the prostate measures from an inch to an inch and a quarter; from

side to side from an inch and a half to two inches; and from half an inch to an inch in depth from before backwards: a healthy prostate weighs five or six drachms. This measurement nearly accords with that given by Dupuytren, who devoted much attention to this subject, as having a most important bearing upon the bilateral operation of lithotomy.

A correct knowledge of the relations of this body to the adjacent viscera is of the highest practical importance. If, after the introduction of a catheter through the urethra into the bladder, the finger be passed into the rectum, and carried forward, the bulb of the urethra is first indistinctly felt, behind which is the membranous portion: whilst beyond this, and still within reach of the finger, the prostate is perceived. In the empty state of the bladder the outline of this body is usually distinct enough; but when the bladder is over-distended with urine it becomes in a great measure confounded with the posterior surface of this viscus, and cannot be easily distinguished. To obtain a good view of the connections of the prostate, a side view of the pelvis should be prepared in the ordinary manner, by the removal of the left os innominatum, with the soft structures in immediate connection with it, leaving a small portion of the symphisis and ramus of the os pubis, together with the spine and a part of the ramus of the ischium. In this manner the levator ani is first brought into view, at the upper edge of which is seen the point of division of the pelvic fascia into the vesical and obturator. The levator ani has no immediate connection with the prostate, for, although it gives it a general lateral

support, it is separated from it by the vesical fascia. Internal to the levator ani lie the vesical fascia and the levator prostatæ muscle. The vesical fascia is continuous with the pelvic, it passes inwards over the prostate, rectum, and bladder, inclosing these structures in separate sheaths. Thus the prostate gets a complete investment from it; this covering is above continuous with the anterior true ligaments of the bladder, in front it is connected with the posterior layer of the deep perinæal fascia, and beneath, the fascia passes between the gland and the rectum; thus the gland is completely invested by a fibrous capsule. This envelope incloses within it the prostatic plexus of veins, and the blood-vessels and nerves of the prostate; the veins are continuous in front with the dorsal vein of the penis, and behind with branches terminating in the internal iliac vein. Many branches of the prostatic venous plexus are necessarily divided in the lateral operation for the stone; and in old persons, from their increased size, they occasionally pour out so large a quantity of blood as to endanger the life of the patient. They often contain calculous concretions, to which the term phlebolithes has been given. The following is the mode of connection between the prostate and the coats of the bladder; the mucous coat is of course continuous from the bladder to the urethra; the submucous cellular coat is firmly adherent to the capsule of the gland, whilst the inferior fibres of the detrusor urinæ are arranged thus, the longitudinal fibres split into two layers, one, the thickest, adheres to the submucous cellular coat of the bladder just behind the prostate; and the other,

thin and indistinct, is implanted into the base of the gland itself. Guthrie has described a long, delicate, and distinct band of muscular fibres as entering the notch in the base of the gland, beneath the uvula vesicæ and middle lobe, into which it is sometimes inserted; but it can frequently be traced nearly an inch further to be inserted into the veru montanum.* I cannot satisfy myself of the existence of any muscular fibres at the under surface of the prostate. On either side of the gland we perceive a muscle, the *levator prostatæ*. It is frequently confounded with the anterior edge of the levator ani, from which however it is occasionally separated by a layer of cellular tissue. It arises from the posterior part of the symphysis pubis by a tendinous slip, and its origin extends for a short distance backwards from the anterior true ligament of the bladder of the corresponding side; as it descends, its fibres spread out over the side of the prostate, and are inserted into the under part of its capsule; its use is to support the gland, and, by compressing it laterally, to assist in the evacuation of its ducts. The prostate rests on the anterior surface of the rectum, a thin layer of fascia passing underneath the gland and the vesiculæ seminales. Behind the prostate are the vesiculæ, which diverge from each other as they recede, and are in front received into the interval between the lateral lobes, their anterior extremities are placed beneath the third lobe; the vasa deferentia run on their inner side, and the common ejaculatory ducts pass upwards

* Harrison has described a similar arrangement of muscular fibres. (Cyclopædia of Anatomy, vol. i. p. 381.)

in a curved direction, between the lateral and middle lobes to terminate by the side of the sinus pocularis.

The anterior surface, which is grooved by a shallow longitudinal depression, is attached to the back part of the symphisis pubis on either side by two ligamentous or tendinous bands, which are continuous with the capsule of the gland below, and above with the true anterior ligaments of the bladder; they are termed the *ligamenta pubo-prostatica media et lateralia;* they serve to support the prostate and sling it to the pubis, thus contributing to the support of the neck of the bladder. The posterior surface of the prostate is smooth, and is traversed by a longitudinal depression, at the bottom of which two smaller grooves are visible, inclining towards each other in front, they bound two sides of a small triangular portion of the gland; this is the under surface of the third lobe, on either side of which a *vas ejaculatorium* takes its course.

The prostate is surrounded by a dense capsule derived from the vesical fascia; this gives it a complete investment, and adheres so firmly to the tissue of the gland as to be separated from it with great difficulty. It is divisible into two layers, between which the prostatic plexus of veins runs. The gland itself is of a lightish brown colour, of a fleshy feel, and when cut it offers the resistance of soft cartilage: it is one of the firmest glands in the body. It is principally formed of two lateral lobes, a right and a left, of equal size in the healthy condition, of an ovoid shape, with their long axes from before backwards; they diverge from each other behind, leaving an interval between

them, already mentioned; the lateral lobes are connected together beneath the urethra by an isthmus of variable depth and breadth. Between the two lateral lobes, which make up the bulk of the gland, we find the middle or third lobe. The name of Sir Everard Home is usually associated with the description of this lobe. Although not the discoverer of it, he gave the first full description of it. Mr. (now Sir Benjamin) Brodie made dissections of it under Home's direction; in the first subject in which it was examined, it appeared as a distinct gland, resembling Cowper's gland in size and shape; but in the examination of this body in five different subjects, the appearance was not the same in any two of them. The following is the account given by Home of what he considers the most natural condition of this part of the prostate:—"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 round, 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 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 veru montanum."

It is well known that Hunter was aware of the existence of this lobe as a natural constituent of the prostate, for he says, "A small portion of it (the prostate) which lies behind the very beginning of the urethra, 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." Hunter has given an accurate drawing of the middle lobe of the prostate. In the normal state it represents a simple elevation of glandular structure beneath the uvula vesicæ, between the two lateral lobes at the back part, and connected laterally with them; but it varies materially in size and consistence in different subjects. I have no doubt that in some cases it is wanting altogether, in others it is of small size; and in many, where it is well developed, it is as firm and consistent as the other parts of the prostate. In one example which I examined, it was much firmer than the lateral lobes, and of a much lighter colour; indeed, so distinct did it appear that I really doubted whether it belonged to the prostate. I applied a microscopical test, and found its ducts charged with similar concretions to what have been so frequently found in other parts of the gland; this proved to me

that it was a part of the gland itself. The best method of viewing the third lobe is to make a vertical section from before backwards through it, and to carry the incision directly through the *veru montanum, sinus pocularis,* urethra, and inferior part or isthmus of the prostate, the divided third lobe is thus brought into view, as well as the ejaculatory duct of one side, passing between it and the lateral lobe. The sinus pocularis runs beneath it.

The urethra traverses the prostate from behind forwards, and is completely surrounded by it, Amussat doubted this fact, and thought that only three-fourths of the canal were encircled by the prostate, and that the remaining fourth (the anterior) was covered by a cellular or muscular medium, extending from one lobe to the other. This is undoubtedly incorrect as a general rule, for I have examined with the microscope that portion of the gland placed over the upper surface of the urethra, and found it identical in structure with the remainder of the organ. The urethra in passing through the prostate is dilated into a considerable sinus, and presents in front a triangular opening if a transverse section be made. It is not exactly in the centre, being nearer the anterior than the posterior surface; it is generally said to be about two lines distant from the former, and four from the latter, and seven from the lateral surface of the gland. It varies frequently in this respect in a marked degree. When the third lobe is small and flat, it is much nearer the posterior surface than the anterior; and this is the case where the isthmus or medium of connection beneath is thin, a condition not very uncommon.

The prostatic portion of the urethra is about fifteen lines in length, and is wider in the middle than at either extremity; it contains within it the veru montanum or caput gallinaginis, which runs along it, forming a conical elevation, and dividing it into two equal portions.

Over the urethral surface of the third or middle lobe of the prostate, the mucous membrane is raised up so as in some subjects to form a remarkable elevation, lying transversely at the beginning of the urethra; this is especially seen in old subjects: it corresponds with the anterior extremity of the *trigonum vesicæ*, and is known by the names of the *uvula vesicæ*, *luette vésicale*, *valvula pylorica* of Amussat. In the healthy state of the bladder and prostate, this elevation is frequently scarcely perceptible, unless the bladder is much contracted; but it is subject to considerable increase in size, and is generally involved in those cases of enlarged prostate which are of such frequent occurrence in the old person, and where the third lobe is the seat of hypertrophy. Mercier describes this vesico-urethral valve as a semicircular fold, raised suddenly at a right angle from the posterior surface of the neck of the bladder, and composed of a tissue somewhat resembling muscle; and Mr. Guthrie, in his lectures delivered at the College of Surgeons in the year 1830, directed attention to it as frequently the seat of disease totally independent of any enlargement of the third lobe of the prostate; but to this I shall again direct attention when the morbid anatomy of the prostate is under consideration.

Intimate Structure.—The prostate comes under

that division of the glandular system, inappropriately termed conglomerate. Müller places it in his fourth order of glands—"*glandulæ ex cellulârum contextu spongioso compositæ, mediis cellulis in ductus excretorios hiantibus, sine lobulorum divisione composita.*" It is arranged by Cuvier under the head of supplementary glands of the male organs of generation. The external covering of the gland, derived, as already described, from the vesical fascia, having been removed, we come to a deeper layer, which closely surrounds the glandular tissue; it is most intimately connected with it, so as to be detached with the greatest possible difficulty, and can evidently be shewn to send processes into the gland, which are probably continuous with the fibrous tissue between the follicles. On the surface of this the lymphatics of the gland are seen to ramify: this is best shewn after previous immersion in water. If a simple section is made, the gland presents a spongy cellular aspect, and an opaque fluid oozes out from the cut surface: but its intimate structure can only be made out by microscopical examination of thin sections, or by injections with mercury or coloured size, or by inflation; the outline of its follicles may, however, be seen by a minute injection of its blood vessels, which ramify in a delicate plexiform manner on their surface. It is not a gland of much complexity of structure or arrangement. Briefly, it may be said to be composed of minute terminal follicles, opening into canals or tubes, which unite together to form ducts, which open in an oblique manner on the prostatic portion of the urethra. The orifices of the prostatic ducts are situated principally

close to and around the most elevated portion of the veru montanum, in the form of a crescent, the larger ducts on the side, and the smaller on the posterior aspect of this body. If a longitudinal, vertical section is made, many of the ducts of the prostate are seen passing upwards, towards the under part of the veru montanum, in a straight direction: the interior of some of them being slit open in the section, whilst others pass obliquely beneath the mucous membrane for some distance prior to their termination. They vary in number from ten to fourteen, but as many as thirty have been seen. Their diameter ranges from one-sixth to one-fourth of a line. It sometimes happens that two or more ducts unite, and open by one common orifice, large enough to admit the end of a small probe.

To unravel the structure of the gland, it is requisite to inject the ducts separately, as the follicles to which they lead have no communication with each other, as the representation given by Müller would lead one to imagine; each duct will be found to give off tubes, which, passing in a straight direction, separate gradually from each other, and terminate in minute cells or follicles, which, according to Weber, range from one-sixteenth to one-twelfth of a line in diameter. Müller says that the larger cells are visible to the naked eye, and that with a simple microscope the smaller cells, situated within the larger, and formed of an exceedingly delicate membrane, can be seen; the cellular structure is rendered perceptible by inflation from the ducts. Mr. John Quekett has injected with coloured size, and examined the tubes

and follicles of the prostate with the microscope, and represents the latter as varying in size in different parts of the gland; he thinks that one-hundredth of an inch is their average diameter. Henle has found them to be lined by a delicate pavement epithelium, and at the commencement of the duct he has seen a cylindrical epithelium. Mr. Quekett has traced an intermediate cellular or fibrous tissue, filling up the spaces between the follicles or lobules, and connecting them together. According to Dr. C. H. Jones, "this principally consists of the white fibrous element, but also contains numerous bands, resembling closely those of organic muscle."* The latter anatomist thinks that the enlargement of the gland in hypertrophy of the prostate, is due to an increase in this tissue: he regards the prostate as an assemblage of secerning follicles rather than as a really conglomerate gland. Kölliker has described a large quantity of muscular fibres entering into the structure of the prostate. He says the quantity of this tissue is so large in the gland itself that the true glandular structure constitutes scarcely one-third or one-fourth of the whole. And the following is its arrangement, according to him: "on removing the mucous membrane from the prostatic portion of the urethra, the yellow longitudinal fibres of the caput gallinaginis come first into view. This longitudinal fibrous layer of the prostatic part is connected, internally to the sphincter vesicæ, and by a thin and indistinct layer of fibres with some of the longitudinal fibres of the muscular fibres of the bladder: but by far the greater

* Medical Gazette, Aug. 20, 1847.

part of it is unconnected with this latter: it consists of half fibro cellular tissue with many nucleus fibres, and half of evident, smooth, muscular fibres with characteristic nuclei. After this, and external to it, follows—secondly, a strong layer of yellowish, circular fibres of muscular and elastic tissue. This layer is connected above with the sphincter vesicæ, where also it is most developed; whilst below it becomes gradually thinner, and below the caput gallinaginis is either lost, or appears only in very small quantities. On removing the several muscular layers, we come at last to the proper glandular tissue of the prostate, of which individual lobes penetrate among the circular fibres just mentioned, their excretory ducts passing through the longitudinal fibres."*

The arteries of the prostate are usually derived from the vesical and hæmorrhoidal branches of the internal pudic, and from the middle hæmorrhoidal of the internal iliac, which, entering the gland on either side beneath its capsule, are distributed in the form of a network on the parietes of its tubes and follicles; the veins terminate in the vesical and hæmorrhoidal veins: its nerves, which are extremely small, are branches of the hypogastric plexus of the great sympathetic. The lymphatics consist of a superficial and deep set, and pass into the hypogastric ganglia. It happens occasionally that an artery of considerable magnitude runs on either side of the prostate, from the internal iliac, and becomes the artery of the bulb of the urethra. This variety has been seen by Haller,

* Kölliker, Beiträge zur Kenntniss der glatten Muskeln, in the Zeitschrift für Wissen.

Burns, and Barclay. I have witnessed a similar distribution myself. Dr. Monro met with a case, in which an irregular vessel came from the internal iliac, passed along the lateral and inferior surface of the bladder, pierced the illio-vesical fascia, ran along the lateral lobe of the prostate, and divided into three branches, one to the dorsum, one to the crus penis, and another to the bulb. Other varieties in the course and distribution of the branches of the internal iliac, involving the prostate, have been occasionally met with, and I allude to them here as points of great interest in respect to the surgical anatomy of this body.

Liquor Prostaticus.—It is the office of the prostate to eliminate from the blood sent into its arteries a fluid called the liquor prostaticus. This has been examined microscopically; but in consequence of the difficulty in obtaining it in any large quantity, it has not hitherto been made the subject of chemical analysis. This fluid can be obtained after death by squeezing the gland, when it oozes through the orifices of the ducts around the veru montanum. It usually presents a turbid appearance, is of a thin milky aspect, and is somewhat unctious to the feel. Haller found it in many cases coagulable by the addition of alcohol: it contains, according to Krause, muddy flakes, or globules, filled with minute granules, varying from $\frac{1}{900}$ to $\frac{1}{300}$ of a line in diameter. Prevost and Dumas examined the liquor prostaticus of the dog, cat, hedgehog, and rabbit: they found it to contain globules like milk-globules. Cuvier remarked in the fluid of the hedgehog, numerous ovoid and spherical vesicles,

others oblong and conical in shape: many of the vesicles presented a stellate aspect, and contained a central nucleus. I have carefully examined, in many cases, the prostatic secretion of the human subject, in as fresh a state as I could possibly procure it. I have found it of a milky aspect, like a very weak mixture of milk with water. In some cases, I have seen it of a consistence more resembling cream. I consider the former state to represent the healthy fluid. Examined with the microscope, it was found to contain numerous molecules, epithelial cells, both pavement and cylindrical, in various stages of formation, and granular nuclei of about 0·0036 of a line in diameter. In by far the greater number of instances in which I have examined it, I have been rather surprised to find it give feeble but distinct signs of acidity when tested by litmus paper. I thought it not unlikely that the apparent acidity of the prostatic secretion was due to the cadaveric infiltration of urine through the tissue of the gland; but I adopted every precaution, by carefully and repeatedly washing the surface of the bladder and urethra, to obviate this source of fallacy, and the result was still the same. I have found a similar reaction in the prostatic secretion of an old man, in whom the gland was greatly hypertrophied; and where the ducts and follicles were distended with an opaque creamy-looking fluid, such as is often seen after death. The appearance of the liquor prostaticus may be, and probably is, very different after death to what it is during life. There is every reason to believe that it is secreted more clear and transparent, and it most likely owes much of its turbid appearance

to the admixture of a large number of minute epithelial cells. I regret that I have nothing to offer as to its chemical constituents, as it is not possible to collect more than two or three drops at a time, a quantity too small to submit to chemical investigation. That the acidity of the liquor prostaticus is not incompatible with the existence of calculous concretions of the phosphatic species in the follicles of the gland, I have proved by repeated examination.

Utriculus prostaticus. Vesicula spermatica spuria. Vesica prostatica. Sinus pocularis.—At the anterior part of the most elevated portion of the veru montanum, we find an opening in the mesial line one-third or half a line broad, leading backwards to a small bag resembling a bottle in figure, of variable length and breadth: it is generally known by the name of the *sinus pocularis,* but has received also the designations here mentioned. In most cases in which I have examined it, it forms a canal, terminating in a blind extremity, and usually is not more than three or four lines long. I have found it an inch in length. The opening, which faces obliquely forwards, will just admit the point of a small catheter or bougie. Some surgical interest is attached to this structure, because it has been stated by writers on urethral diseases that an instrument is liable to catch in it when an attempt is made to pass it into the bladder; but I believe this very rarely happens, as the beak of the catheter is usually kept against the anterior surface of the urethra, when it is made to traverse the prostatic portion, and it is therefore carried well above this little pouch: if, however, such an accident should be suspected to have

occurred, a gentle withdrawal of the instrument and depression of the handle are quite sufficient to clear the impediment referred to. But much physiological importance attaches to this sinus, for reasons which we shall presently see. Huschke describes it in the following manner:—"It commences by a narrow portion, resembling a neck, which forms about half its length, behind which it swells out into a round membranous vesicle or fundus; between these two portions there is often a constriction. It penetrates the posterior surface of the prostate gland, so that the middle lobe is situated in front of its fundus. Its parietes are thinner at the fundus than at the neck, and are usually about one-fourth of a line in thickness. On either side a vas ejaculatorium is inclosed within its wall; so that, in point of fact, these ducts do not penetrate the glandular substance of the prostate. Its walls are composed of two layers, an external, fibrous and strong; an internal, of a mucous character: the latter is covered by small mucous glands, arranged closely together, with openings of about the twenty-fifth of a line in diameter. These glands resemble minute warts, each with a small opening on its apex. They cannot be confounded with the orifices of the prostatic ducts, as these always open external to this pouch, around the veru montanum. About its neck larger glandular openings are perceptible. The nature of the secretion of these glands is not known."

Great physiological interest attaches to the utriculus, from its having been supposed by some anatomists to be the true representative of the uterus. Its homology with this body is evinced by its shape, and position

between the two ejaculatory ducts, although the latter do not open into it, as the fallopian tubes do into the uterus; but it is more consonant with the ideas of the transcendentalists to regard it rather as the vestige of the *protometra*, whence the uterus, &c. are developed, than of the uterus itself.

In an interesting case of hypospadias, a case peculiarly favourable for the investigation, Professor Theile, of Berne, most carefully examined the utriculus, and described its anatomical relations. I take the following account of this examination from the first number of the "British and Foreign Medico-Chirurgical Review:"—"The scrotum contained two testicles; the vasa deferentia, vesiculæ seminales, and prostate gland were present. The latter was fourteen lines long, eight and a-half thick, and sixteen broad. Theile found a canal originating in the usual opening on the utriculus, run backwards for an inch and a half, ending in a cul-de-sac four lines in diameter, and placed between the two vasa deferentia; this canal (vesica prostatica), with the exception of its anterior part, did not lie within the prostate, but low or behind this gland. Besides this structure, a small, oval, glandular body, five lines long, four broad, and two thick, was found behind, lying between the vesica prostatica and the prostate itself; it did not appear that this substance was continuous with the substance of the prostate, although this continuity might have existed and escaped detection. Examined by the microscope, this body presented an aggregation of cells and vesicles, which were much more easily seen in it than in the proper prostate. Theile regards this

body, lying closely upon the vesica prostatica, as a middle lobe of the prostate. In order to ascertain the relation of the ductus ejaculatorius with the vesicle, a wax injection was thrown into the lower part of the vas deferens. On a careful examination, it was found that the ejaculatory duct did not open into the utriculus, but was only closely applied to its lateral wall, and then penetrated into the urethra in the usual place." In this case the membranous portion of the urethra opened into a normal bulbous portion.

Professor Theile also gives an account of another case of hypospadias, " dissected by the elder Sœmmerring, in which the urethra and scrotum were fissured, the testicles remaining in the abdomen. Between the glands and the anus two openings were found, separated by a partition of about one line in breadth. That next the penis was the orifice of the urethra ; the latter led into a canal, into which a quill could be passed. It was an inch and a half long, and when inflated it was nearly as large as the little finger, and was situated between the bladder and rectum, but nearer to the former. Sœmmering laid open the canal towards the rectum, and it appeared like 'an alveus communis,' into which the vesiculæ seminales opened. When quicksilver was injected into the vasa deferentia, it ran partly into the vesiculæ seminales, but partly into this pouch." " The existence in the male of a central sac or canal, occupying precisely the same relation to the orificium urethræ, the bladder, and the rectum, as the vagina in the female, is particularly elucidative ; and, among other facts, for which we are indebted to embryological research,

further corroborates the conclusion of the most scientific anatomists of the present day, that every variety of so-called hermaphroditical malformation is referrable to an abnormal condition, either of the male or female organs, existing singly, and but rarely conjoined in the same individual." With these facts before us, there is no necessity to resort to the mechanical idea of the gradual distension of the prostate gland and vesiculæ seminales, to account for the existence of a rudimentary uterus in those cases of hermaphrodism where the subject is unquestionably male, with an increase in the development of the utriculus beyond its natural condition.

The development of the prostate and vesicula prostatica.—There is no department of embryological research of higher interest than that relating to the development of the genito-urinary system. A minute inquiry into this subject, and a careful observation of the phenomena attending it, can afford the only means of obtaining a satisfactory clue to the comprehension of that remarkable structure just described. By no other means is it possible to ascertain the natural relation of the utriculus prostaticus.

I shall limit the inquiry here to the manner in which the utriculus and prostate gland are supposed to be formed.

At an early period of fœtal existence the allantoid sac, which was continuous with the urinary bladder, becomes shut off entirely from that viscus, and the only remains of its original communication is the obliterated urachus. As the bladder at its inferior fundus communicates with the intestine, thus forming

with it one common cavity, it may fairly be said that the human subject really is at this period possessed of a cloaca. In the mammiferous class generally the urinary bladder very soon separates from the intestine, and has a separate opening externally in front of the anal aperture. There are different opinions as to how this is actually accomplished; but there is no necessity to discuss the question here. In this separation of the bladder from the rectum the evidence of the existence of a cloaca disappears, and a cavity, or space, or canal is left common to the bladder and genital organs; this is termed the *sinus uro-genitalis*, or the *canalis uro-genitalis*. This afterwards, in the male, is represented by the neck of the bladder and beginning of the urethra, and communicates with the external organs. In the monotremata the uro-genital canal is persistent. The sinus uro-genitalis receives the terminations of the excretory ducts of the Woolfian bodies, the ureters, the vasa deferentia in the male, and the fallopian tubes in the female. In the female the vagina and uterus are both developed by extension and division of this canal,—the vagina having in front of it the urethra; and as development advances, the last portion of the sinus uro-genitalis is represented by the vestibulum, and is common to the urethra and the vagina. According to Valentin, in the male the vasa deferentia at first open together in the mesial portion of the uro-genital canal; in the female the same is observed in respect to the fallopian tubes. Rathke states that at a later period a small conical crimpling of the uro-genital sinus occurs near the openings of the vasa deferentia, and that from this the

vesiculæ seminales are developed, which communicate with the vasa deferentia, and, indirectly, with the sinus, or with the urethra itself. A separation takes place between the two vasa deferentia, when each vas deferens, uniting with a corresponding vesicule, opens separately into the urethra. In the interval between the terminations of the vasa deferentia we find the remains of the uro-genital sinus, which eventually becomes the *utriculus*, or *vesicula prostatica*, or *sinus pocularis*.

Bischoff thinks that the prostate gland commences by a simple thickening of the vasa deferentia near their termination. It is most probably further developed in the same manner as the glandular system generally. He agrees with Rathke in the opinion that there exists a septum between the two sides at this portion of the urethra, the vestiges of which are represented by the veru montanum.

The prostate, up to the period of the full development of the organs of generation, is of small size. In the early periods of fœtal existence it is composed of two lateral lobes, which coalescing at the fourth or fifth month, give rise to the isthmus and third lobe.* It is rounder in the child, is situated vertically, and is said to be occasionally just reached by the peritonæum. As we advance in life it becomes firmer in texture and yellowish in colour. Mercier says that in the child the anterior part of the gland exceeds the posterior in thickness; in other words, that the

* I do not consider the isthmus and third lobe as synonymous expressions, and would limit the former term to that portion of the gland which connects the lateral lobes beneath the urethra.

prostatic ring encircling the urethra is thicker above than below.

Function of the prostate gland.—It is the office of the prostate to secrete a bland and somewhat viscid fluid, which is poured into the urethra at the commencement of its course, at that point where the secretion of the testes and vesiculæ seminales are received into the canal. It is well known that the secretion of the prostate is increased in quantity under states of venereal excitement; I have, however, some doubts as to whether the secretion effused under such circumstances is wholly prostatic: I cannot help thinking that some of it at least is due to the glands of Cowper and the follicles of the urethra generally; but, be this as it may, there can be no doubt that the largest quantity of the prostatic fluid is poured into the urethra at the moment of, or prior to, the venereal orgasm; at least we are justified in drawing this inference from observations made on these parts in animals killed during, or immediately after, the completion of the act of copulation.

That the prostatic fluid is subservient to the generative function, may be deduced from these circumstances; and this is further established by the fact mentioned by Hunter, that the gland is liable to changes at certain seasons, and that in the mole in winter, the prostate is scarcely discernible, whilst in the spring it becomes of large size, and filled with fluid. We are not aware whether this is the case universally in the animal kingdom. How does the prostatic fluid aid the function of generation?

An old opinion assigns to these accessory glands

the office of perfecting and increasing the bulk of the seminal secretion, so that the urethra may be more fully distended by it, and its muscles may be enabled to act more completely in forcibly injecting its contents into the vagina. This idea is, in my mind, rather too mechanical, although it may be advanced in its favour, that these accessory glands are found in all animals where they exist, to empty themselves into those dilated portions of the urethra, in which the seminal secretion is supposed to accumulate prior to its expulsion. It has been thought by some that the prostatic secretion is useful in diluting the semen, so as to increase its bulk, not merely for the more perfect distension of the urethra, but that it may ensure the more easy transmission of this secretion into the female vagina, and thus favour its contact with, and impregnation of, the ovum. As to its defending the orifices of the ejaculatory ducts from the presumed acrimony of the urine, I cannot attach any importance whatever to this notion; the gland is essentially a sexual organ, and its use must, in some manner or another, be connected with the excretion of the seminal fluid, either in the manner just mentioned, or in lubricating the surface of the urethra, so as to facilitate the onward passage of this fluid. The very structure of the prostate, which is of the simple follicular character, favours the latter notion. Its position at the commencement of the urethra leads to the same conclusion. It is probable that its secretion is poured into the urethra prior to the escape of the seminal fluid into the canal; and it is quite evident that no large glandular masses could have been conveniently placed

along the urethra in any other situation; for however much they vary number and size, in the various orders of animals, their position near the beginning of the urethra is constant.

The prostate gland, with Cowper's glands and the vesiculæ seminales, must be regarded as accessory rather than as organs essential to the generative function. That it is not essential in man, is rendered probable by the persistence of the procreative faculty in many cases of extensive disease of this organ.

In connection with this obscure and difficult subject, I think the fact of the prostatic secretion being naturally, as I believe, acid, is a circumstance of some interest. The secretion of the testes is well known to be alkaline. Is it not probable that the reaction of the prostatic on the seminal fluid may be of use in the maintenance of the fluidity of the latter? The idea is somewhat confirmed by the fact, that in women the acid secretion of the vagina prevents the coagulation of the menstrual blood, and thus favors its discharge. This has been proved by Mr. Whitehead, who found that, if the menstrual fluid was received directly from the os uteri into a speculum, it coagulated like ordinary blood.*

* On the causes of Abortion and Sterility, &c., by James Whitehead, 1847.

CHAPTER II.

DISEASES OF THE PROSTATE GLAND.

Inflammation.—The prostate gland, from its intimate association in function with the organs of generation, and from its close connexion with the bladder, partakes of those diseases to which these organs are liable: but more especially is it subject to inflammation from sympathy with the urethra. Thus, in severe attacks of gonorrhœa, inflammation, commencing at the anterior extremity of the canal, gradually extends itself backwards towards the neck of the bladder, and gives rise to a train of symptoms of extreme urgency; in this condition the prostate is liable to be affected. Inflammation of the mucous membrane lining the neck of the bladder is not uncommonly the consequence of the employment of remedies for the arrest of the discharge in gonorrhœa; and it often happens that the symptoms bear no relation in intensity to the previous inflammation: a trifling discharge suddenly arrested is often followed by urgent indications of inflamed bladder. When the disease sets in, a slight uneasiness is experienced at the extremity of the penis, the desire to pass water

becomes more frequent than usual, and is at first under the control of the patient, so that without difficulty he can reach a place convenient for the discharge of the contents of the bladder. Very soon, however, the desire to micturate becomes more urgently felt and occurs very frequently, the patient being called to pass his water every ten minutes or quarter of an hour: the urgency now becomes so great that the urine frequently escapes at the instant the desire to pass it is felt, and the clothes are thus kept constantly wet to the great discomfort of the individual. There is but little pain in the passage of the urine along the canal, because the inflammation of this part has been suddenly translated from the front to the back part; but immediately after the discharge of urine the pain becomes intense, and, from having been previously sharp, smarting, or scalding, becomes now of a deep, forcing character, as if the bladder were contracting to expel a foreign body: after this a perfect lull occurs, and the patient is comparatively easy for a short time: the symptoms, however, re-appear with increased intensity. There are some circumstances connected with this urgency to make water which are in themselves curious and difficult to explain: first, the irritability of the bladder is frequently if not generally greater in proportion as the urine is bland, or more dilute in its nature, and *vice versâ;* thus a patient, who during the day has been unable to retain his water but for a few minutes, will at night perhaps only rise to pass it two or three times, and towards morning will be enabled to hold it for a much longer period than at any other time; this circumstance

which is very common, may possibly depend upon the recumbent position of the patient during the night (the pressure on the sensitive neck of the bladder being thereby taken off) although I cannot think the explanation satisfactory, but of the fact there can be no doubt whatever;* secondly, the powerful influence of the nervous system on the *musculus detrusor urinæ* is well exemplified in this unpleasant affection, for, no sooner is the mind directed to the condition of the bladder, than an urgent desire to make water comes on, and this is irresistible, so that the act must be performed momentarily, however small the quantity of water in the bladder. A stream of running water seen or even heard by the patient will also induce a similar desire to micturate; the act of washing the hands has a similar influence. These circumstances must be referred to the extreme irritability of the neck of the bladder and its sympathy with the central masses of the nervous system, from the large plexus of nerves distributed about this region.

The symptoms just enumerated depend on inflammation of the mucous membrane lining the neck of the bladder and prostate gland, a part endowed with a peculiar sensibility; the inflammation is at first confined to the mucous membrane, and on the re-establishment of the urethral discharge is generally speedily and completely relieved. But it occasionally happens otherwise, and deeper structures become involved, thus the prostate gland from its close

* Lallemand thinks that it depends more on the increase of the secretion than on any peculiarity in its character.

contiguity to, and the termination of its ducts on, the mucous membrane of the urethra, is very liable to become affected with inflammation, the symptoms of which I shall presently proceed to enumerate.

It may, however, be better to refer to the causes predisposing and contingent which give rise to the inflamed neck of the bladder. Of these gonorrhœa holds the first rank; in acute attacks of this disease a simple extension of the inflammation passing, as it invariably does, from before backwards, in its natural progress, involves this part and occasionally the lining membrane of the bladder itself; and although this is by no means an uncommon consequence of the simple extension of the disease, yet it is unquestionably much more frequently the result of the employment of means to cure the inflammation of the urethra, or to arrest suddenly the secretion of pus from the part; thus the internal use of copaiba, cubebs, and the application of astringent injections, in proportion as they arrest the progress of the disease in front, tend to give rise to it at the back part of the canal, or to increase it if already existing in this region of the urethra. The application of cold to the penis for the purpose of controlling the inflammation has a similar effect—violent exercise frequently produces it, and the too free use of wine, spirits, or any other stimulant; the indulgence in libidinous ideas occasionally induces a similar condition.

Inflammation of the neck of the bladder commencing in simple irritation is one of the frequent consequences of stone in the bladder. Small stones impinging on this sensitive part of the bladder, give rise

to the symptoms characteristic of this affection in a high degree; but here it is difficult to draw a line of distinction between those which depend on simple irritation, and those consequent on inflammation; nor is it a matter of very serious moment, for the simple introduction of the sound or catheter, as it pushes the stone from the neck of the bladder, gives immediate relief: it must, however, be borne in mind that a repetition of symptoms is to be expected, even in an increased degree, and that no effectual and permanent relief can be expected without the removal of the stone from the bladder.

In suppressed gout and rheumatism, irritation of the neck of the bladder is by no means uncommon, this may lead to actual inflammation, characterized by extensive mucous deposits in the urine, and all the other signs of inflammation; this state of things is sometimes momentarily relieved by the re-establishment of the original disease, or by the exhibition of colchicum and other medicines calculated to relieve the ordinary signs of gout. Of these, the blue pill, in four-grain doses, with one grain of the acetous extract of colchicum at bed-time, followed in the morning by a dose of carbonate of magnesia and rhubarb, is perhaps the best. It is probable that the immediate cause of the disease under circumstances just mentioned is to be referred at first to simple nervous irritation of the part; but if this condition continues, inflammation then supersedes irritation, and is to be relieved by the usual means. The altered state of the urine no doubt has a powerful influence in the production of the disease in question; but this is a subject far

too extended in its nature to admit of discussion in this place.

Inflamed prostate.—If, after an attack of inflammation of the neck of the bladder, the prostate becomes involved, a train of symptoms sets in to a certain extent similar to those which characterize the former affection, but much more intense in their nature and of far more serious import.

The extreme irritability of the bladder and the almost total incontinence of urine (so characteristic of inflammation of the neck of the bladder,) will possibly to a very great degree have subsided, and the patient, instead of being constantly and instantly called on to evacuate the bladder, will perhaps only be required to do so once in the course of two or three hours; sometimes he can retain his water six hours; but the urine, which, previous to this, was forced out in a good stream, though small in quantity, now is expelled with some degree of difficulty, and without force; occasionally very great effort on the part of the patient is required to empty the bladder, and after the evacuation the feeling still exists, as if there was some urine remaining of which he cannot entirely rid himself. In some instances the difficulty of making water is so great as almost to amount to a complete retention, but this does not commonly happen in the early stage of the disease. The pain accompanying micturition is not so acute as in the former case, and is referred principally to the *corona glandis:* and the sensation after the evacuation of urine, which previously was of a forcing character, is now partially relieved, and is succeeded by deep seated throbbing

pains in the perinæum, increased especially on pressure. During the evacuation of the rectum some uneasiness is felt, if the motion be solid, from the pressure on the under part of the inflamed prostate. The orifice of the urethra is usually redder than natural, and is generally moistened with mucus, and occasionally the lips of the opening adhere together; the end of the *glans penis* for some distance beyond the urethral orifice presents a dark reddish blush. If the urine be examined in a glass it will be found to contain shreds or strings of mucus, and to be slightly turbid.

Suspecting, from the history of the case, that the prostate has now become involved in the contiguous inflammation, if the surgeon passes his finger into the rectum, pressing forwards, he finds the gland a little swollen and more plump than natural, and considerable pain is experienced in the neck of the bladder, towards the perinæum and extremity of the urethra, if firm pressure be made. We ought not altogether to lose sight of the discharge; this, which had nearly or entirely ceased when the inflammation was first confined to the neck of the bladder, now occasionally re-appears, but instead of presenting the ordinary purulent aspect, becomes more gleety and thinner in its character. A few drops of blood frequently attend the discharge of the urine, and the same is remarked especially after straining to empty the bowels. This trifling hæmorrhage particularly arrests the attention of the patient, and he becomes alarmed at its appearance; I have repeatedly known this symptom lead to the suspicion of calculus: the careful introduction of

the catheter dispels all doubt upon the subject, and the patient's mind becomes at once relieved.

Such are the common signs indicative of inflamed prostate after or during an attack of gonorrhœa: there is seldom much disturbance of the general health, beyond that which had existed during the whole attack of gonorrhœa, nay, in many cases, any febrile excitement which may have existed, will entirely cease, as the constitution does not so readily sympathise with this part as with the urethra itself; I am now alluding to cases of simple sub-acute inflammation of the prostate. If, however, acute inflammation attack the gland, as is by no means uncommon, especially after the employment of remedies to arrest quickly the discharge of gonorrhœa, or from any other cause, the symptoms are aggravated in a marked degree; thus the desire to micturate becomes more frequent and urgent, and the inability to pass the urine with any thing like force increases; nay, there is often a complete retention, and the introduction of the catheter becomes absolutely necessary, or the urine drops from the urethra, and when collected is found loaded with mucus. The pain in the perinæum is augmented, it extends deeply into the rectum, and is accompanied with acute shooting pains along the urethra to the glans penis and towards the lumbar region and down the thighs; the discharge from the urethra wholly ceases, and the redness of the urethral orifice is increased. In this acute attack of prostatitis, occasionally one or other testicle becomes inflamed, or the spermatic cord is swollen and painful, from the extension of the inflammation along the vas deferens; in some cases I have

witnessed effusion into the tunica vaginalis, leading to the suspicion of simple hydrocele, and I have known this to be regarded as the real seat of the disease, when all the signs of inflamed prostate had been overlooked. After the introduction of the catheter to relieve the bladder, considerable hæmorrhage takes place, and great pain accompanies the passage of the instrument over the inflamed prostate; and when examination is made by the finger, *per anum*, acute pain is experienced, the gland feels hot, and the pulsation of its arteries is readily distinguishable: this condition frequently terminates in the formation of abscess. After the difficult evacuation of the rectum there is a constant sensation as of something still remaining in the rectum which the patient cannot discharge. A swollen state of the hæmorrhoidal veins, forming external piles, frequently accompanies this distressing disease; these are attended with painful itching around the anus and weight in the perinæum, materially increased when the patient is in the erect position.

I have described the symptoms of sub-acute and acute prostatitis, as they usually present themselves when the gland becomes inflamed under an attack of gonorrhœa. As this is the most frequent cause of the disease in question: although there are many other circumstances which lead to a similar condition. When gonorrhœa is at its height, the prostate is very liable to become inflamed from an extension of the inflammation through the orifices of the prostatic ducts to the follicles of the gland. So also, as long as a gleet remains, the gland, on exposure to cold and

wet, or any other exciting cause, as exercise on horseback, or from the free indulgence in wine, he is very apt to run into a state of sub-acute or chronic inflammation. I have little doubt, but that the discharge of what is very commonly termed a gleet frequently depends on an increased and altered secretion of the follicles of the prostate, and hence the great difficulty so often experienced in the cure of gleet by the use of astringent injections; for it is difficult, nay, even often impossible, to reach by these means the true seat of the disease; whereas the exhibition of the chia turpentine in five-grain doses often puts a stop to the discharge instantly: acting, as I presume it does, specifically on the prostatic portion of the uretha, and on the ducts and follicles of the prostate itself. In such cases therefore I always advise either the total cessation of the use of injections, or their employment in addition to those remedies which cure by their influence on the posterior as well as the anterior portion of the urethra. Acute prostatitis is also frequently consequent on long continued gleet, especially in persons of a delicate constitution, and who have been much reduced in condition by any debilitating causes, as close confinement to business in crowded cities, &c. A sudden attack of acute inflammation will thus attack a prostate already chronically inflamed, and after its termination there still remains the former disease predisposing to another acute attack. But gonorrhœa is not the only cause of prostatitis although a very common one; sudden or long continued exposure to cold and wet, as travelling in wet clothes, long walking in the wet, the

sudden suppression of the secretion of the skin, suppressed eruptions and gout, all may induce prostatitis of an acute form, especially if the gland has been before the subject of chronic disease. One of the most severe cases I ever saw, occurred in a gentleman of 27 years of age, who had had for some time a continued slight gleety discharge from the urethra, the result of a clap caught a long time prior to the attack now alluded to. The case affords so good an illustration of the mode of attack and symptoms of the disease, that I shall briefly describe it. This gentleman had been shooting on the day previous to the attack, and had been exposed to wet, especially about his legs and feet; he had worn a pair of Mackintosh gaiters which confined the perspiration to such a degree that, when they were removed, steam arose from his legs as if he had been immersed in a vapour bath. He complained immediately afterwards of being unwell, and of great chilliness, and towards evening had an attack of shivering. He suffered at first no pain in the region of the bladder or the urethra, but on the following day, he had some uneasiness in the perinæum and rectum, with a frequent desire to pass water, and some difficulty in accomplishing this. He was attacked with fever with its usual accompanying signs, and consulted a physician, who treated him for this, at the same time directing his attention to the bladder, as the probable source of the mischief: by his direction some leeches were applied to the perinæum. In consequence of the continued frequent desire to micturate, and the difficulty of passing his water, I was requested to see him. I was informed

of the previous existence of gleet, and looking now at the present condition, I could not doubt that he was labouring under an attack of acute prostatitis. The finger was passed into the rectum, and the prostate was found swollen and painful, and hot; this of course confirmed my suspicions. He was ordered leeches daily to the perinæum, and the hip bath night and morning. Calomel and Dover's powder at night, and mucilage mixture with liq. potassæ and tinct. hyoscyami every four hours. The symptoms, although at first somewhat alleviated by the treatment, were not subdued. The pain in the perinæum increased, the desire to make water became more urgent, and the difficulty of passing it also increased. He had now one or two attacks of shivering, and this was followed by retention of urine, so that I was compelled to introduce the catheter. The retention of urine was now complete, and it became necessary to pass the instrument whenever the desire to make water came on. There was no difficulty in the introduction of a moderate sized silver catheter. I passed my finger *per anum*, and found a fluctuating tumor in the prostate: I therefore at once inferred that suppuration had taken place. It became therefore a question as to the propriety of puncturing it *per rectum:* but it was left alone, and it suddenly burst into the urethra on the passing of the catheter, when a considerable quantity of pus and blood mixed with urine passed off by the instrument. He was at once relieved of much of the pain and distress he had suffered, but the irritability of the bladder continued for a few days after, and it was requisite to pass the catheter; this

was accomplished readily, but with pain. The symptoms gradually subsided, the pain and frequent desire to make water gradually abated, and the urine became clearer, until all evidence of the previous existence of the abscess disappeared. The prostate still continued enlarged, and shreds of ropy mucus passed with the first drops of water. He continues in this condition to the present time. The disease I am now alluding to having occurred nine years since. In the interval, however, he has had another attack of inflammation of the prostate without similar severity of symptoms. The constant discharge of small shreds or threads of mucus with the urine is so frequent an attendant on inflamed prostate, that I wish particularly to allude to it, especially as patients attach generally great importance to it; it is however a sign of comparatively little consequence, although it should not wholly be lost sight of, as it at any rate indicates the presence of irritation in some part of the urinary tube, but is not pathognomonic of diseased prostate.

When the gland becomes the subject of chronic inflammation the symptoms are much modified in their intensity and general character; thus, there is an absence of fever, notwithstanding the patient is subject to general *malaise*, and the tongue is slightly furred; the bowels are also irregular, and the contents of the rectum are discharged with difficulty. There is still pain in the perinæum experienced, by pressing firmly in this region, and when the legs are thrown forcibly one over the other; a slight gleety discharge accompanies this condition; this is increased by the use of stimulants and the free indulgence in

venery; the discharge is sometimes a mere gleet, now and then it is distinctly puriform, the quantity is generally small. Pain is felt along the course of the urethra as far as the glans penis, and is often confined to the latter situation; there is frequently pain and weight in the rectum, increased by pressing on the gland with the finger introduced per anum; pain also is felt shooting down the thighs in the course of the sciatic nerves and towards the lumbar region. Excessive irritation of the anus is a very common attendant on chronic prostatitis, and this is frequently accompanied by hæmorrhoids and a species of eczema. On examination the prostate is found to be swollen, and occasionally indurated to the feel, and during the night there are occasional attacks of painful spasm of the muscles of the perinæum and anus.

These symptoms will sometimes go on increasing in intensity, and sudden relief will be experienced on the escape of a small quantity of puriform fluid from the urethra; this latter phenomenon, I apprehend, arises from the sudden discharge of fluid pent up in one or more of the prostatic follicles.

This condition frequently leads to permanent hypertrophy of one or other lobe of the gland; and I have no doubt is the most frequent cause of hypertrophied prostate of the young, when occurring under 40 years of age. With careful treatment, however, it may be entirely relieved, and all evidence of disease will pass away.

Irritability of the bladder and scalding on passing the urine are frequent concomitants of chronic inflammation of the prostate.

Treatment of Acute Prostatitis.—The treatment of inflamed prostate naturally resolves itself into that adapted to acute and that to chronic inflammation. In acute prostatitis, if the disease is traceable to the employment of remedies for the cure of gonorrhœa, all such remedies must of course be immediately discontinued; the surgeon therefore must at once make enquiries as to whether the patient has been using astringent injections, or copaiba or cubebs, and these must be wholly prohibited. Leeches are to be applied daily, in numbers according to the strength of the patient; I usually order eight leeches night and morning to the perinæum: for my experience leads me to believe that when applied to the perinæum, they are infinitely more efficacious than when applied above the pubis or by the rectum; and there are obvious inconveniences arising from their use in the latter situation, which render their employment there very undesirable. The sympathy between the skin of the perinæum and the prostate and neck of the bladder generally can be readily explained, by the arteries to both being derived from the same source, namely, the internal pudic. Leeches are in my opinion far preferable to cupping on the perinæum, as they are much more certain in their effect, and give less pain to the patient than the cupping glasses, which require generally to be frequently re-applied, so that the necessary quantity of blood may be procured: in some patients it is impossible to obtain more than two or three ounces of blood from this region by cupping. If secrecy be requisite, which can hardly be the case in acute prostatitis, for the patient must be kept in bed,

then cupping may be employed instead of leeches, as it can be performed quickly and leaves no mark by which its employment can be traced.

After the leeches, the hip bath heated to 100 of Fahreinheit should be used for fifteen or twenty minutes, every four hours; or a warm fomentation with flannels or sponges should be employed for half an hour, and the perinæum should then be covered with a poultice: warm injections by the rectum give comfort to the patient and act as a fomentation to the inflamed gland. Calomel in two-grain doses with ten grains of Dover's Powder are to be given at bed-time; although I do not advise the use of mercury to the extent of producing salivation, because I believe the powerful action of mercury has but little effect in curing inflammation in glandular structures; but I believe it has an influence in controlling fever and allaying irritability, and I will not altogether deny a certain amount of influence over inflammation in any tissue of the body: on these principles I advise the exhibition of calomel, short of mercurialization. The use of the Dover's powder is recommended to procure rest, and to determine to the skin. Next in order come those medicines which influence specifically the urine, rendering it more dilute in its character and consequently allowing of its being passed more easily by the patient: of these the salts of soda and potash hold the first rank as being most readily absorbed into the system, and neutralizing the acidity of the urine, and by increasing the secretion, thus rendering it more tolerable to the bladder and more easily excreted. I therefore prescribe the mucilage mixture, with fifteen

drops of liquor potassæ, and twenty drops of tincture of hyoscyamus every six hours.

It appears that the salts of potash and soda, more especially the carbonates, exert an influence over the neck of the bladder more than can be accounted for by the altered state of the urine resulting from their use, and I have always regarded the carbonate of soda as especially adapted to the cure of irritable bladder when depending either on the irritation consequent on gonorrhœal or other causes, as calculus, &c. I therefore always, in such cases, order, for an adult, scruple doses of the carbonate of soda, and generally with immediate effect. There is nothing unreasonable in the belief that a specific action is induced over the nerves of the neck of the bladder by such means; other medicines have specific powers in controlling the irritation of other nerves, as is well illustrated in the powerful and instantaneous effect shewn in the sudden cessation of pain under the free exhibition of large doses of sulphate of quinine, in neuralgic affections consequent on disorder of the central or peripheral portions of the sympathetic system.

The most ready means of increasing the quantity of urine and diluting it, consists in the exhibition of mucilaginous drinks, as barley water and *eau sucrée:* these should be indulged in to as great an extent as can be conveniently taken by the patient; of course they are not to be used to the over-distension of the stomach. These, with the horizontal position, with the pelvis slightly elevated, and light unstimulating diet, comprise the category of remedies which may

safely, and with little variation, be employed in the treatment of acute prostatitis.

Treatment of Chronic Prostatitis.—A considerable modification of treatment is requisite for chronic inflammation of the prostate. The discontinuance of those stimulating measures, which have been employed for the stoppage of supposed gleet is first to be insisted on, as injections, copaiba, cubebs, &c.: this will probably lead to the re-appearance of the discharge, if this has been arrested: but this is not always the case, nay, it not unfrequently happens that the discharge, which appears to have been merely kept in check by these remedies, will altogether suddenly cease when they are discontinued, affording a tolerably clear proof that they have been in some measure the cause of the continuance of the discharge. The blue pill in three-grain doses, with five grains of the extract of conium may be given at bed-time, and fifteen drops of liq. potassæ, with twenty drops of tinctura hyoscyami thrice daily may be taken with great advantage. The warm bath once a week gives great relief in such cases, and the occasional application of leeches to the perinæum, or cupping, is to be had recourse to. I have often found the injection of cold water by the rectum to the extent of ten or twelve ounces at night of very great service in assisting in the thorough cleansing of the rectum, and as a cold application to the prostate. If the discharge reappears, we may resort to the chia turpentine as being sufficiently astringent, and not likely to add to the irritation of the prostatic part of the urethra: the use of copaiba having been discontinued, should not again be resorted to

unless all other means to stop the discharge have failed to do so: the occasional introduction of a full-sized catheter or bougie gives great relief: this is very frequently followed by the loss of a teaspoonful of blood; sometimes only a few drops escape; and from this positive good often results.

If the disease is of long standing and the patient is suffering in his general health from the local irritation, the tinctura ferri sesqui-chloridi in doses of twenty drops three times a day is indicated; or the patient should resort to the sea-side, or to some chalybeate spring, and use the cold hip bath daily. The diet should be good but not stimulating.

The use of iodine in the form of iodide of potassium is highly beneficial in this disease; thus two or three grains of it may be given three times daily in the simple decoction of sarsaparilla, and at the same time the patient may employ with advantage frictions of the compound iodine ointment to the perinæum every night. The use of iodine as a suppository has been recommended in these cases, but I believe its employment not to have been so successful as has been imagined; but I have no personal experience of the remedy thus recommended. Opiate suppositories are useful in relieving the excessive anal irritation.

Above all things a careful attention must be paid to the maintenance of the general health, for I have little doubt that in many cases every vestige of disease will disappear, provided the general health be fully maintained.

Dr. Warren, of America, recommends the use of

the cold douche to the perinæum; from this, he states, that he has seen very great benefit; indeed, in chronic prostatitis, he has found it the most useful of all remedies.*

I do not think the total abstinence from venery desirable in chronic prostatitis, but frequent indulgence in it is of great injury; and the access of a fresh attack of gonorrhœa is a most serious complication, and requires most careful and discriminating practice; thus any attempt at the sudden arrest of this disease, under such circumstances, is fraught with the greatest risk of converting the chronic into an acute attack, and I have little doubt that it is in such cases that abscess of the prostate and inflamed bladder are so frequently induced by the incautious use of strong astringent injections, copaiba, and cubebs. All such attacks should be treated by the mildest means, as leeches, warm baths, diluents, &c., and, if after the inflammatory stage is passed, the discharge still continues, small doses of copaiba and cubebs, with mild injections of a solution of sulphate of zinc are to be most cautiously employed.

Prostatitis with Stricture.—Chronic prostatitis, accompanied with enlargement of the gland, is said to be not unfrequently complicated with stricture of the urethra, the latter disease being set down by surgical writers as one of the causes of the former affection. I do not deny their occasional complication, but I believe it to be by no means frequent; and I come to this conclusion, first, from the examination of morbid specimens of stricture, and secondly, from the

* Warren's address before the Medical Association of Cincinnati.

fact, that, in cases where it is necessary to pass a catheter from enlarged prostate, the result of chronic inflammation, there is rarely any obstruction or difficulty experienced before the instrument reaches the neck of the bladder; now such would not be the case if there were any stricture of the urethra. When the gland becomes inflamed in cases of stricture, which can only result from propagated inflammation, or when slight enlargement of the gland occurs from engorgement of vessels under such circumstances, it is recognised by a similar train of symptoms as has been before alluded to, coupled with a diminution in the size of the stream of urine: to relieve this condition, the cure of the stricture is unquestionably the first indication; but if it has followed the use of instruments for the dilatation of the strictured urethra, these must be immediately discontinued, and a mild antiphlogistic treatment had recourse to. Sir Benjamin Brodie mentions a case, where the gland appeared to be four or five times the natural size, "producing much uneasiness from pressure upon the rectum, but not in any degree interfering with the functions of the bladder. The disease subsided, but very gradually; and in the course of three or four years no perceptible enlargement remained."

By the rude introduction of the catheter for the relief of stricture, especially when the membrane is lacerated, inflammation of an acute character sometimes attacks the prostate, in conjunction with the other adjacent structures, and if not relieved, may lead to the formation of abscess of the gland, or to its total disorganisation. The symptoms under these

circumstances become increased in intensity, and are usually ushered in with shivering, followed by fever, hæmorrhage from the urethra to a considerable extent having succeeded the withdrawal of the instrument. Then follows the ordinary train of symptoms characteristic of acute prostatitis; the bladder becomes intolerant of its contents, or there is complete retention of urine, attended with an urgent desire to pass water, and, if the catheter is introduced, the passage of the instrument over the prostatic portion of the urethra is attended with acute burning pain; and the urine is drawn off bloody, mixed with pus and shreds of lymph: the patient now becomes typhoid, and sinks under an accumulation of misery. On examination after death, the prostate is found broken up and disorganised, and, if any vestige of the gland remains, it is found infiltrated with stinking pus, or converted into a sloughy mass: the bladder, ureters, and kidneys having been involved in the mischief. Such is by no means a very unfrequent result of the violent introduction or forcing of a catheter through an old stricture. Acute prostatitis thus excited is scarcely amenable to the ordinary modes of treatment; antiphlogistic remedies cannot be had recourse to, as typhus soon sets in, and the patient requires the stimulating support of ammonia, wine and brandy, or he speedily succumbs.

Prostatitis from Onanism. — Chronic prostatitis occurring in delicate and strumous subjects is frequently the cause of nocturnal seminal emissions; this may be totally independent of onanism, and admits of ready explanation from the continuous

sympathy between the orifices of the vasa ejaculatoria and the testes. Such emissions are generally readily excited by dreams, and are usually attended or followed by considerable pain of a spasmodic character in the perinæum and neck of the bladder: for the relief of these distressing and debilitating discharges, the cure of the inflamed prostate is essential; but as a similar train of symptoms frequently depends on an irritable state of the prostatic portion of the urethra, excited by masturbation, it becomes a matter of some importance to recognise this condition, as the application of the solid nitrate of silver, as advised by Lallemand, readily, at least in many cases, effects a cure. When however the nocturnal emissions are dependent on prostatitis, the use of the argentum nitratum is seldom of any service, and the surgeon must resort to the exhibition of conium in five-grain doses, cold hip baths, steel, &c., with cupping or leeching the perinæum, and such remedies as have been already referred to as calculated to relieve chronic prostatitis.

But, amongst the most common causes of prostatitis, acute and chronic, onanism takes a primary rank: this condition is frequently overlooked, and the medical practitioner directs his attention to the re-establishment of the general health by the employment of steel, &c., irrespective of the local change in this gland, consequent on the repeated and unnatural excitement of the prostate. The obvious sympathy existing between the parts implicated in the venereal orgasm would naturally suggest the possibility, if not the probability, of disease in the prostate as the result

of onanism; and, however disgusting the consideration of the unfortunate condition thereby so often induced, it becomes the duty of the scientific surgeon to investigate all the consequences resulting from it, so that appropriate remedies may be suggested for the cure of a disease now so frequently consigned to the ignorant and designing empiric.

In many of the cases which have come under my own observation, the attention has been directed by the patient to the frequency and debilitating effect of nocturnal seminal emissions; but on enquiring into such cases, I have generally found many symptoms existing, indicating considerable prostatic irritation, and often inflammation of the gland; thus there is usually a frequent desire to make water, and that desire is urgent in its character; there is a sense of scalding, experienced in passing the urine, generally referred to the end of the penis or urethra, the ejection of the urine being performed without force, there is pain in the pelvic region shooting through the hips and down the thighs, frequent discharge of transparent or occasionally turbid mucus from the urethra, in such quantities as to lead the patient to believe that the seminal secretion is constantly escaping, and this excretion of the urethral contents is attended with a slight sensation of pleasurable titillation, which still further strengthens the impression; the discharge generally taking place whilst the patient is at stool: this depends partly on the pressure of the hardened fæces upon the prostate and vesiculæ, partly on the increased distension of the blood vessels of the part arising from the forcing necessary to evacuate the

rectum: there is a constant sense of weariness about the loins and region of the sacrum, generally an habitually constipated state of the bowels; and, if the finger is passed *per anum*, the prostate is found enlarged and indurated, and on pressure, great pain is felt along the course of the urethra. These local signs indicate an attack of chronic prostatitis, and this is invariably attended with such a depressing influence upon the mind, that a deep and settled melancholy attends it, and deprives the patient of all disposition to mental or bodily exertion.

The manner in which this condition is brought about is at once obvious to anybody who reflects on the anatomical condition of those organs thus kept in a state of constant excitement.

The first effect resulting from the frequent seminal emissions thus voluntarily induced by the patient without the stimulus of natural copulation, is an irritable state of all those parts sympathetically called into action, as the extremities of the *vasa ejaculatoria* and adjacent portion of the urethra, and the prostate gland: the urethral membrane at this part is endowed with exquisite sensibility; I have no hesitation in affirming it to be the most sensitive part of the canal. This sensibility obviously depends on the large supply of nervous filaments distributed about the neck of the bladder; for although it is not possible to trace with the scalpel the ultimate termination of such nervous filaments, their destination must be the point referred to. Hence arises the pain, or at any rate the unpleasant sensation experienced on the introduction of the catheter even in the healthy condition,

and the acute and stinging sensation when inflammation exists in the canal. Through this nervous distribution arises the sympathy of this part with the bladder, vesiculæ seminales, and testicles, on the one part, and with the glans penis on the other; a sympathy illustrated by the desire the patient experiences to evacuate the bladder the moment the bougie or catheter reaches this sensitive part: a sympathy illustrated also by the seminal discharges arising from the irritation of this part by the introduction of foreign bodies, when the natural irritability of the sensient papillæ of the glans penis has been exhausted by the long continued practice of masturbation, of which the unfortunate case mentioned by Richerand affords so graphic an example. This nervous supply, derived both from the cerebro-spinal and ganglionic systems, affords a ready clue to the explanation of those general phenomena attending these cases; thus, to speak of the natural sympathy, fainting and sickness, so often induced by the first introduction of the bougie, result from the irritation propagated to the heart and stomach by the ganglionic nerves: hence, also, to speak of unnatural sympathies, depend the pain in the loins in onanism, and the deep pain in the dorsal region. The sympathy between the testicles and kidneys is still further anatomically explained by the nerves to both being derived from the same source; the irritation of the kidneys, as exemplified by the copious secretion of lympid urine, results from the same cause; so further, the general nervous exhaustion, as shewn by the weakness in the gait, by the *tinnitus aurium*, by

the *muscæ volitantes*, and by the general indisposition to mental exertion under the same condition; it is the derivation of the nerves of the testis from the renal plexus, and the connexion of the latter with the cerebro-spinal axis in the lumbar region, that explain the draught, so to speak, upon the central nervous system, which is constantly taking place under the repeated and unnatural excitement of the organs of generation thus constantly indulged in.

Lallemand, in his excellent work, "*Des pertes Seminales*," has directed the attention of surgeons to the effects of gonorrhœa and masturbation on the prostatic portion of the urethra. The involuntary discharge of the seminal secretion is one of the frequent consequences, according to Lallemand, of gonorrhœa attacking the prostatic part of the urethra; this, which can only be accurately made out by an examination of the contents of the urinal after the discharge of the urine, has been described by him as being attended by a peculiar train of symptoms, as headache, constant lassitude, a total inaptitude for any mental exertion, with a flatulent or constipated state of the bowels, frequent desire to pass water, and an absence of all venereal desire. Such is the ordinary category of symptoms under such a condition, and the best proof that the cause lies in the prostatic portion of the urethra is deduced from the readiness with which the cure is accomplished by the application of the solid nitrate of silver to the part. I confess, however, that to my mind the evidence of the escape of the seminal secretion under the circumstances just mentioned is not quite satisfactory.

Lallemand describes the flocculent sediment at the bottom of the urinal, and the peculiar faint odour emitted by the urine, and the readiness with which it decomposes, as clearly indicative of an admixture of seminal secretion: but all this may, I imagine, depend on the escape of the fluid of the vesiculæ seminales and prostate, and be totally independent of the semen: in fact, the only direct test of semen is afforded by the microscope, and in the absence of examination by this instrument considerable doubt must still hang over the subject. I cannot believe that any escape of seminal fluid ever happens without the characteristic signs of ejaculation, however modified; and in these cases such signs are frequently altogether wanting. In the use of the microscope as a test of the existence of semen, it ought to be remembered that Dr. Davy has found spermatozoa in the fluid secretion of the vesiculæ, and hence some doubt may arise as to the source of these microscopical bodies; it can only be decided in my opinion by a reference to their numbers, which in the seminal secretion is infinitely greater than in the secretion of the vesiculæ.

If we are to believe the recorded cases now so commonly set forth by writers on the subject of spermatorrhœa, we can have no difficulty in coming to the conclusion that the escape of the seminal secretion and its admixture with the urine are of daily occurrence; but I am disposed to be sceptical on this subject, and cannot but look with an eye of great suspicion on the statements set forth by a class of men whose object is to excite alarm in the minds

of those too prone to yield to intimidation, and whose end is plunder. I believe, nevertheless, that cases are of very frequent occurrence, in which, after the persistence in the pernicious practice of masturbation the whole genital system becomes almost paralysed, and impotence, at any rate partial, if not complete, unfortunately exists; and that this is accompanied with the occasional escape of the contents of the vesiculæ seminales, during the expulsion of the contents of the rectum, and that under such a condition the seminal fluid makes its escape in paroxysms attended with but a very trifling sensation. It is in such cases that the mind gives way, and a settled melancholy fixes on the unfortunate patient, tending further to maintain by its mental influence this state of impotence. These are the cases to which Lallemand refers, and in which he traces the cause to the irritable state of the prostatic part of the urethra, involving the orifices of the ejaculatory ducts.

In many of the cases of spermatorrhœa detailed at such length by the French surgeon, the prostatic part of the urethra was found, on examination after death, to exhibit evident signs of inflammation; in some presenting a villous appearance, in others it was completely broken up by irregular ulceration and suppuration; these conditions depend on inflammation having attacked the part, from the irritation resulting from masturbation. We must, however, be on our guard, lest we come to too hasty a conclusion that all cases of presumed impotence depend upon this cause; we shall thus escape the errors into which the charlatan falls, who treats all cases submitted

unfortunately to his management in precisely the same manner. I consider that the fairest test, that the irritability of this portion of the urethra is the cause of the symptoms referred to, is afforded by the pain experienced on the introduction of the catheter when the instrument reaches the prostate and traverses that portion of the canal which is surrounded by this gland. The escape also of a few drops of blood is another indication of a similar condition; the hæmorrhage in some instances is rather copious, and from its bright colour evidently depends on the giving way of the arterial capillaries of this part of the urethra; this, together with an irritable state of bladder, will be amply sufficient to justify the conclusion that the general symptoms depend on the cause now alluded to.

Spermatorrhœa from Onanism. — In the more simple cases of spermatorrhœa, the prostatic portion of the urethra is but slightly, if at all affected; I allude to those in which the discharge occurs but once a week, or occasionally only once in the course of a fortnight, and is followed with but trifling lassitude and a sense of slight indisposition. The introduction of the catheter gives very little pain, a transient sense of uneasiness is all that is experienced when it traverses this part of the canal, and no other evidence than this exists of its morbid irritability. Under these circumstances, we are scarcely justified in regarding the occasional emission as more than an effort of nature to relieve herself of that which ought to be discharged under the influence of the ordinary stimulus. Nor is the cure of such cases difficult; the

occasional introduction of the bougie, with steel internally, a due attention to the bowels, with the cold hip or shower bath every morning, followed by friction with a coarse towel or horse-hair gloves, will in all probability speedily restore the patient to his pristine state of health.

Whilst writing the above, a gentleman, apparently in perfect health, called on me in a state of great distress of mind, having been induced to consult an advertising quack for supposed spermatorrhœa. I found that the only disorder he laboured under was an occasional nocturnal emission, which took place about once in a fortnight or three weeks; this, together with the escape of half a teaspoonful of glairy fluid during the evacuation of the rectum, when the bowels were costive, although his general health was not affected, rendered him morbidly sensitive to his supposed infirmity, and induced him to seek advice. The empiric made a great parade of examining his urine, and having received some of it into a glass, he introduced an hydrometer, and shewed him what he said was the seminal fluid collecting around the bulb. When I examined this gentleman with the catheter, I found that the prostatic portion of the urethra was rather more sensitive than natural, and that the orifice of the urethra at the glands was a little reddened, and the lips of the urethra agglutinated by mucus. I examined the rectum with my finger, but could detect nothing abnormal about the prostate or neck of the bladder. I directed him to use a cold water injection night and morning, to take ext. conii gsr. v., omni nocte, and a little liq. potassæ in infusion

of gentian. His urine was acid, but not especially so.

I mention this case as one of very common occurrence, it exposes clearly the manner in which young men are occasionally duped: they read the advertisements which these nefarious impostors get introduced into the daily or weekly newspapers, they become acutely alive to the supposed consequences of the early habit of masturbation, and they fancy that they are already the subjects of impotence and other infirmities, to which their minds are directed by the perusal of the advertisements. They are thus induced by a species of infatuation to consult the quack, who paints the infirmity in the most horrible colours, of course always holds out a prospect of certain cure, and levies the highest contributions on his unfortunate dupe.

It is much to be regretted that so large a portion of fair and legitimate surgery should be thus diverted from its proper channels; but it is probable that this will always happen to a greater or less extent. I cannot help attaching some blame to surgeons for neglecting the study of this department of medicine, or, at any rate, for neglecting to make known to the world their success, or otherwise, in the treatment of these unfortunate cases; but the very nature of these cases is such, that, in all probability, from the presumed necessity of maintaining secresy, patients, thus afflicted, will continue to resort for relief to such as hold out, by public advertisement, a promise of inviolable confidence and certain cure.

To remedy this unfortunate condition, moral as well as medical means are to be had recourse to: the

patient must not be treated with levity or indifference; the surgeon should enter fully into the detail of the symptoms, and thus, having assured the patient that he has thoroughly made himself master of his condition, he directs his attention to the employment of such medical means as he believes are calculated to remove it; and which consists in the occasional local application of the solid nitrate of silver about once a week, by means of Lallemand's caustic-holder, and the internal exhibition of such remedies as are best calculated to restore the general health, as steel, quinine, conium, &c. I have found great benefit from the exhibition of conium and soda in an infusion of gentian, especially when the urine has been found loaded with acid. Of course, due attention must be paid to the state of the bowels, but free purging is not desirable. I need scarcely mention that country air, or a residence by the sea-side, with cold sea bathing, are most powerful adjuvants in rectifying this condition. The sensibility of the orifices of the vasa ejaculatoria is so acute, under the disease, that the slightest irritation is sufficient to induce a discharge of the contents of the vesiculæ, and frequently to excite the excretion of the seminal fluid; for this reason, horse exercise must be strictly avoided. I believe that the internal use of alcoholic drinks to be most injurious, and that it is infinitely better to debar the patient from the use of wine, or even porter, altogether, than to give them to the extent of stimulating the heart's action. When the patient is brought, by these continual discharges, to the lowest possible state, it would appear unreasonable to withhold

the employment of those articles of diet, which, under any other circumstances, a prudent surgeon would be disposed to use; in this particular disease, however, it ought to be remembered, that the source of debility lies in a discharge most readily excited by such stimulation as would be induced by the use of means now alluded to. Patients labouring under the debilitating influence of spermatorrhœa are, from the very nature of the case, more or less impotent, that is, they are incompetent to the natural act of copulation: they resort instinctively, or, by the advice of their medical attendant, to the use of stimuli; first, to excite within them the natural desire, now almost effete; and secondly, to enable them to complete the act: in the greater number of instances they fail completely in their endeavours: the over and unnatural stimulus thus induced, perhaps, may rouse, in a slight degree, a feeling of desire; but the anxiety for the full accomplishment of their wishes paralyses their efforts to do that which ought to be performed spontaneously, instinctively, and without effort. I think, in every point of view, stimuli of this nature are in themselves bad, when administered with a view to excitement, in this disease. I would not, of course, deny a moderate use of them to a patient sinking under the corporeal debility and mental despondency resulting from spermatorrhœa; I would withhold them as a means of cure, and only employ them in such quantities as may be desirable to sustain the patient's general health.

The effect upon the mind in this disease has been frequently alluded to, and the moral influence induced

upon the patient has been frequently dwelt upon. The attention of the patient should always, if possible, be diverted from his malady, and, more especially ought the surgeon to insist upon a total abstinence from erotic ideas, as essential to the cure of impotence. The mind, being wholly averted from thoughts of this nature, it is most probable that a genuine and instinctive feeling will arise spontaneously, and that the wishes of the patient will be realized; but if this be not the case, I am certain that no stimulus of this nature will bring it about. This is a subject of much delicacy, and, by many, will be regarded, probably, as beyond the scope of ordinary medicine; I cannot coincide in that opinion, and I am fully convinced that a careful attention to this subject will well repay the trouble devoted to it, and that good effects will result to society from its consideration; the disease being thus placed in the category of those conditions which are amenable to medical treatment.

CHAPTER III.

IRRITABLE PROSTATE GLAND.

THERE is a condition of the prostate and neck of the bladder combined, which is indicated by a train of symptoms characteristic of an irritable state of the gland, and distinguishable from inflammation. The patient complains of a sense of uneasiness in the perinæum, dull pain in the testicles with swelling of the spermatic cord, with weight in the rectum, itching about the anus, a more frequent desire than natural to pass water, which is passed with some difficulty, and a slight discharge of mucus from the urethra, so as just to moisten and discolor the linen. In cases of long continuance the orifice of the urethra presents a peculiar appearance under this condition not to be mistaken: it seems to have lost its natural outline, and is more patent than in a healthy state, and around the orifice there is an irregular patchy redness as if there were a distinct eruption; this is accompanied by itching along the urethra and about the glans; very frequently small superficial sores appear upon the prepuce surrounded by a slight blush of inflammation and swelling of the part. Spermatorrhœa at night is

not an uncommon attendant. If this condition, as is often the case, becomes exacerbated by indulgence in venery or stimulating drinks, the discharge, from being glairy and almost colourless, becomes yellow and puriform, and is often mistaken for an attack of gonorrhœa, and the surgeon is often consulted in this stage for a presumed clap. Possibly the patient has already commenced a course of copaiba or cubebs, which has occasioned an increase rather than a diminution of the symptoms. I believe that it more frequently attacks persons who have been the subject of severe and long continued gonorrhœal attacks, and who at the commencement of each fresh invasion have resorted at once to large doses of copaiba or cubebs with a view to cut short the disease at once. It generally happens in this affection that copaiba, cubebs, or stimulating injections have been employed before the surgeon is consulted: or possibly a sound or bougie has been introduced by the medical attendant under the presumption that a stricture of the urethra exists. I see no great objection to this if no violence be used, as the mind of the patient becomes at once relieved of the serious impression of the existence of stricture of the urethra: but the disease is not cured by such a practice, and in the hands of the unskilful may possibly be made worse. It is a matter of the highest consequence to distinguish this from gonorrhœa, and I have no doubt that by a careful attention to the symptoms the disease may be readily recognised. Thus, the appearance of the discharge, and the absence of scalding and chordee must form the basis of our diagnosis; of course the fact, that in many of these

cases there has been no risk of infection, will at once lead a surgeon to pronounce a positive opinion on the subject. With regard to the pathology of this affection, I believe the disease essentially to consist in irritation of the prostatic part of the urethra accompanied by a similar condition of the ducts and follicles of the gland. The sympathy between the urethra and rectum and anus is nowhere better illustrated than in this affection, the itching of the anus and parts adjacent, together with occasional deep-seated uneasiness in the rectum, are evidence sufficient of this sympathy, a sympathy the true anatomical explanation of which is afforded by the fact that both parts derive their nerves from the same source, namely the pudic plexus.

In this really trifling affection it often happens that the mind becomes profoundly influenced, the spirits are depressed, and the patient labours under the impression that a gonorrhœa exists, and he consults his surgeon with a view to ascertain the possibility of communicating the disease to another; or seeks the advice of the empiric, who, partly by exciting fear, partly hope, has no difficulty in plundering the unwary to an incredible amount.

Treatment.—The treatment of this affection is simple enough. First, a total cessation from all stimulating medicines is essential, and copaiba, cubebs, and stimulating injections must be interdicted. Cupping on the perinæum or the application of leeches once or twice a week, together with warm fomentations or the hip bath to 90° night and morning, are of the greatest use; a brisk cathartic should be

administered to unload the rectum, and the bowels are to be kept soluble by small doses of Epsom salts. At first a mucilage mixture with liq. potassæ and tincture of hyoscyamus may be given, and after the continuance of this for ten days or a fortnight, the chia turpentine in doses of five grains, with three of rhubarb may be taken thrice or four times daily. Abstinence from wine and spirits and acid beer is requisite. If this treatment, persisted in for two or three weeks, is not sufficient for the arrest of the disease, very small doses of copaiba, say ten drops thrice daily, are occasionally useful; and the warm applications may give place to the cold hip or douche-bath once daily. As I have spoken against the use of copaiba in this disease, I must qualify the opinion against its use to this extent, namely that it should not be resorted to until all irritation in the neighbouring parts has ceased. Its use then is not contra-indicated, and I think it is beneficial in arresting the gleet of the prostatic follicles. The use of steel medicines, as the tinct. ferri sesqui-chloridi, is beneficial after the subsidence of the symptoms of irritation, and whilst the gleety discharge continues, but I am certain that the indiscriminate employment of steel is positively injurious. This medicine forms the basis, so far as I have seen, of the medicines administered by the empiric, and no doubt is in many cases beneficial, indeed with the restrictions I have mentioned, and in the hands of a skilful practitioner, it is a most valuable medicine. The treatment, however, which I advise, consists of a pill containing five grains of extract of conium with two

or three of blue pill every night, and the chia turpentine and rhubarb three or four times daily. A question is often put to the surgeon by patients thus circumstanced as to the propriety of marriage, and the probability or possibility of infecting another person. Whilst the disease is in its early, and what may be termed acute form, I should unquestionably dissuade the patient from marrying for reasons I need not mention: but when the discharge is reduced to a simple colourless glairy condition the restriction may with propriety be removed. As to the chance of infection, I am of opinion that if the discharge be decidedly puriform there is a possibility of its exciting inflammation in a sound vagina, which inflammation may be attended with a slight puriform discharge; and I have seen this take an acute form, and even extend to the os uteri. Generally with mild antiphlogistics and abstinence this speedily subsides, and does not re-appear. I have known repeated instances of this, and am consequently in the habit of giving a cautious opinion, when asked about the propriety of marriage. If, however, there is a total absence of puriform secretion in the male, we need be under no apprehension of his communicating any disease to the female.

CHAPTER IV.

HYPERTROPHY OF THE PROSTATE GLAND.

In advanced age, when all or most other structures in the body begin to shew evidences of want of nutritrition and become atrophied or waste by interstitial absorption, the prostate gland very frequently undergoes a remarkable increase in size. This change in the gland is so common after the age of 50, that an enlarged prostate may be almost regarded as one of the necessary contingencies of old age. Although we may consider simple hypertrophy of the prostate as characteristic of age, yet considerable enlargement of the gland has been occasionally met with at a much earlier period of life, and Sir Astley Cooper mentions the case of a boy in whom the prostate was found on dissection of very large size: it is not impossible, however, that this enlargement may have depended on strumous deposit in the substance of the gland.

In considering this subject, it is important to distinguish between this disease and the simple engorgement consequent on acute and chronic inflammation, as the treatment calculated for the relief of one will be inert, if not injurious, in the case of the other.

The latter disease usually depends on gonorrhœa or other causes already referred to, and occurs in persons of between 20 and 40 years of age. In some cases the supervention of the disease is marked by a train of symptoms not to be mistaken, whilst in others, and they are the most frequent, the disease is so insidious in its attack, that the only indications of its occurrence are evinced by the mechanical impediment to the discharge of urine consequent on the increased size of the gland: no pain nor uneasiness being felt before the prostate has obtained a considerable volume, after which symptoms set in of a nature so distressing as to embitter more or less the future existence of the patient.

In alluding to the pathology of the disease in question, I have no hesitation in stating that I consider it to arise wholly independent of inflammation, and I have therefore purposely omitted its description under that head. I consider this a subject of some importance, being fully satisfied that anti-inflammatory treatment will avail nothing in arresting its progress. It must, however, be remembered that in the progress of the disease the gland may become the seat of secondary inflammation set up by adventitious causes, as exposure to cold and wet, free living, or the rude introduction of instruments, but even under these circumstances the employment of anti-inflammatory means to any extent is inadmissable.

Symptoms.—What then are the signs of hypertrophied prostate? The patient of the age of 60 or 70, from having enjoyed uninterrupted health, and possibly having avoided such causes as might naturally

be supposed likely to produce the disease in question, as a too free indulgence in venery and the luxuries of the table, complains of a slight sense of uneasiness about the region of the bladder, with pains shooting to the loins, down the thighs and into the groins and to the extremity of the penis: this is usually attended with but little disturbance to his general health, and is attributed to rheumatism or some other simple cause. This is a condition in which the surgeon is often consulted, and he not uncommonly favors the idea of the patient, and prescribes an ordinary diaphoretic with a purgative and warm bath, by which the symptoms are either palliated or altogether removed for a time. If the patient still abstains from the indulgences before mentioned, he possibly may be completely relieved for a considerable period, and on the recurrence of a similar train of symptoms may have forgotten the previous attack. However, it usually happens that the symptoms return with some slight increase in intensity, when little or no relief is experienced from the use of the simple measures alluded to: he now observes for the first time that he has a more frequent desire to pass his water than usual, and that he voids but little water at a time; and that what he passes does not flow quite so freely as formerly; but still it comes in a stream and is passed with force and without effort. In this condition he again seeks advice: perhaps simple measures are prescribed, but without relief; the desire to micturate increases in frequency and intensity, and he is called up repeatedly, especially at night, to pass his water, which, however, comes but in a very small quantity indeed, and is expelled

by a sort of ejaculatory effort. His pains are now exacerbated, he becomes feverish, his tongue is a little furred, and his hands feel hot and dry, but he is not incapacitated from following his ordinary occupation : his clothes are constantly wet by the dribbling of the last drops of urine, or by the frequent escape of water from the bladder, the smell from which is ammoniacal and exceedingly offensive ; the expression of his face is anxious, and presents an appearance characteristic of urinary disease. To this condition, if unrelieved, succeeds a train of symptoms of increased intensity and of imminent danger ; thus the frequent desire to make water increases, the quantity passed at each effort diminishes, until at last he is unable to pass a single drop, and now labours under a complete retention of urine. It almost invariably happens that the stream of urine gradually diminishes in force, and that instead of being expelled, it rather runs over and dribbles away ; sometimes he can pass it in a stream in very small quantities, but obviously never completely evacuates his bladder.

In investigating the subject of hypertrophied prostate, it is not a matter of much difficulty to comprehend the rationale of the symptoms just mentioned. The early signs of the disease seem to me to point out an irritable state of the bladder consequent on the enlargement of the prostate encircling or in close contact with its neck, the most sensitive part of the viscus. As the gland increases in size, we observe, coupled with this irritability, a difficulty of expulsion with frequent desire to pass it, the bladder being over distended from the mechanical impediment at its neck, and this

continuing to increase, a total inability to expel its contents arises. The pains in the loins, down the thighs, and through the groins and penis, are clearly dependent on irritation propagated along the nerves; whilst the constitutional disturbance arises from general nervous irritation. It happens of necessity, that all structures in immediate connexion with the hypertrophied prostate are functionally affected; thus the rectum is one of the first organs to sympathise with it; hence arise irritability of the gut and the difficulty of expelling its contents when the gland encroaches upon it; hence also the altered shape of the fæces as observed after expulsion. In reference, however, to the rectum I have been astonished to find that, notwithstanding an immense increase in the size of the prostate, the functions of the rectum have been performed with regularity and without difficulty in many cases, and that the fæces have been as well moulded as usual; I apprehend that the former circumstance depends on an increase in the development of the muscular coat of the rectum, a condition I have frequently remarked, whilst the latter must depend upon the moulding or shaping of the fæces in their transit through the sphincter. The vesiculæ seminales are usually compressed, but so far as can be ascertained seem to perform their office as usual. I have sometimes found them diminished in size and much thickened in their coats. From continued sympathy it very frequently happens that irritation is propagated along the vasa deferentia, and nocturnal discharges of semen, accompanied with pain, occur often to the great distress of the patient. Such are the usual symptoms

of hypertrophied prostate, but in many cases they vary: thus I have witnessed occasionally an irritable state of the bladder with pain in passing the water, and the escape of a few drops of blood as almost the only signs of disease present. In other cases I have found the symptoms to resemble those of stone in the bladder, and the notion of the existence of stone has been still further strengthened by the sensation produced on the introduction of the catheter, as the instrument will often be found to grate against some hard body as if it struck a stone: this deceptive impression arises from the almost cartilaginous condition of the prostate.

I now wish especially to direct attention to the condition of the urine in all stages of the disease, and to enquire particularly into the cause of retention. In most of the cases which have come under my own observation, the urine which is discharged at the onset of the malady is of the natural appearance, of an acid reaction; indeed in many cases it presents, when tested by litmus paper, signs of unusual acidity: as the disease advances, and the irritability of the bladder increases, partly from the irritation propagated to the kidneys, partly from its long residence in the bladder, it becomes neutral or presents distinct traces of alkalinity; whilst, when complete retention occurs, especially if this is unrelieved for any lengthened period, it is always alkaline, nay, generally ammoniacal. It is passed clear at first, but it soon becomes charged with minute flocculi of lymph, which render it more or less turbid, and afterwards blood or pus, or a mixture of both, renders it completely muddy in its appearance. The mixture of flocculi of lymph arises

from an exudation from the mucous membrane of the bladder now becoming slightly inflamed, as is sufficiently evinced by a large collection of ropy mucus which, held partly in suspension in the urine, is now deposited at the bottom of the receiver. The irritability of the bladder in what I would venture to denominate the second stage of prostatic hypertrophy, in which the bladder is over-distended, is attended first with a discharge of acid urine, which afterwards becomes alkaline and turbid. On the removal of this by the catheter, that which is drawn off first is very frequently clear, whilst the remainder is muddy and loaded with mucus or muco-pus. In the advanced stages of the disease, when complete retention of urine occurs, and especially if violence has been used in the introduction of the catheter, the urine becomes alkaline, is remarkably fœtid to the smell, and loaded with ammonia from the decomposition of the urea, or from the large effusion of mucus from the lining membrane of the bladder; in this condition we meet with blood and pus in large quantities, as is evident after the urine is allowed to stand for twenty-four hours, and the urine presents an appearance as if it were mixed with coffee grounds. When the catheter is withdrawn it is found much discoloured, and has evidently been acted on by the sulphuretted hydrogen resulting from the decomposition of the albumen contained in the mucus, and which is much increased in quantity by its admixture with pus.

In estimating the state of the urine we should not lose sight of the fact that it is liable to all the changes of smell and appearance from admixture with

substances or medicines taken into the stomach: thus the odour of turpentine is often perceptible when the patient has resorted to the drinking of gin for the relief of the retention under which he is labouring: I have seen it of a greenish colour after the exhibition of the uva ursi, a remedy often employed in this disease: so also the odour of hyoscyamus may be occasionally detected after the employment of this useful medicine.

The pathological changes in the state of the bladder are remarkable in this disease, they vary, however, under circumstances apparently similar: thus in one case we find it so contracted and thickened as to be incapable of holding more than a few ounces of water, whilst in others it has been known to hold as much as half a gallon. I cannot offer any satisfactory explanation of this variation in the capacity of the viscus, but I am under the impression that in those cases in which it is so diminished in size there has been inflammation of the prostate extending to the bladder, and the gland has attained a sudden increase in size, whilst in the others no such inflammation has existed, and a gradual dilatation has taken place from an accumulation of urine which has been going on for a considerable period. This latter condition constitutes a genuine hypertrophy, with dilatation of the bladder, and is of very great practical interest. The bladder usually dilates in all directions, but not invariably; thus I have known it to extend itself upwards in its long axis, its fundus reaching the umbilicus, whilst in other directions it has remained nearly of its natural size, in others the dilatation has occurred

transversely, with a flattening from before backwards; in some it assumes an irregular pyramidal form, the apex projecting abruptly from the body; whilst in many the *bas-fond* is found enormously increased in depth, and encroaching upon the rectum to such an extent, as to compress it from before backwards to a degree sufficient to give rise to obstinate constipation, irremediable except on evacuation of the bladder by the catheter.

Another remarkable change the bladder undergoes consists in the protrusion of numerous sacculi of mucous membrane of larger or smaller size in various parts: sometimes there is a single adventitious sac appended to one or other side of the bladder, whilst in other cases as many as eight or ten are found of a size varying from that of a pea to that of a large marble. I have known the protrusion of a single sac to equal in size the bladder itself. As to the mode of formation, and the nature of these sacs there can be but little doubt, they are really hernial protrusions of the mucous membrane through the interstices of the fibres of the detrusor urinæ, occasioned by the over-distended mucous membrane gradually insinuating itself between the hypertrophied bands of muscular fibres. At the superior fundus of the bladder we occasionally find one or more sacculi presenting themselves just beneath the peritonæal covering of the bladder, and in the advanced stages of the disease, when inflammation has attacked the viscus, I have noticed evidences of sloughy ulceration in these pouches giving rise to general peritonitis, which has accelerated the death of the patient. These

pouches often contain pus, when the general cavity of the bladder is free from this fluid; this fact has been mentioned by Sir Benjamin Brodie; he has given an admirable illustration of this in the case of an old gentleman from whom he drew off three or four ounces of clear urine, after which he was surprised to find half a pint of pus made its escape; the patient died, and on examining the body after death, he found three cysts of various sizes communicating with the bladder, the largest of which was situated between the bladder and rectum, and contained half a pint of pus. There was no ulceration of the surface, and the pus must have been secreted from the mucous membrane of which it was composed. I think it not improbable that these pouches are liable to insidious attacks of inflammation, to which their mucous lining is predisposed according to a general law, under which parts when forced out of their natural position become readily inflamed; this is well exemplified in those fatal attacks of inflammation to which hernial protrusions of the intestines or even hernial sacs themselves are liable; or possibly the inflammation may depend on the influence of the decomposed urine retained in them. Whichever be the true explanation, of this I am certain, that they often become inflamed, and that this inflammation is a very common cause of the fatal termination of such cases. These vesical pouches often open by small orifices into the bladder, they frequently contain calculi, and it need scarcely be remarked that under such circumstances their extraction by operation becomes a matter of serious difficulty if not of absolute impossibility.

Mr. Guthrie, in his truly practical lectures on the diseases of the bladder and urethra, delivered at the Royal College of Surgeons in 1830, directed especial attention to this pathological change in the structure of the bladder; and from my own experience I am convinced that "*the fluttering blow of the bladder*" felt on the drawing off of the urine by the catheter, may be taken as a pathognomonic sign of this affection in most cases. As this is a subject in a great measure passed over by writers on diseases of the urinary organs I shall take the liberty of dwelling somewhat upon it. So far as I have observed, these cases are usually attended with pain about the region of the pubis, and in the perinæum, and along the urethra, especially after the evacuation of the bladder, there is generally more or less irritability of this viscus evinced by a frequent desire to pass water; hence the surgeon's attention is directed to the state of the bladder, the catheter is introduced, it may be without difficulty, or at any rate with no more difficulty than commonly attends its introduction when the prostate gland is hypertrophied, and on the escape of some urine, the flow of water suddenly stops, and *a fluttering blow* is struck against the point of the instrument as if a solid body came in contact with it: the surgeon believing that he has drawn off the whole of the urine is about to withdraw the catheter, when a small quantity more escapes, and perhaps the blow is repeated. The impression first conveyed to the mind of one unaccustomed to it is, that there is a stone in the bladder, but the experienced hand at once detects the nature of the case, or at any rate the idea of the existence of

stone is at once removed from his mind. Mr. Guthrie suggests that these are the cases which have been so often mistaken for stone in the bladder, and in which the operation for lithotomy has been attended with a cure of the symptoms from the division of the neck of the bladder. Although such may have been the case occasionally, I am under the impression that, in those cases in which lithotomy has been unnecessarily performed, there is an hypertrophied condition of the *detrusor urinæ*, and that the deceptive sensation which favors the impression that calculus exists, arises from the grating of the point of the sound against the hard *rugæ* of the bladder, formed by the columns of this muscle increased in size and density. It is not long since that I was in attendance on a valued medical friend, who was labouring under all the symptoms of hypertrophied prostate with its concomitant horrors, the disease approaching rapidly a fatal termination, when his medical attendant in the country assured me that he had detected the cause of his disease in the existence of a stone in the bladder; on introducing the catheter I was at once convinced that the opinion was erroneous: I felt the fluttering blow upon the catheter, and ventured to diagnosticate a considerable pouch in the bladder: my opinion was verified on the examination of the body after death, which took place soon after.

The formation of vesical pouches is not peculiar to dilated bladder from enlarged prostate, as it often co-exists with stricture or any other mechanical obstruction to the free passage of the urine: they are usually situated in its posterior part.

The changes in the bladder in enlarged prostate, just described, may be fairly classed under the head of lesions from mechanical causes, as they necessarily depend on obstruction to the passage of the urine, and are produced in the efforts to overcome that obstruction: but there are many other changes to which the bladder is liable in this disease, which belong to a totally distinct class; thus the mucous membrane in some cases becomes much thickened, in fact, hypertrophied; whilst, in others, it becomes exceedingly attenuated: the former state is usually the result of chronic inflammation, the latter is found where no inflammation can be said to have existed. Inflammation of the mucous tunic of the bladder, with all its usual results, is not an uncommon attendant on enlarged prostate: this inflammation may end in ulceration or sloughing. Ulceration of the bladder is by no means common; it is one of the most distressing diseases to which man is liable; it is indicated by a constant desire to void the urine, and so intolerant is it of this fluid, that scarcely a drachm passes into it ere it is expelled with violent and irresistible effort, both blood and pus being found mixed with the urine, and the pain attending, after its expulsion, amounts to positive agony. Unfortunately, the disease is irremediable, and the free use of opiates affords the only palliation of the symptoms. It is curious to observe the extent to which ulceration of the bladder sometimes proceeds, the whole mucous membrane having been found in some cases completely destroyed by ulceration. In all probability, the ulceration commences in the vicinity of the prostate,

and gradually extends itself in all directions. In other cases, only a small portion, and that in the vicinity of the neck of the bladder is ulcerated: nevertheless, a similar and equally irremediable train of symptoms exists, however limited the extent of the disease, as where ulceration has extended over a far larger portion of the bladder.

Rupture of bladder.—Rupture of the bladder is another occasional consequence of enlarged prostate. The bladder, however, very rarely indeed gives way before death; at least it is uncommon to meet with this in the examination of bodies after death from retention of urine from diseased prostate: it is, however, not improbable that such cases are more common than is generally imagined. It is very rare for patients to die unrelieved of retention in the metropolis, they die rather from the effects consequent on retention than from retention itself. If, however, the accumulation of urine continues, and no relief is obtained, the force exerted upon the interior of the bladder in all directions is so great from the well known hydrostatic law, that it may excite our surprise that this occurrence is so rare as it is. Whenever the bladder gives way from over distension, the rupture invariably takes place at the superior fundus; it is by no means clear why this should be so, I presume, however, that this must be the weakest part of the bladder. The term, rupture, requires some qualification, as it must not be imagined that a complete laceration of the bladder occurs; it is rather a yielding of its tunics, which is preceded by sloughing from over distention than an actual rupture. In

whatever manner it happens, the occurrence is, under the conditions now alluded to, invariably fatal; the urine becomes extravasated, giving rise to fatal peritonitis; and, on examination after death, an irregular and ragged aperture at the fundus, usually of small size, is found, surrounded by a sloughy state of the peritonæum. This must be admitted to be a rare termination of this disease, and indeed it ought never to happen.

When inflammation attacks the mucous membrane of the bladder, with hypertrophied prostate, it extends in the course of the ureters, and attacks the pelvis and infundibula of the kidneys, and even the delicate mucous lining of the tubes of Bellini and Ferrein, so that these structures becoming inflamed, undergo a process of disorganization similar to that which is observed in the bladder, and hence the secreting function of the kidneys is deranged, and the urine is poured out turbid and alkaline, instead of presenting its natural appearance, and its usual acid condition. Hence, also, the tissue of the kidneys becomes inflamed, and chronic enlargement, abscesses, and sloughing take place, and they become subjected to a general disorganizing process so characteristic of a long-continued inflammation attacking any highly organized structure. The urine, under these circumstances, will be found loaded with the earthy phosphates, and shreds of lymph moulded to the interior of the tubes of the kidneys.

Morbid Anatomy. — In senile hypertrophy the gland becomes enlarged in all its dimensions, it expands laterally, extends downwards towards the

rectum, so as to be readily felt, forming a considerable tumor in this situation, and upwards behind the symphysis pubis, so that in a thin person, with the hand firmly pressed upon the hypogastric region, the surgeon can, in some cases, feel it distinctly. Its outer surface is smooth and round, or occasionally very irregular and nodulated: the two lateral lobes expanding in all directions, are pressed together so as to become flattened at their opposed surfaces: if one increases particularly at one part, as is often the case, there is a corresponding impression in the other; and thus the direct course of the urethra is altered, and the canal is twisted in various directions. The disease is not usually confined to its lateral lobes, for the third lobe frequently participates in the enlargement; this may happen to a great extent, in some measure, independently of the increase in size of the lateral lobes, but usually where the middle lobe is affected, the lateral lobes are enlarged, although the converse of this condition is not so invariable. The middle lobe sometimes forms a simple pyramidal elevation at the urethral orifice, sometimes a large pendulous or valvular tumor, occasionally rising upwards from the posterior part of the prostate in the mesial line direct, frequently inclining to one side; it has been known to attain the size of a small orange; and where it has increased to such an extent, it must of necessity happen that the base of the tumor is the smallest part of it. Whatever form of enlargement the middle lobe assumes, the tumor always projects towards the bladder: it is frequently knotty or lobulated on the surface. In its increase, the third

lobe draws up the prostatic portion of the urethra, and elongates the veru montanum. Very great interest has attached to this condition of the middle lobe in a surgical point of view, since Sir Everard Home particularly directed the attention of surgeons to Mr. Hunter's observations upon it, who states "that it sometimes increases so much as to form a tumor projecting into the cavity of the bladder some inches." The disease of this part of the gland had not escaped the observation of Morgagni, although he did not attach much importance to it; it was also known to Valsalva.

Hypertrophy of the prostate is frequently attended with general induration, so that when cut into, it almost resembles cartilage; this has obviously given rise to the term *schirrhous* prostate, as applied by the older surgeons to the disease in question. In other instances, it feels softer than natural. The capsule becomes either greatly thickened, or gradually attenuated by distension, and the direction of the tumor is always towards the part where there is least resistance; the muscles also connected with the gland, as the levatores prostatæ, become increased in size.

It has been very commonly asserted that the left lobe is more frequently hypertrophied than the right. The observation originated with Sir Everard Home. I cannot deny the truth of the assertion, but it is divested of any practical importance, as it is well known that the right lobe is, in very many cases, the larger of the two; indeed, Mercier thinks the right lobe more frequently affected: however, the fact that

the two are very frequently unequally enlarged ought to be impressed upon the mind of the surgeon, as he may expect that the course of the urethra will deviate to either side, and, in the introduction of the catheter, in cases of retention from enlarged prostate, he must direct his instrument accordingly.

The enormous increase of size which the prostate attains, produces serious inconvenience to the parts adjacent. Thus, independent of the effect on the nerves of the pelvis, as indicated by pains in the loins, sacrum, groins, and down the thighs, its influence is most sensibly perceived in the altered state of the urethra, in the bladder and rectum. By the enlargement of the prostate, the urethra is increased in length, a fact well known to practical surgeons; this actual elongation takes place only in the prostatic portion of the canal: the diameter of the urethra, so far from being diminished, is really increased; but the part surrounded by the gland is altered in shape; for, whereas in the natural state the prostatic sinus is longer in a transverse than in a vertical direction, it is now quite the reverse: its sides are also approximated by the coaptation of the lateral lobes; and if any unequal projection of either lobe exist, it takes a tortuous course to reach the bladder, or reaches it by two channels one on each side of the middle lobe; besides which, the urethral orifice into the bladder is more or less blocked up by the projection of the middle lobe, or is raised higher than natural, the prostatic part of the canal forming a sickle-like curve, the convexity of which is downward. The prostatic sinus is occasionally dilated to such an

extent as to be capable of holding two ounces or more of urine. The veru montanum is placed at a greater distance than natural from the bladder. Where the third lobe is much enlarged, it throws the neck of the bladder forwards, and increases the depth of the *bas-fond* to such a degree as to cause the lodgment of calculi in its cavity. In one respect, this circumstance is attended with some advantage, inasmuch as it lulls the symptoms of stone, by preventing the calculus from coming in contact with the sensitive neck of the bladder. But an obvious inconvenience arises in other cases from the difficulty of seizing calculi under such circumstances, in the operation of *lithotrity;* and, after a calculus is broken up, it prevents the escape of the fragments, and thus favors the recurrence of the disease. I observed this in the case of a friend and patient of my own, who had a stone crushed by one of the first surgeons of the day; two fragments remained unexpelled behind the prostate, these formed the nuclei of further concretions. His friends were averse to any further examination by the sound; he died at last miserably worn out by the disease. I do not see why this unfortunate state might not be obviated, by turning the patient on his belly, and seizing the fragments of stone with the lithotrite in this position, so as still further to comminute it, when, by repeated washings, its escape might be facilitated. If a case of this sort came under my own observation, I should not hesitate to adopt this procedure: a large catheter with a considerable aperture at the extremity as well as at the sides might advantageously be employed to favor the escape

of the fragments. I have known an instance in which a very experienced lithotritist was deceived by the size of the prostatic sinus, and in which, under the delusive impression that he had reached the bladder, he commenced expanding his instrument for the purpose of seizing the calculus ; and many a surgeon of great tact and experience has been deceived in cases of retention of urine, by the escape of an ounce or more of water from the prostatic sinus.

The enlarged prostate, pressing its way gradually towards the cavity of the bladder, necessarily dilates the sphincter vesicæ: this is in a great measure counteracted at first by the increased development of the fibres of the muscle, which, thus becoming more powerful in their action, are still able to close the urethral orifice ; but as the gland goes on progressively enlarging, the power of the sphincter is altogether destroyed, and hence results a constant dribbling of the water ; and the only impediment to the complete draining of the urine arises from the hypertrophied prostrate itself, which thus dams up the channel for the escape of the urine.

To such an extent does this happen, that some surgeons have ingeniously, though I believe wrongly, suggested the idea that the hypertrophied prostate is a wise provision of nature to prevent incontinence of urine in the old person, where the fibres of the sphincter vesicæ are partially paralysed from age.

One of the most troublesome symptoms attending enlargement of the prostate is the frequent desire to rise in the night to pass water. It often happens that a patient is able to retain his urine during the day-

time, and to void it occasionally as the desire to do so suggests; but immediately on retiring to rest, when he falls asleep, he is disturbed by an inclination to make water, and, on getting out of bed, he passes a small quantity, and thus relieves himself for the time. The relief, however, is but momentary, and his night's rest is completely destroyed by a frequent repetition of the desire to micturate. If, however, the inclination be disregarded, and he happily falls asleep, he finds, on rising in the morning, that his clothes are wet, and that his bed is pervaded by a strong ammoniacal odour, affording clear evidence that an escape of urine has taken place during sleep. It is evident that the bladder is either at this time unusually irritable, or that a larger quantity of urine has been secreted during night than in the day-time, which the bladder is unable to retain. I can hardly imagine that there is any increase in the quantity secreted at this particular period, and I therefore conclude that the irritability of the detrusor urinæ is greater at night; and I believe, further, that in consequence of the suspension of the power of volition over the sphincter vesicæ, which necessarily occurs during sleep, this muscle permits the more ready escape of the contents of the already overcharged bladder. I think it, however, not unlikely, that if a careful estimate were made of the number of micturitions which take place during the day and night, we should not find so great a disparity as we imagine, and that the calls in the night are more regarded because they are attended with greater inconvenience.

Ætiology.—The cause of this disease is involved in

the greatest obscurity. Its occurrence in old age alone is an important point in the consideration ; for, although there are a few cases on record of enlarged prostate occurring to persons of earlier years, yet it is admitted by all that the true hypertrophy of the prostate is a characteristic of advanced life. I know of no class of persons who can establish an exception from the disease in question. Thus the rich and the poor are equally obnoxious to it; the single and the married are liable to its attack ; and even the ascetic who leads a life of entire abstinence from venereal indulgence, is not wholly proof against it.

Assuming therefore the fact to be, as is generally supposed, that the disease is one peculiarly incidental to age, how are we to explain the circumstance? Is there any necessary connexion between the declension of the powers of the generative system and the enlargement of the prostate? In other words, do they stand towards each other in the relation of cause and effect? I cannot doubt that there is some connexion between the two conditions alluded to, which I confess I cannot explain. The prostate in man is a necessary part of the genital system, and is therefore intimately associated with the testicles, vesiculæ seminales, and other organs of that important system ; and it has been by some fancifully supposed that the blood, which is sent to these latter organs whilst in their full vigour, is in age diverted from its natural course, and, being sent in greater quantity to the prostate, thus favors the enlargement of the gland. I doubt not that this may be the case, to a certain extent, as no true enlargement of a part can arise

without an increase in the supply of blood to it, but still the fact falls far short of a true explanation of the cause of the phenomenon, as we do not find any visible diminution in the size of the testes in the aged; they are certainly more flabby, but by no means smaller, indeed they are often larger than at an earlier period of life.

Venous congestion, a condition of very common occurrence in the aged, has been assigned as a cause; and the idea is, to a certain extent, strengthened by the fact, that the venous plexus around the prostate is in a state of great congestion in the old person, but as the same observation applies to other parts of the generative system, where no hypertrophy occurs, the observation is entitled to little consideration. That hypertrophy of the prostate frequently depends on great excitement of the part, I believe there is no doubt: the disease is certainly common in those who have habitually given way to venereal indulgence, and who seek to gratify the almost effete desire in every possible manner, thus determining a large quantity of blood to the part; now, in these persons, there can be little doubt but that the bulk of the fluid excreted in the venereal orgasm is not seminal, but consists of the secretion of the prostate and vesiculæ seminales. This repeated irritation of the gland may be regarded as an occasional, but certainly not a constant, cause of the disease.

The morbid anatomy of true hypertrophy of the prostate throws but little light on this obscure question: for putting out of our consideration all those accidental conditions which now and then accompany the

enlargement, as fibrous tumors, the deposit of scrofulous and schirrhous tubercle, we may regard the disease as an universal increase in the natural elements of the gland: thus when examined by the microscope its blood-vessels are found numerous and large, its ducts and follicles are immensely increased in diameter; they are loaded with concretions, and there is a remarkable increase in the deposit of the white fibrous and muscular elements which fill up the spaces between the follicles. Occasionally we find large tumors developed in the lobes analogous to the fibrous tumors which occupy the female breast, and which are constituted of a genuine hypertrophy of the glandular tissue. Sometimes the enlargement depends on the growth of distinct oval and circumscribed tumors growing within the gland. And not uncommonly true hypertrophy of the prostate is accompanied with the growth of a large projecting tumor growing into the bladder, and having no immediate connexion with the gland itself, but attached to the neck of the bladder, and which is often mistaken for an enlargement of the prostate. The mistake is not of the slightest moment, as the character of these tumors cannot be verified except by microscopical examination after death. They are composed of fibrous and cellular tissue.

An hypertrophied prostate, under whatever circumstances it may have arisen, is undoubtedly predisposed to attacks of simple venous congestion, and to inflammation with all its consequences. Congestion of the prostate is, I have no doubt, a very common consequence of simple irritation from many causes, and I believe it to be one of the commonest causes of

retention of urine when the prostate is enlarged: this conclusion I have arrived at principally from the fact that such a state of things generally arises without any of the ordinary signs of inflammation, and subsides under careful treatment, without the employment of any anti-inflammatory measures. I may remark that the evidences of the existence of congestion in hypertrophied prostate are amply evinced both by the microscopical examination of the gland within, and the state of the prostatic plexus without, and it is easy to imagine that, if from any cause an additional quantity of blood be sent to the gland, whether under venereal excitement or from any other cause, the size of the gland may readily be increased in all directions, and hence retention of urine by the blocking up of the urethra by the enlarged lobes. This congestion of the prostatic vessels is frequently brought about by hard drinking and riding on horseback. I do not of course intend to convey the idea that venous congestion in enlarged prostate is the commonest cause of retention of urine, but it certainly is a very common one. I knew an old gentleman some years since, who was repeatedly the subject of retention of urine, and in whom the attack invariably came on after a nocturnal emission under the influence of a dream; in this case I think there can be little doubt but that a sudden afflux of blood to the part took place, and that thus the already swollen gland became further increased in size, and effectually prevented the discharge of urine from the bladder; there could have been no inflammation here present, as the effect was too rapid, and its subsidence under

the ordinary treatment, too speedy, I mean by the introduction of the catheter, to justify an opinion that the retention arose from inflammation of the gland.

Treatment.—As the disease itself is so insidious in its invasion and progress, the attention of the surgeon is rarely directed to it before some difficulty is experienced by the patient in micturition. Thus it often happens that the surgeon is called to a case of retention of urine, and discovers, much to the astonishment of the patient, that there is an enormously enlarged prostate blocking up the commencement of the urethra, and preventing the passage of the urine. In other cases it may be different, and the patient will complain to his medical attendant that he finds himself called on to make water more frequently than usual, and that this desire to pass water especially troubles him at night, that, if accustomed to ride on horseback, he is frequently compelled to dismount to pass a small quantity of urine, and that always after the passing of his water a small quantity escapes over his linen, making him wet and uncomfortable; frequently the mere jolting, whilst riding, will force out a small quantity of water, and the same unpleasant circumstance will attend a ride in a carriage over the stones. This state of things obviously depends on one of two causes, and the cause ought to be understood so that a proper line of practice should be adopted. What then are the conditions? I have no doubt whatever that in many of these cases there is but a slight hypertrophy of the prostate with considerable congestion of its veins, and an irritable state of the bladder;

and I think this state of things is indicated by a slight pain at the end of the penis, which is the part, by the bye, to which all the sensations of the patient are referred, and this is usually attended by slight disturbance of the general health, as shewn by a dry hot skin and furred tongue; whilst in other cases the bladder itself is over distended with urine, and the escape of urine depends more upon an overflow of the fluid, forced out as it were at each sudden movement of the body. It is essential to distinguish between these two causes, otherwise a fatally pernicious practice may be pursued. The patient should therefore be at once thoroughly examined; he must be placed on a bed and the hypogastric region should be explored to ascertain the condition of the bladder, to see whether it be over distended or empty; if there is any doubt on this subject a catheter should be carefully introduced. If the patient can pass any water, let it be tested with litmus or turmeric paper, as the case may require. When the symptoms depend on an irritable condition of the bladder, with slight hypertrophy, the urine usually offers a decidedly acid re-action, on the contrary when the symptoms are dependent on over-distended bladder, the urine is, from long continuance in the bladder, either feebly acid or decidedly alkaline. It may be said that the introduction of the catheter will set the matter at rest at once, and save a great deal of unnecessary trouble and waste of time; but I am confident that the indiscriminate employment of instruments is injurious, and therefore I should not resort to the catheter unnecessarily. I have often seen it do harm, and the escape

of some blood, although in itself of no moment, often alarms the patient. There is, however, another circumstance which should not be lost sight of in these cases, namely, the possible existence of stone as a cause of the frequent desire to micturate: admitting, therefore, the probability of stone, it is most desirable that the bladder should be explored; and I therefore advise that, after the irritability of the bladder is by appropriate treatment relieved, a large sound should be introduced and the interior of the bladder carefully explored. If then we have reasons for believing that the symptoms just mentioned depend on congestion of the prostate, and the opinion may be strengthened by the introduction of the finger through the rectum, when, if it be pressed gently forward, the patient will experience pain at the extremity of the penis, and a sense of heat will be communicated to the finger: the condition of the bladder can now be ascertained and the opinion of the nature of the case will be fully formed. Under these circumstances the treatment must be applied to the removal of the congestion of the prostate and the dilution of the urine: let the patient be cupped on the perinæum or on the sacral region to the extent of eight or ten ounces, or let twelve leeches be applied to the perinæum, let a hip bath heated to 100° Fahrenheit be used night and morning for half an hour, and the patient may take a table-spoonful of castor oil. With respect to the abstraction of blood I would make this remark, that it shall not be repeated so frequently as to debilitate the patient; secondly, that the relief is not generally momentary, but that the good effects are more

frequently experienced on the second or third day after the loss of blood, and, according to my own experience, that the application of leeches, although more tedious, is generally more efficacious than cupping. There is often much benefit from the exhibition of two grains of calomel with ten of Dover's powder at bed-time; but I would not give more than two or three doses, as we must guard against producing any powerful effect upon the system. If there is any difficulty in getting the bowels to act, an injection of warm gruel will be highly useful, and will at the same time act as a gentle fomentation to the congested prostate. With a view to promote a free secretion of dilute urine, a draught consisting of mucilage of gum arabic with about twenty drops of liq. potassæ and the same quantity of the tincture of hyoscyamus every four hours is to be given. The diet must of course be simple and unirritating, but a total abstinence from meat is not desirable. Positive rest either in bed or on a sofa must be enjoined.

The beneficial influence of this simple treatment will be often experienced in a few days, and the patient, from having been frequently called upon to pass water, will be able to hold it for two or three hours, and there will be little or no difficulty experienced in expelling it. I have, however, seen in some of these cases a retardation to the passage of urine, or rather a difficulty in commencing its expulsion, as if there was some impediment to overcome, and such, no doubt, is the case; but when this is overcome, the urine flows freely enough. The functions of the bladder will soon be resumed, and the patient

will be relieved, if not permanently, at any rate for a considerable period, from any unpleasant symptoms: he should, however, be put upon his guard, and be directed to be cautious in his diet, and to be especially cautioned to avoid any excess in venereal indulgence. It does not follow, of necessity, that any relapse should occur, although this must be anticipated: I have often known patients who, by care and attention, have kept the disease completely at bay, and in whom the slight enlargement of the prostate, if it has not wholly disappeared, has diminished considerably. Of the complete durability of slightly enlarged prostate, when it occurs in the young person, I entertain no doubt whatever; I have witnessed such a result as the effect of careful treatment, and I should therefore never despair. It is, in my opinion, in such cases that the too frequent introduction of the sound or catheter does mischief, and, unless necessity arise, I advise its entire discontinuance.

When, however, the incontinence of urine depends on hypertrophy of the prostate, it is quite clear that a different line of practice must be followed; here the first part of the cure of the symptoms must depend on the relief of the bladder from over distension, and a catheter should at once be passed, and the water drawn off; the instrument should be introduced night and morning at least, and even more frequently should it be requisite, and this practice is to be steadily pursued until the bladder regains its power of evacuating fully its contents. In old persons, the period at which so desirable a consummation may be anticipated, varies considerably; in some cases the

patient experiences momentary relief, and passes his water freely on the ensuing day, and hence declines the further interference of the surgeon; whilst in others, weeks or even months will pass away before the urine is expelled by the natural efforts of the bladder: nay, in many instances, it will be requisite to draw the water off by artificial means for the whole term of the patient's life.

As to the use of leeches or any active antiphlogistic treatment, they are positively injurious in the generality of cases of hypertrophy. I would not certainly deny but that cases may arise even in old persons, especially those of vigorous constitution, in whom cupping or leeching might not be advantageously used, but I am convinced by experience that harm usually follows the attempt to cure the enlarged prostate of old persons by active antiphlogistic means. The hot hip-bath is to be used, glysters of warm water may be thrown up the rectum, a dose of castor oil may be advantageously given, and diluent medicines, with hyoscyamus, are unquestionably beneficial. I cannot too strongly deprecate the employment of opium in the irritable bladder of old persons from hypertrophied prostate: the disease itself has a great tendency from causes now sufficiently understood, to induce a torpor of the cerebral functions, and I should be decidedly averse to the exhibition of any medicine which has the effect of increasing that tendency. That some qualification of this opinion may be had in some cases, I am not bold enough to deny, as where the patient complains of severe pain about the neck of the bladder, extending as far as the

glans penis, under these circumstances, a dose of morphine may be given with advantage; but in speaking generally on the treatment of these cases, I am convinced that I am right in deprecating the use of opium. The tinctura ferri sesqui-chloridi in occasional doses of twenty drops is a favorite medicine with some, but I am of opinion that it not only does no good, but that it is positively injurious; it irritates the bladder either by acidifying the urine, or by irritating the neck of the bladder, and although I have witnessed its exhibition in many cases in the stage of the disease I am now considering, I do not remember to have observed it of any use in any one instance, and in very many cases of retention of urine from hypertrophied prostate, I have found that this has been one of the means employed for the cure of the complaint, and I believe its use has been attended with injury rather than benefit. A total retention of urine is not very commonly the result of slight hypertrophy, but it is occasionally so, as I have already stated, when to this condition is added an attack of inflammation, supervening on the original disorder, as the consequence of exposure to cold, or other injurious causes which I need not now dwell on, as they have been already discussed under the head of inflamed prostate.

There are two points connected with this subject, which, though slightly glanced at in the preceding remarks, demand especial consideration, namely, the treatment of retention of urine from hypertrophied prostate, and the hæmorrhage so frequently attending it.

On retention of urine from enlarged prostate.—I entertain no doubt whatever that if a careful record of cases of retention of urine were kept by practitioners in general, it would be found that a very large proportion depended on enlarged prostate gland: in our large public hospitals, retention from this cause is exceedingly common, although not so frequent as from strictures. It is, of course, unnecessary again to speak of the signs of this condition, they are obvious to all: but it will in general be found that, prior to a total retention, the patient has experienced for a length of time some difficulty in emptying his bladder, if indeed he has ever of late completely emptied it: of this latter circumstance, however, he himself has not been aware; but of this he is always convinced, that after the supposed evacuation of his bladder, he has found that a slight dribbling of urine has followed the attempt, and that he has been made uncomfortable by this for some time. The surgeon, however, suspecting the nature of the case, proceeds to pass a catheter; and here two questions suggest themselves, both of great importance, namely, the position of the patient, and the choice of the catheter to be used. There are many cases in which the surgeon has no choice as to the position of the patient: an old man, who has suffered long from the disease in question, and has probably been confined to his bed for a length of time, ought not to be disturbed from his ordinary recumbent position; whilst in others, where the disease has recently come on, the surgeon may make his choice between the recumbent and the erect position. For my own part, I prefer the recumbent position usually, and I advise

all young surgeons to practise it, as generally least uncomfortable to the patient: my reason for preferring this position is, independent of what I have just stated, that, in many cases, where the third lobe is much enlarged, and constitutes the cause of retention, when the patient is erect it falls forward, and impinging upon the apex of the catheter, prevents the instrument from passing into the bladder, whereas, if the patient be laid upon his back, the third lobe falls backwards, and the instrument glides freely onwards without impediment. I have in many instances succeeded in this manner when I have failed in the other, and I therefore invariably attempt it at first: the only inconvenience that I see arises from the occasional difficulty of depressing the handle of the catheter sufficiently to tilt up the point to the requisite height; but I believe that, with a properly contrived catheter, there will be generally very little difficulty in effecting the object desired. If, on the contrary, it is found impracticable to introduce the catheter in the recumbent position, we have no alternative, but must at once resort to the other, and this many prefer.

The next point for consideration is the catheter, and even here there is some difference of opinion as to whether preference should be given to the elastic instrument or the silver catheter. I have no doubt that the elastic catheter is the best generally, and I should always attempt the relief of the patient first by this means, but there are many cases in which the silver instrument must be used. The advantages of the elastic catheter are these—first, even in unpractised

hands, there is little or no risk of injuring the urethra or the prostate in the attempt to introduce it; secondly, by a well-known manœuvre, it can be made to adapt itself to the altered direction of the prostatic part of the canal; and thirdly, if, from any peculiarity of the circumstances of the case, as where there is very great difficulty in its introduction, and where the surgeon is at such a distance from his patient as to be unable to afford the requisite personal attendance night and morning, it may be conveniently retained in the bladder without risk of injuring the coats of the viscus. If, therefore, from these considerations, the surgeon makes up his mind to employ an elastic catheter, he selects one of diameter sufficient accurately to distend the urethra, without forcibly stretching it, and of such a length as that it can be made to traverse the urethra, however much this canal may be elongated; in fact it ought to be at least thirteen or fourteen inches in length; this is to be armed with an inflexible steel stilet, with a flattened handle, and to which the requisite curve is to be given.

The surgeon standing on the right of his patient, if he be recumbent, passes the instrument, well oiled, down to the prostate gland, with the concavity of the curve towards the abdomen; when he has reached that part of the urethra which has traversed the triangular ligament, he expects to find the entrance of the point of the catheter into the bladder obstructed, he therefore carefully depresses its handle between the thighs of the patient, and very generally in the hands of the practised surgeon it enters the bladder at once. If the least difficulty occurs at this important step of

the operation, he carefully withdraws the catheter for the distance of one, two, or three inches, and, giving its point an earlier tilt, by depressing the handle, he very likely slips it in with great facility: however experienced in this manœuvre, he nevertheless may still be baulked in his endeavour, and instead of using force to effect his object, he adopts the plan first proposed by the celebrated Hey of Leeds, and withdraws the steel rod from the instrument, by which the curve of the elastic catheter is still further increased, and its point readily glides over the raised floor of the prostatic part of the urethra.

It is of the highest practical importance that the surgeon should have clear and definite ideas of the cause of difficulty in the treatment of these serious but very common cases: there can be no doubt that many valuable lives are sacrificed through ignorance of this particular: cases of retention, from enlarged prostate, are of daily occurrence, and every surgeon of common experience has had cause to lament the serious mischief resulting from a want of attention to this subject; nay, it occasionally happens that, on being called in consultation to cases of this description, the surgeon finds his brother practitioner ignorant of the true cause of the retention, totally unpractised in the use of the prostatic catheter, and in all probability without such an instrument in his *armamentarium*:— this ought not to be, and there is no excuse for such negligence: every surgeon on commencing practice ought to be aware that such cases *must* of necessity present themselves to his consideration, he is therefore in moral duty bound to provide himself with the

necessary information on these topics, and he is equally bound, for his own sake as well as for his patient's, to have such appliances ready as he must at some period or other of his practice be called upon to use.

And, whilst I am on this subject, I cannot help making a brief digression on what I conceive to be a paramount duty of those who undertake the instruction of students at our large hospitals. I conceive that they have not done their duty to their pupils unless they have not only directed their attention to this important point, but have instructed them in the actual manipulation requisite to relieve their patients in this most perilous straight: a student, however intelligent and zealous in the acquisition of knowledge, cannot attain dexterity by *intuition* or by reading, he must be taught under the eye of his instructor how to handle the catheter, where to expect the difficulty in its introduction, and how to overcome that difficulty; by this he gets a confidence which is essential to his success, and which in no other way can he by possibility acquire.

In many cases of enlarged prostate, I have found a silver catheter answer better than the elastic instrument, that is, I have found it more easy to pass; I cannot well assign a reason for this, unless it be that in these cases the third lobe of the prostate hangs loose, and thus offers a resistance to the elastic catheter, which is at once overcome by the silver one; but I am uncertain whether this explanation be correct: but of this there can be no doubt, that the surgeon possesses greater facility in directing an inflexible

than a flexible instrument, and, in experienced hands I see no objection to its constant employment. A full sized catheter is to be selected, of thirteen inches in length, with a large curve and blunt point, it should have an opening carefully rounded off at its very summit, besides a large hole on one or other side within the third of an inch of its apex; it ought to be of a size sufficient fully to distend the urethra without unnecessarily stretching it. It is an error to have too large a catheter, and it is better therefore always to be provided with instruments of varied diameter, and perhaps a slight variation in length and curve is advisable, indeed I have frequently found this requisite.

The surgeon standing either on the right side or in front of his patient, passes the catheter down deeply into the perinæum with the concavity towards the abdomen, he then by most gentle manipulation gradually advances it until it has reached the prostate, when he depresses the handle fully, and with a slight pushing movement the instrument is made to enter the bladder. Here again if he is unsuccessful in his first attempt he withdraws the catheter for an inch or so, and endeavours to raise its point earlier than in the first attempt, and probably he will now succeed; or if he fails again, let him incline the point first to one side and then to the other, always bearing in mind the admirable obstetric maxim, "*arte non vi,*" which is equally applicable to this division of surgery. The pushing forward of the silver catheter is a point of great importance to attend to in diseases of the prostate gland; where the third lobe is large, and

attached by a small narrow neck, it has a tendency to hang forwards in consequence of the forcing of the bladder in its expulsatory efforts to get rid of the urine: it requires therefore to be pushed backwards into the bladder ere the catheter can be made to enter, and hence the necessity of this manœuvre, which ought only to be attempted when the point of the catheter is well raised, otherwise the instrument hitches in the front of the third lobe, and if force be now used it enters this part of the gland and may be even pushed onwards completely through it. This is a state of things which cannot by possibility happen with the elastic catheter, and ought never to occur undesignedly with the silver instrument. I have already remarked that on attempting to relieve the patient in the erect position, a difficulty has arisen from the falling forwards of the third lobe, and I cannot help believing that in all cases, from a variety of considerations, it is best to place the patient on the bed before the attempt to introduce the catheter. If still there be an impediment to the free entry of the instrument into the bladder, the left fore finger of the surgeon, well greased, should be passed, *per anum*, and the point of the catheter should be gently raised by pressing on its convexity, at the same time that it is carefully advanced.

The entry of the catheter into the bladder will at once be recognised by the facility with which the handle can be depressed, although the surgeon is liable to be deceived even in this unless he is cautious, as I have frequently seen, on the withdrawal of the stilet, much disappointment expressed by the prac-

titioner as well as the patient at the non-escape of the urine. Then is the occasion on which the skill and patience of the practitioner is tested, for it will be found, on fully and rather forcibly depressing the catheter, either that it is not of sufficient length, or that it has caught in the third lobe: another instrument must be substituted, and one in which the point is still more elevated; a gentle withdrawal of the former, and some slight manœuvring to one or other side will probably effect the object. I have frequently seen the surgeon foiled in the passing of the catheter in consequence of his having paid too much attention to the elevation of its point by depressing the handle; this happens in cases where the lateral lobes of the prostate are enlarged and the third lobe is free; the point of the instrument is thus tilted against the roof of the prostate and cannot be forced into the bladder. Under these circumstances an instrument of full-sized bore, but of nearly the ordinary short curve, will answer much better than the prostatic catheter, especially if, after having reached the prostatic sinus, it is pushed gently onwards towards the bladder. I have lately had a silver instrument constructed with an opening at the end sufficient to permit a long elastic catheter to be passed through it, so that, when the silver instrument has reached the prostatic part of the urethra, the elastic catheter may be pushed for some distance beyond, and thus be made to enter the bladder. The water is to be entirely withdrawn, and it will usually be found, if many futile attempts have been made, tinged with blood, probably of a dark chocolate colour, and

loaded with tenacious mucus or muco-pus, especially towards the last.

The impression that the catheter has entered the bladder, when it really has not, depends on the preternaturally-dilated prostatic sinus, which in some cases is capable of holding more than an ounce of fluid. The question is not unimportant, whether it is prudent completely to empty the bladder or not, and I am disposed to discuss the question, although I have advised that the bladder should be emptied. It is possible that the immediate withdrawal of the entire contents of an over-distended viscus may lead to inflammation of its tunics, as sometimes happens to the uterus and its peritonæal covering, after the withdrawal of retained menses ; but the risk of mischief is in the present instance so remote that it is more than counterbalanced by the great relief afforded to the patient, and it should be remembered that it almost invariably happens that, on the evacuation of the bladder after it has been over distended, a copious secretion of urine takes place, and the viscus becomes speedily re-filled, so that the catheter is required to be passed after a very short interval, and thus the patient must be again subjected to the manipulation of the surgeon. On the whole I think it better that the bladder should be completely emptied, after which if there be evidence of any decomposition of the urine, as in all probability there will be, the bladder may be washed out with warm water gently thrown in with a syringe previous to the removal of the catheter.

As to the frequency of the application of the catheter every thing must depend on the feelings of the patient

and the condition of the bladder; in some cases, I presume in those where there has been inflammation of the prostate, the desire to make water frequently is very urgent, and it is requisite to pass the catheter at least three times daily, whilst in others in which the urgency is not so great, it will be sufficient to draw the water off night and morning. On this part of the subject the following rule should be, if practicable, adopted; namely, the catheter should not be confided to other hands than his who has without force succeeded in its employment; and no false delicacy should for a moment interfere to set aside this most necessary rule. Every surgeon must have witnessed the inconvenience arising from a want of attention to this circumstance; I have no hesitation in saying that I have seen many lives sacrificed to a false professional delicacy in a matter of this kind; it is infinitely better, if from distance or other cause it is inconvenient for the same practitioner to attend, that an elastic or even silver catheter, should be permitted to remain than that the patient should be subjected to the unpractised hand of another surgeon; the road which is familiar to one may not be so to another.

Hæmaturia connected with enlarged prostate.—I have frequently had occasion to allude to the subject of bloody urine as a very common concomitant of hypertrophied prostate. Hæmaturia occasionally occurs independent of retention, but it is frequently an attendant on it. It is a symptom which occasions great alarm to the patient, and is certainly a condition not to be neglected by the practitioner. The hæmorrhage is in some cases trifling, and the urine

is only slightly tinged, whilst in others it is of much greater extent, and on the introduction of the catheter the fluid drawn off resembles pure blood in appearance, having, however, but a faint urinous smell. Sometimes the urine escapes in a stream through the meatus, it is generally of a dark colour, sometimes it flows freely through the catheter and is more florid in colour: occasionally it passes in the form of long worm-like clots. If no instrument be used the blood generally flows back into the bladder and is discharged with the urine. There can be no doubt that the blood discharged under these circumstances escapes from the preternaturally-enlarged capillaries of the mucous membrane of the prostatic part of the urethra, and that the hæmorrhage is attributable principally to congestion of the prostatic veins. But in many cases the hæmorrhage is entirely dependent on injury the urethra has sustained in rude attempts to pass the catheter. I have in some instances distinctly traced it to the act of copulation, and hence am disposed to attribute it to venous congestion. The hæmorrhage will frequently cease of itself, and the urine will become daily clearer: but on the slightest indulgence, especially if retention arises, it is very apt to re-appear. Hæmorrhage, the result of malignant disease of the prostate, is by no means uncommon, and is usually distinguishable from the former case by its occasional, almost periodical, occurrence, and by the arterial character of the blood: and the diagnosis is facilitated by other signs of malignant disease.

To arrest the hæmorrhage into the bladder in disease of the prostate I know of no remedy

equally important or more efficacious than the recumbent posture, by which the emptying of the over-distended capillaries and large veins is most readily facilitated. Next to this in importance I advise the injection of cold water into the rectum night and morning in such quantities as that the rectum may retain that which is thrown up, I would say that half a pint is amply sufficient, and is not more than may be borne with ease. Ice also may be applied to the perinæum and above the pubis, and, as a last resource, cold water may be injected in small quantities into the bladder itself. Of internal remedies the simple salts of soda and potash, as the carbonates in small and repeated doses are decidedly preferable to acids, the tinctura ferri sesqui-chloridi in large doses is often resorted to, for the arrest of hæmorrhage into the bladder; but from my own experience I regard it as very frequently injurious from the irritation it produces about the neck of the bladder. In some cases balsam of copaiba and the terebinthinates are useful.

If the alkaline plan does not succeed in arresting the bleeding, it may become requisite to have recourse to small doses of the mineral acids given at short intervals; and, on the high authority of Sir Benjamin Brodie, Ruspini's Styptic may be given as a *dernier ressort*. Sir Benjamin relates a case in which this medicine succeeded after all other things had failed. The tincture of matico in doses of twenty drops every four hours is occasionally given with advantage. Hæmaturia, although relieved for a time, very often recurs notwithstanding all treatment; and the patient becomes gradually blanched from the

frequent and repeated drain upon the system from this source: and not unfrequently it leads to the destruction of the patient by inducing general dropsy. In reference, however, to this subject, it should be remembered that hypertrophied prostate is not unfrequently combined with organic disease of the liver and kidneys, and the patient has to bear up against a complication of maladies which at the advanced age to which the disease in the gland is incidental must necessarily speedily destroy him. It happens occasionally that the bleeding still goes on, and that the blood accumulates in the bladder to such an extent as to occasion the greatest possible distress to the patient, who is tormented with a constant, irresistible, and ineffectual desire to micturate; the hypogastrium is swollen, and, if the finger is passed *per anum*, the bladder can be felt forming a projecting tumor behind the enlarged prostate. The patient at each attempt voids only a small quantity of blood without any relief to his symptoms; the surgeon is therefore induced to pass a catheter, and he is occasionally successful in drawing off the whole of the blood from the bladder; the blood re-accumulates and the catheter is introduced with similar success; in this manner it becomes necessary to relieve the patient whenever the urgency of the symptoms demands it, until all trace of blood disappears from the urine.

The blood in these cases is generally kept in a fluid state by its admixture with the urine, and readily passes through the catheter; but this is not always so, and hence the necessity to break up the clots by

throwing in small quantities of warm water, and thus to facilitate its escape. This plan, however, is not always successful, and the bladder in some cases still remains loaded with coagulum, and the distress of the patient is most urgent. Under these circumstances, a syringe should be adapted to the catheter, and exhausted by drawing up the handle of the piston, by which clots of blood will be drawn into the catheter: or, what is in my opinion much more effectual, and produces a more complete vacuum, a long wire bent at the further end, to which a piece of lint is attached, sufficient to fill the bore of the catheter, is to be pushed to the point of the catheter, and then suddenly withdrawn; by this means long strips of coagulum can be readily pumped out, and the manœuvre being rapidly repeated, the whole of the coagulum can be removed. The advantage of this over the former plan arises from the greater facility with which a vacuum can be produced when the suction power is exerted along the whole extent of the catheter. I have seen this plan successful when all attempts to draw off the blood by the syringe had completely failed from the difficulty of forming a vacuum.

In the attempt to relieve retention of urine from enlarged prostate, the surgeon may possibly fail; but it rarely happens that an experienced surgeon is foiled in the introduction of the catheter: but the enlargement of the gland may take place in so irregular a manner, and the third lobe may so effectually block up the entrance into the bladder, that it becomes impossible to raise the point of the catheter over it. Under these circumstances, the

only operation calculated to relieve the patient is the puncture of the bladder above the pubis : but even this, however much the distension, is not to be lightly resorted to, as there is considerable risk of fatal inflammation, either of the peritonæum or of the cellular tissue of the abdominal parietes : it is better to adopt the plan, sanctioned by the experience of Sir Benjamin Brodie, to push the point of the catheter forcibly through the resisting third lobe of the prostate, and retaining the catheter in the bladder for thirty-six or forty-eight hours, thus to establish a permanent false passage for the urine. In the Dublin Quarterly Journal of Medical Science, Dr. Mayne relates the case of an old man who had been repeatedly the subject of retention of urine from enlarged prostate. But, on the last occasion he came under the care of a medical man, who introduced a catheter with great difficulty, and a large quantity of blood preceded the escape of the urine. He was directed to retain the instrument in the bladder for some days; the result was, that from that time until his death, seven months afterwards, he had no further retention : he was so pleased with this, that he used to contrast very unfavourably the practice in the hospital where he had been frequently before relieved, with that of the surgeon by whom he said he had been cured at once. On examination after death, the prostate was found enlarged in all its lobes ; the third lobe projected from behind forwards, and a false passage had been effected through it, by which a new portion of the canal for the escape of urine had become established.

This perforation of the prostate is not always

unattended with danger, as it occasionally leads to inflammation of the gland, as well as extensive and often fatal disease of the bladder. There can be no doubt, however, that in many instances the newly formed opening performs well the office of the original urethra.

The idea of perforating the middle lobe of the prostate, in obstinate cases of retention from enlargement of this portion of the gland, was carried out by Lafaye, on the person of Astruc, the French surgeon. Having been called to his patient, who was labouring under retention of urine, he was unable to pass the catheter, and believing from the symptoms, that the cause of the retention was an enlargement of the middle lobe of the prostate, he introduced a catheter armed with a perforator, with which he penetrated the obstructing lobe of the gland. The perforator being withdrawn, the urine escaped, and the catheter was allowed to remain in for fifteen days, after which a larger one was substituted. Astruc lived ten years, subject however to occasional attacks of retention, which Lafaye alone was enabled to relieve. On examination after death, a hard sacormatous mass (*fongus sarcomateux*) was found, two thirds of which projected into the bladder, and the remainder was attached to the veru montanum. The instrument had penetrated the left side of the tumor.*

As the chances of the complete subsidence of an hypertrophied prostate to its original size are exceedingly problematical, and as a patient, who has once

* Anatomie pathologique par J. Cruveilhier.—See note to the seventeenth fasciculus, page 4.

suffered from retention of urine from this cause, is very liable to frequent relapse, it becomes important that he should be instructed in the best means of relieving himself by the introduction of the catheter. He ought to be taught to pass an elastic catheter, and directed to use it night and morning, or even more frequently, if necessary, as long as he lives; and thus the remainder of his life may be rendered comfortable, and with care and attention, and especially by abstaining from any venereal excitement, the disease will be rendered stationary, or at any rate the increase in size of the prostate will offer nothing more than an increased mechanical impediment, which can be readily overcome. Some patients succeed better with the silver catheter; they should therefore be taught to introduce it without force, so that no injury be inflicted on the prostate.

As there appear to be no remedies which have the power of diminishing the size of a prostate affected with senile hypertrophy, it has suggested itself to some that it might be practicable to destroy or remove by contusion and consequent sloughing the projecting third lobe, so often the cause of obstruction. To accomplish this object Mercier* proposed to introduce a lithotrite composed of two blades contained within a sheath, and, the projecting lobe being seized, it is either to be twisted off, or broken into pieces. The bladder is afterwards to be washed out with cold water. Sir W. Blizard advised incision of the prostate with the double gorget. Other methods to accomplish the same object have been devised which

* Gazette des Hôpitaux, Jan. 23rd and 27th, 1849.

it is unnecessary to do more than allude to, as they are founded on the utmost temerity, and fraught with the greatest danger. The same surgeon has also recommended the division of the muscular bar at the neck of the bladder which is the occasional cause of retention, and which has been especially dwelt upon by Guthrie. The only objection I see to this practice arises from the difficulty of forming an accurate diagnosis between enlargement of the third lobe of the prostate and the bar at the neck of the bladder just alluded to.

Atrophy of the Prostate.—The size of the prostate, at various periods of life, bears a ratio to the size and development of other parts of the generative system, and, when any arrest occurs in the development of these organs generally, the prostate is diminished in size, or, in other words, is atrophied. Dr. Bailie met with a case of atrophy of the prostate in a case of ectropium of the urinary bladder, accompanied by malformation of other organs of generation; and I have remarked a similar condition myself in a case of epispadias. It sometimes happens that in very old persons the prostate is found much diminished in size, but this condition is exceedingly rare.

The most common form of atrophy, however, to which the prostate is liable, is *eccentric atrophy*. In this form of disease, one or both lobes are converted into a bag or cyst from the pressure of urinary or prostatic calculi, or from a large collection of matter, the result of inflammation; the whole of the true follicular structure of the gland is thus destroyed, and the capsule becoming condensed forms a cyst

communicating either directly with the urethra, or, by means of a lengthened sinus, with the bladder itself.

In old cases of stricture of the urethra, the prostatic ducts become sometimes enormously dilated, so as to produce a cribriform appearance of the prostatic part of the urethra; this condition is occasionally accompanied with atrophy of the glandular structure of the prostate, and appears to depend on pressure on the ducts of the gland, by the violent efforts of the bladder to expel the urine; a pressure which is exerted on the orifices of all tubes communicating with the bladder or the prostatic part of the urethra. I believe that, in consequence of the obstruction arising from the stricture, the urine, acted on by the powerful detrusor, dilates the prostatic sinus, and this dilatation extends to the ducts of the prostate itself.

CHAPTER V.

SCROFULOUS PROSTATE.

THE prostate rarely becomes the seat of tubercular deposit, a circumstance which I attribute in a great measure to the condensed nature of its tissue, and to the necessarily small quantity of cellular membrane in its composition. Nevertheless, where there is a great tendency to tuberculosis, and especially where this disease attacks extensively the urinary and genital system, the prostate becomes involved to a greater or less extent, and the disease leads almost inevitably to the destruction of life. I do not mean to say that the tubercular prostate destroys life, but that the irritation set up by it, in connexion with the general cachexia from the disease at large, is commonly fatal.

Scrofulous deposit may take place in three forms; either small miliary tubercles, like those met with in the lungs, may exist in the prostate; or there may be extensive deposition of cheesy matter in numerous parts of the gland; or one lobe of the gland may be occupied by a large tubercular mass. Of the former, Lallemand met with an instance in which no less than thirty small abscesses, and the same number of

crude tubercles were formed in the prostate. In a case recorded by Mr. Cross, of Cincinnati, there were six or eight small masses of a pale yellowish colour, and of a soft curdy consistence, scattered through different parts of the gland, which was considerably reduced in size; the patient died of psoas abscess, in the Cincinnati hospital. In a case which came under my own observation, the whole tissue of the gland was broken down by the gradual softening of scrofulous tubercles. In another case, also under my own observation, a similar condition was remarked; the disease, in this instance, was associated with extensive tubercular deposit in the left kidney and in the testicle; and of the history of which I append a brief abstract, as it illustrates the obscurity of the affection, and the equivocal nature of the symptoms in the early stage of the disease:—

George Pearson, aged 26, was admitted into the London Hospital, under my care, on the 2nd of June, 1850, and was supposed to be labouring under chronic cystitis, consequent on disease of the prostate. He stated that he had been gradually failing in health for two years and a half, and had complained of great lassitude, with general indisposition, and pain in the back. He became a patient of one of the large metropolitan hospitals, and having at the time a fluctuating tumor on the left side, beneath Poupart's ligament, his disease was presumed to be psoas abscess. The moxa, and other counter-irritants were applied ineffectually to the loins; the abscess was afterwards opened, and he was discharged, as cured, about a year ago. From this time, however, he got gradually

worse, with but trifling occasional amendment, and, as he began to suffer a great deal of irritation of the bladder and other symptoms, he came under my care at the London Hospital.

When first admitted he was considerably emaciated, and presented the aspect of one labouring under some organic disease; his symptoms, however, were principally referrable to his urinary system; thus he had frequent and urgent desire to pass water, and this he did only in small quantities; the urine was turbid, and deposited a large quantity of ropy mucus, occasionally bloody, and now and then mixed with pus, the odour was offensive and ammoniacal, and it generally gave an alkaline reaction. I passed a sound, under the idea that possibly a stone might be found in the bladder, but I could discover no stone; I found, however, that on passing the instrument over the prostatic part of the urethra, the patient complained of excruciating pain, and this was increased by pressing on the prostate through the rectum. I therefore, in the absence of stone, and from the previous history of the case, ventured to hazard the opinion that the patient was labouring under scrofulous tubercles of the prostate, and that the tubercles were beginning to soften. I was confirmed in my opinion by the subsequent progress of the case; for, after a variety of treatment, the man had an abscess in the perinæum, through which, urine, mixed with mucus and pus, was discharged; and this was succeeded by an abscess in the scrotum, on the left side. He eventually died, worn out by the constant irritation and pain; but the immediate cause of death was low peritonitis, induced

by the giving way of an abscess of the prostate, communicating with the bladder, and bursting through the peritonæum. On examination after death, there were found traces of extensive suppuration of the prostate, the gland having almost disappeared; there was an abscess between the coats of the bladder, which had made its way round its neck into the peritonæum of the opposite side. The left kidney was loaded with masses of scrofulous matter, and the corresponding ureter was filled with a similar deposit down to the bladder. The testes were also studded with scrofulous tubercles in various stages.

The case is highly instructive, and affords an additional proof of what has been frequently asserted, that scrofulous disease of the prostate is generally associated with extensive tuberculosis of the urinary and genital system at large.

Some years ago I was called in consultation to a case of supposed hydrocele; but as the swelling in the scrotum was painful, and accompanied by symptoms of great irritation of the bladder, I recognised at once an inflamed state of the testicle and cord, with effusion into the tunica vaginalis, as the result of irritation about the neck of the bladder: I passed a sound, and remarked in this case that which I have mentioned in the preceding, namely, that the patient complained of great pain as the instrument traversed the prostatic portion of the urethra. On examination *per anum*, the patient suffered pain when the prostate was pressed: the gland was somewhat enlarged; the patient was a man of sixty years of age. A similar train of symptoms had existed as in the case just

related, and I concluded that he was labouring under abscess in the prostate, from deposit of scrofulous matter in the gland; he died gradually exhausted, and the examination after death justified the opinion I had formed.

The symptoms of this unfortunate disease, in its advanced stage, resemble so closely those which are indicative of stone in the bladder, that on the first investigation of the case, the surgeon is apt to pronounce a positive opinion at once as to the existence of stone, but the examination with the sound at once undeceives him: hence it happens that the patient is often again and again subjected to the same mode of examination by each surgeon who may be called in successively; and I need not remark that, so far from any benefit arising from the investigation, his sufferings become increased, and the disease is exacerbated at each introduction of the sound. I cannot help alluding especially to this circumstance, as a warning against what I conceive to be a pernicious practice of passing the sound so indiscriminately.

Having had no opportunity of dissecting a tubercular prostate before the stage of softening, I cannot positively localise the situation of the deposit, but I am under the impression that it is to be found in some cases in the follicles of the gland, and in others, in the connecting cellular tissue.

There are two circumstances connected with the disease in question calculated to render our treatment futile and of no avail; the first is this—the symptoms are so insidious in their nature that it is impossible to recognise the disease before the tubercles have

advanced to the stage of disintegration; and the second is, that the disease is associated with extensive tuberculosis in other parts, so that its effects, although in themselves sufficiently annoying, become subordinate to the cachexy resulting from the general constitutional taint. If we could by any means ascertain the nature of the complaint in its early stage, it would be most desirable that the patient should abstain from all excitement of the organs of generation, and that such remedies as are calculated to invigorate the constitution should be immediately had recourse to. Steel, quinine, iodine, cod liver oil, &c., &c., with the use of flannel next the skin, warm salt water bathing, and a residence by the sea-side in a warm climate, comprise the category of remedies most likely to be of use. But when the disease has advanced to suppuration, and all the symptoms of excessive vesical irritation have set in, it must at once be evident that little beyond a palliative treatment can with propriety be recommended. The use of alkalies, combined with opium, and hyoscyamus in mucilaginous vehicles are to be administered; warm hip-baths, and opiate enemata; and the occasional and careful injection of tepid water to wash away the adhesive mucus of the bladder may be employed with advantage: at the same time, the health of the patient must be supported by the customary stimuli. Where there is the slightest tendency to point, especially if there be fulness in the perinæum, an opening ought to be made with a sharp-pointed bistory. Under this treatment, if the disease is limited to the prostate, it is possible that the whole of the scrofulous matter may be gradually softened

out, and that contraction and complete cicatrization of the abscess may take place.

I cannot positively assert that I have seen cases of scrofulous prostate cured, because it is difficult to form an accurate diagnosis between this disease and abscess in the prostate, the result of chronic inflammation; but I am strongly impressed with the notion that more than one case of the disease has come under my observation where a cure has taken place under the treatment mentioned; and I ground my opinion on the fact of the subsidence of the symptoms which existed previously in a mitigated form.

If the scrofulous deposit be of limited extent, and suppuration follow the gradual disintegration of the mass, and if the patient be wholly free from tubercular taint in any other organ, I see no reason why a cure may not take place.

It has occurred to some to imagine, that abscesses depending on scrofulous deposition in the prostate may give rise to those anal fistulæ which are so frequently the concomitants of phthisis pulmonalis. To this opinion I cannot subscribe; for, whereas, scrofulous abscess in the prostate is exceedingly rare, anal fistulæ are not of very uncommon occurrence in connexion with pulmonary tubercles. The opinion has been advocated on the assumption that tubercular prostate has been found by Ricord of very common occurrence; this fact may, according to him, be readily ascertained by examination per anum, when the gland is found, under these circumstances, unequally enlarged.*

* Medical Times, August 14, 1847.

When abscesses form in the prostate, as the result of tubercular deposit, or from other causes, they make their way in different directions, according to the yielding of the coverings investing the gland. Thus, as in the case narrated—one abscess pointed in the left side and lower part of the perinæum, another which communicated with an abscess between the coats of the bladder made its way beneath the peritonæum, and burst into the abdominal cavity. A glance at the anatomy of the parts will at once explain the circumstance, and the fact should not be lost sight of, as it clearly indicates the propriety of an early opening, when the abscess begins to point. It will, however, often happen that, on the introduction of the catheter, the abscess will give way, and the matter will be discharged through the instrument. Mr. Mayo mentions an instance of abscess occurring in an infant, two years of age, in which he repeatedly drew off a large quantity of pus by the catheter; the infant died, and a large abscess was found opening by a considerable orifice into the urethra; it is not, however, stated whether this was a scrofulous abscess, or the result of common inflammation.

A case of tuberculous abscess in the prostate is mentioned by Ricord, occurring in a man fifty-eight years of age. It was found in connexion with extensive deposit of tubercles of the urethra; and had been preceded by a similar disease of the testicle, which had been removed some years previous to death.*

Mr. Guthrie also incidentally alludes to a case of

* See Medical Times, April 20, 1850.

scrofulous disease of the prostate, in which the gland was found, on examination after death, to be larger than the closed hand, and to have partaken of a cheesy-like suppurative process; the whole pelvis was nearly filled up by a mass of disease of a similar character.

M. Vidal, of Cassis, has reported a case of tubercle in the prostate gland, in a man fifty years of age, in whom a similar disease existed in the kidneys and lungs. The lobes of the prostate were distended with tuberculous masses. The patient had no difficulty in micturition, but there was slight cystitis.*

* See Medical Times, Jan. 25, 1851.

CHAPTER VI.

CANCER OF THE PROSTATE GLAND.

This disease of the gland in any form is comparatively rare: it is to be remembered, however, that this opinion is arrived at from the very small number of recorded instances of the disease: but the testimony of all surgeons of experience is undoubtedly in favor of the opinion here expressed, and my own experience leads me to a similar conclusion. I have, however, witnessed three decided instances of schirrhous prostate, in two the disease was of the soft cerebriform variety, in the other it was of a genuine hard schirrhous character. Dr. Carswell alludes to cancer as a not uncommon cause of hæmorrhage into the bladder, but this latter complication is so common in all kinds of disease of the gland that I cannot attach any importance to the observation. Cruveilhier never met with a case of cancerous prostate. Dr. Walshe in his able work on cancer has given the result of the tables of M. Tanchon to prove the rarity of the disease, for the French surgeon found that out of 8289 cases of death from cancer only five were attributable to the disease of the prostate: nevertheless

the disease may have existed to a greater or less extent in the gland, but possibly had not proceeded to the extent of destructive disorganization. Rokitansky regards this affection as exceedingly rare and only makes allusion to the encephaloid variety. Mr. Travers* and Sir Benjamin Brodie allude to presumed cases of cancer, and the former examined a case after death, and described the gland as occupied by a large tumor having all the characters of schirrhous. Sir Benjamin Brodie does not appear to have had an opportunity of examining a case after death, although the detail of symptoms mentioned by him leave no doubt that he had formed a correct diagnosis in the cases he describes. In the museum of the late Mr. Langstaff there was a preparation of schirrhous prostate, it was accompanied by stricture of the urethra and disease of the bladder. The prostate gland was converted into an immense mass with various sized fungoid tumors, and some of a schirrhous density. The tumor had extended into the perinæum, and occasioned an obstruction in the prostatic and membranous portion of the urethra; and small tumors of the same character formed beneath the mucous coat of the bladder near its neck: this caused considerable impediment in expelling the urine, and the difficulty of introducing a catheter. The vesiculæ seminales and vasa deferentia were impacted in the morbid mass? (Catalogue of Preparations of the Museum of George Langstaff, No. 1394.)

Mr. Langstaff has published a case of medullary sarcoma of the prostate, which projected into the

* Medico-Chirurgical Transactions, Volume XVII.

bladder, having taken its origin in the third lobe of the gland: the tumor was of the size of an orange, and its surface was covered with recently-effused arterial blood. It had occasioned absorption of as much of the mucous coat of the bladder as allowed of its growing readily into the cavity of that organ; the remainder of which was highly inflamed. In this case, owing to the difficulty of transmitting the urine into the bladder, the ureter of the left kidney had ruptured; and both ureters were plugged for a short distance from the bladder with a schirrhous mass. The liver was also studded on its surface with several medullary tubera. Mr. Howship also has described the case in the 19th volume of the Medico-Chirurgical Transactions of a man who died with extensive schirrhous deposit in various parts of the abdomen and pelvis, in whom symptoms of excessive vesical irritation had existed; the prostate was found scarcely enlarged, but it had undergone a complete conversion into a substance perfectly resembling cartilage in its colour, consistence, and apparent texture.

The same surgeon has also mentioned an instance of the melanoid variety of cancer in the prostate. "The patient had been afflicted with disease of the urinary organs and prostate gland for several years. The symptoms increased, and he had great trouble in voiding his water which was loaded with mucus and had a darkish appearance. Retention of urine came on, and it was necessary to introduce a catheter, and this was effected with great difficulty, the urethra being so extremely irritable from disease. The pros-

tate gland is affected with melanosis and fungus hœmatodes, and the whole of the urethra is in a melanoid state."*

Symptoms of Schirrhous Prostate.—The symptoms indicative of this disease are of the most distressing character, for, superadded to those which are present in the ordinary chronic enlargement of the prostate, we have those to a certain extent characteristic of genuine cancer. In estimating the signs of diseases of the urinary organs, there is one circumstance which ought not to escape our attention; I allude to the peculiar expression of countenance in persons labouring under irritation of the bladder of long duration. There is an anxiety of expression which, although readily recognised by the experienced, cannot be described in words; the face is drawn down, there is a sharpness about the features, and a dull sandy hue of the skin, which at once attests the fact of serious organic disease of the urinary system. Now this caste of countenance is that which characterises cancer, and there is a difficulty consequently in estimating its value as a symptom of cancerous disease of the prostate. In the first case detailed by Sir Benjamin Brodie there was, besides the ordinary signs of enlarged prostate, an indurated gland in the groin, which taken in conjunction with other symptoms left no doubt whatever in his mind of the true nature of the affection.

The symptoms of cancerous prostate vary somewhat according to age, and, as the disease occasionally occurs in very young children, there is much

* Medico-Chirurgical Transactions, No. 1388.

difficulty in recognising it before it has made such progress as to leave no doubt on the subject.

There is generally frequent desire and much difficulty in voiding urine, and this desire to micturate, as is the case frequently in simple enlargement of the gland, is more urgent at night. The discharge of urine is also succeeded by great pain; occasionally a small quantity of arterial blood escapes with the last drops of urine; the urine is at first clear, but is afterwards turbid from its admixture with decomposed mucus or pus and the phosphates. The bladder is unquestionably more irritable than under ordinary hypertrophy, and is equal to the complete expulsion of its contents, at least such is occasionally the case, although I am free to admit that in other cases complete retention of urine is present; this I have myself witnessed in a case I shall presently detail. Pains of a deep dull or lancinating character are experienced along the penis especially towards the glans, in the groin, down the thighs, and in the back, the rectum is uneasy, and the patient fancies that he cannot completely empty it of its contents; these signs, with the peculiar worn aspect of the patient, leads one to suspect that something more than simple hypertrophy exists. When a catheter is introduced there is little or no water in the bladder, and the passage of the instrument through the prostatic part of the urethra conveys the idea of as if it were grating over calculous matter, and hence frequently arises the deceptive notion of stone. The sensation just referred to exists also occasionally in simple enlargement of the gland, but is much more palpable in schirrhous, it is a sensation

very apt to mislead, and it really requires great experience to avoid being misled by the fallacious impression: perhaps the following rule may serve to distinguish the sensation thus produced from that of calculus: in the former the peculiar grating is only perceived whilst the instrument is traversing the prostatic part of the urethra and cannot be made to re-appear after the point of the instrument has once entered the bladder, whilst a stone, besides communicating a harder impression, occasionally attended with distinct sound, can generally be felt repeatedly by moving the instrument about. It may also be confounded with that which arises from the striking of the sound against the thickened muscular columns of the bladder, but this latter is only perceptible after the instrument is fairly in the bladder. On this subject it should not be forgotten that, calculous matter from phosphatic deposit may co-exist with schirrhous prostate, a combination not uncommon in persons advanced in life.

A schirrhous prostate conveys to the finger, passed *per anum*, a sense of gristly hardness, and is usually irregularly nodulated, one lobe being especially affected. As the disease progresses, the symptoms become exacerbated, the pulse increases in frequency, the bladder becomes more intolerant of its contents, or retention of urine arises, blood frequently escapes with the urine, pain and restlessness become more constant, and even opium ceases to exert its benignant influence; the disease makes its appearance either in the inguinal glands or in other parts of the body, and the patient is gradually worn out by the constant pain and

irritation, or, ulceration having occurred, a more rapid termination of the case may be anticipated.

I saw a case of this description in consultation with Mr. Dalby, of Southwark, about three years ago. The patient was a gentleman somewhat advanced in years, and who for a long time had been a martyr to the gout: he was labouring under symptoms of vesical irritation supposed to depend on calculus; the sound had been passed, and the impression that stone existed was confirmed by the examination: I passed a sound and felt convinced in my own mind that there was a stone in the prostatic part of the urethra, in confirmation of which the prostate, being examined *per anum*, was so hard and irregular that the idea at once suggested itself that the calculus was imbedded in the gland. The depressed condition of the patient forbad any interference by operation, and he sank gradually exhausted a few weeks after the examination, having occasionally passed fragments of phosphatic deposit mixed with mucus in his urine. On examination after death, we found that the hard nodulated feel of the prostate arose from the deposit of a hard schirrhous tubercle in the right lobe; there was the *debris* of phosphatic incrustation in the prostatic part of the urethra, and there was a schirrhous tubercle in the liver. It may easily be conceived that in some cases of schirrhous prostate the bladder may be unequal to the expulsion of its contents, and that retention rather than incontinence of urine may be present, a circumstance depending on the mode of growth of the tumor rather than on the especial nature of the disease. When cancer

attacks the prostate of the child it is usually of the cerebriform variety, and its progress is exceedingly insidious; thus a child shall commence to suffer at first from slight general indisposition, as evinced by restlessness, emaciation, hectic flushes, quick pulse, dry skin, and furred tongue; his bladder becomes slightly irritable, the desire to pass water being more frequent than usual, and this is attended with pain, especially after the last drops of urine have escaped; retention of urine now occurs, and if the water is drawn off it is at first clear, but as the disease advances it becomes mixed with blood, and after a time little or no urine escapes by the catheter. The hypogastric tumor becomes fully developed, and this in the early stage of the disease depends on the retention and accumulation of urine, but in other cases, as in one I shall presently refer to, it arises from the increase in size of the prostate itself, and the spreading of the disease into the bladder, so that the interior of this viscus becomes occupied by the cancerous mass, and the secretion of urine is arrested.

I have witnessed two cases of cancerous prostate occurring in children at the early age of three years. Some years ago a child was brought into the London Hospital with symptoms of retention of urine, the child had been ill for some time, and had evidently laboured under much difficulty in passing his water: after a time complete retention occurred, and the child was brought into the hospital in consequence: the hypogastric tumor was fully developed: a catheter was passed but no urine escaped; it was deemed advisable to puncture the bladder above the pubis,

but still no urine passed, and the child speedily succumbed. On examination after death the bladder was found distended with a large cancerous mass which had originated in the prostate gland and made its way into the bladder.

Through the kindness of my friend Mr. Solly, I had the opportunity of witnessing a case of the same description, but in the early stage of its progress. A child three years of age had been in good health until within about a month or six weeks, when his parents observed that he had considerable difficulty in passing his water, the stream of which had diminished in size and force, there was also much pain after micturition, his health began to suffer, and the child was feverish and unwell. In consequence of complete retention of urine, a catheter was passed into the bladder with very considerable difficulty. There was a large hypogastric tumor, and a large quantity of water was drawn off. As the catheter entered the bladder there was a distinct grating sensation, conveying an obscure idea of calculus. It appeared from the size of the hypogastric tumor, which extended to the umbilicus, that the bladder was much higher than natural, and when examined by the finger passed *per anum*, its neck seemed much elongated; the prostate, however, did not appear to be enlarged. As the retention of urine recurred the catheter was introduced repeatedly, and a large quantity of urine was drawn off. At each introduction of the catheter the same grating sensation was evinced, and the idea of the existence of calculus became more firmly fixed on the mind. The child, however, died within a week of

the first attack of retention, and on examination no stone was found; but the prostate, enlarged to the size of a small chestnut, was converted into a mass of encephaloid cancer not yet softened but in its early stage of development: the mucous membrane in the vicinity of the neck of the bladder was dark in colour, the remainder exhibiting particles of slight inflammation. There was no opportunity of examining any other part of the body. At the neck of the bladder small buddings of the diseased prostate were seen projecting into it.

Mr. Stafford has reported in the fourth volume of the second series of the Medico-Chirurgical Transactions a similar case; it occurred in a boy of five years of age. He had complained first of difficulty in passing his urine, and afterwards became the subject of complete retention. There was a large hypogastric tumor extending two inches above the umbilicus. A small elastic catheter was passed, and 25 ounces of healthy urine were drawn off. The instrument was subsequently retained in the bladder, as the retention continued. He gradually sank eight days after the first introduction of the catheter. On examination the bladder was found contracted to about the size of a turkey's egg and contained urine mixed with pus; its mucous membrane was somewhat thickened.

The prostate gland was equal in size to a large walnut; its form was somewhat globular. There arose from the prostate into the bladder, immediately behind the orifice into the urethra, a rounded nipple-like projection, nearly equal in size to a small hazel-nut, and exactly resembling, both in appearance and

situation, the projection of the gland usually ascribed to an enlargement of its third lobe.

On incision the cut surface exhibited none of the natural texture of the gland; it was decidedly encephaloid in colour, consistence, and texture, and one part of the cut surface exhibited so dark a colour, as to present the idea of there being melanotic as well as encephaloid matter.

Mr. Cock related at the Hunterian Society the particulars of a case of schirrhous prostate. It was that of a gentleman 67 years of age, who had laboured under symptoms of severe vesical irritation for a considerable time; there was no retention of urine, but the discharge of water was attended with great pain and irritation, and the urine, although generally normal, was occasionally tinged with blood. The pain attending the disease was throughout of the most agonizing character, requiring for its relief enormous doses of opium in every variety of form. On examination *per anum*, the left lobe of the prostate presented a tumor of an irregular knotty hardness, and the character of the disease was at once suspected. The case was seen by Sir Benjamin Brodie, who coincided in the opinion expressed by Mr. Cock, as to the cancerous character of the disease; the nature of the case was in its progress further elucidated by the appearance of an indurated gland in the groin. As the disease advanced the whole pelvis became blocked up with a hardened mass of schirrhus, and the prostate increasing in size towards the rectum prevented the due expulsion of the fæces, without the constant employment of warm water enemata care-

fully thrown up through an elastic tube; the patient died gradually exhausted. There was never the slightest difficulty in passing the catheter; the patient himself having been directed to pass it occasionally. The left limb was œdematous from pressure on the iliac vein. The examination of the body after death at once verified the opinion entertained of the character of the disease; extensive schirrhous deposit was discovered in the pelvis which had pushed the bladder upwards towards the umbilicus; the bladder was capacious and its coats were thickened. The prostate was large, especially the left lobe, and from that part which corresponds with the third lobe a large rounded tumor projected into the bladder continuous with the left lobe, and presenting an offset of an additional small round eminence of the size of a nut. On section of all these tumors there was abundant evidence of the existence of schirrhous matter in their substance. There was evidence of the deposit of a similar nature in other parts, but the disease seemed nearly localized in the prostate and parts around. The left kidney had suffered especially from the pressure of the schirrhous mass on the ureter.

The diagnosis of schirrhous prostate is at the early periods of the disease somewhat difficult, as the symptoms are scarcely characteristic: thus on the introduction of the finger *per anum*, the gland in simple hypertrophy is often almost of gristly hardness, and hardness is one of the most important signs of schirrhus; we must look therefore rather to a combination of symptoms than to any single sign for a means of making an accurate diagnosis. A cancerous

cachectic aspect attended with slow progressive emaciation, great vesical and urethral irritation, as evinced by frequent, nay, constant and urgent desire to pass water, an agonizing sense of pain after micturition, bloody urine, or urine mixed with shreds of a substance resembling the white substance of cerebriform cancer, especially if loaded with cancer cells, these attended with lancinating pains down the thighs into the groins and up the loins, afford tolerably conclusive evidence of cancer of the prostate; and little or no doubt can exist on the subject, if at the same time the glands of the groin are enlarged and indurated; and if, on examination *per anum*, the pelvis is found to be blocked up to a greater or less extent by some adventitious substance, the nature of which cannot readily be mistaken, all doubt about the true character of the disease is removed.

Of the treatment, unfortunately, little of a satisfactory nature can be said. If retention of urine exists the elastic catheter must be passed night and morning with the greatest care and gentleness, or retained in the bladder, the rectum should be washed out with warm water injections if there is any difficulty in ridding it of its contents. Opiate enemata, or suppositories may be given with much advantage, in fact opium and its varied combinations may be administered to such an extent as to procure at any rate temporary, if not permanent relief from such horribly distressing symptoms as always attend this most intractable disease.

Cystic Disease.—Whether the malignant form of cystic disease attacks the prostate I am not aware;

but this gland, like the testicle, mammæ, and kidney, is sometimes the seat of simple cystic formation, in which a number of cysts are developed in various parts of the gland. The disease is rarely met with, and the only specimen with which I am acquainted, is in the Hunterian Collection of the Royal College of Surgeons. In this case the gland was hypertrophied, and on section was found to contain a number of small cysts, about the size of a swan shot, filled with fluid.

Of the nature of these cysts in the prostate I have nothing to add beyond what is generally known on the subject of such formations in other glands, and especially the breast, in which they have been fully investigated by Mr. Birkett, and who explains them as resulting from a simple dilatation and subsequent closure of the natural follicles of a gland. I know of no particular symptoms to which they give rise, and I can say nothing as to the treatment requisite to effect their removal.

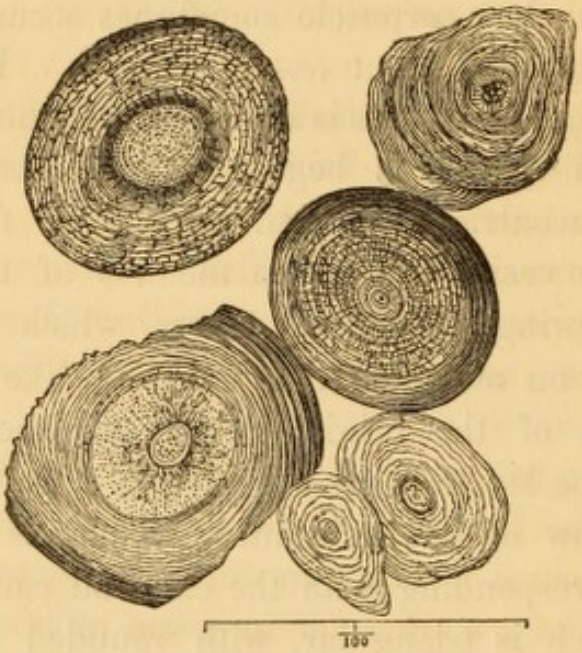
CHAPTER VII.

PROSTATIC CONCRETIONS.

Under this head I include, first, those minute calculous concretions contained in the follicles of the gland, and only to be detected by the aid of the microscope; and secondly, the larger sized calculi, which, being formed in the prostate, escape afterwards into the bladder or prostatic part of the urethra, and are expelled with the urine, or are retained in the bladder. The smaller concretions are frequently met with; indeed, if a thin section of the gland is examined under the microscope, however healthy it may appear, in all probability many of these bodies will be discovered; and so common are they, that they may be almost regarded as belonging to the natural constituents of the gland. Dr. C. H. Jones has given an excellent description of these concretions in the transactions of the Pathological Society, and in the Medical Gazette of August 20th, 1847; and they were the subject of investigation by my friend, Mr. John Quekett at the same time that Dr. Jones was making his enquiries into their nature. From both these enquirers we learn that the concretions exist in

great numbers in the follicles of the gland, and that they vary in colour; sometimes they are of a deep red and yellow colour, occasionally pale or even altogether colourless; they are remarkably small, and deeply imbedded in the tissue of the gland. Dr. Jones thus describes their structure and mode of formation: "They arise in a large oval vesicle, of a single wall of homogeneous membrane. This is occupied by a colourless finely-mottled substance, in the centre of which, a nuclear corpuscle sometimes occurs. Their mean diameter is about $\frac{1}{1000}$ of an inch. In those of larger size the envelope is still seen, but the contained amorphous matter is beginning to be arranged in layers concentric to the envelope. In the further stage, the vesicles measure the $\frac{1}{200}$ of an inch or more, shewing concentric layers, which are more developed on one side than another, like so many repetitions of the original envelope, the intervals between the layers being occupied by a finely-mottled deep yellow or red substance. There is a central cavity corresponding with the external contour in its form, which is triangular, with rounded angles, or quadrilateral. From this normal appearance, these bodies present numerous variations in form and internal arrangement, and appear to occupy an intermediate position between organic growths and inorganic concretions; to the former, by their vesicular origin and by their growth, which chiefly appears to take place by the dilatation of the vesicle, and successive depositions in its interior; to the latter, by their shape, their tendency to become infiltrated with earthy matter, and to pass into the condition of

a dead amorphous mass, of a deep yellow red, even almost black. The chemical composition varies probably with their different stages of development, at first consisting of little else but animal matter, then acquiring, especially when in a state of degeneration, calcareous salts, stated by Prout to be phosphate with a little carbonate of lime. The colouring matter is unaffected by æther liquor potassæ and muriatic acid."



According to the investigations of Mr. Quekett, these concretions are found in the follicles and tubes of the prostate. He describes them as commencing by a deposit of earthy matter in the secreting cells of the gland, they increase in size either by aggregation or by deposition in the form of concentric layers; in the former case they mould themselves to the follicles, in the latter they present, on section, the appearance of an ordinary lithic acid calculus. Where many cells are together, the parietes of the cells in contact

are destroyed; so that by adding dilute hydrochloric acid, and thus dissolving the earthy matter, a multilocular cavity remains. In consequence of the manner in which they mould themselves to the follicles, they frequently present the appearance extremely like mulberry calculi.*

The opinion of Prout that the deposition of earthy salts is the result of a deranged action in a mucous membrane appears thus fully borne out. I have examined these concretions, with Mr. Quekett, in a prostate removed from a young man who had died of phthisis: they were exceedingly numerous, especially in the middle lobe. The middle lobe was much larger than either lateral lobe. I have employed them as a test in determining the fact that the prostate extends over the upper surface of the urethra, as well as in determining the true nature of the hypertrophied third lobe.

From the frequency of occurrence of these concretions, it is perhaps scarcely correct to regard them as the consequence of disease in the gland, they are rather indications of a trifling derangement in the secreting function of the organ, and as the condition cannot be recognised during life, I have nothing to offer as to treatment. It is most probable that they undergo an early solution, and yield up a portion of their granular or amorphous contents to form a part of the secretion of the gland. This is the opinion of Dr. Jones. But if they are not got rid of in this manner, it is natural to conceive that they become the nuclei

* See Guy on the Cause and Treatment of Stricture of the Urethra, and Diseases of the Prostate Gland. 1845.

of larger concretions, and thus give rise to prostatic calculi.

Prostatic calculi sometimes form in the gland in large numbers. I have seen as many as two hundred discharged at intervals, within a short time, and probably many more had been expelled, but had escaped notice. They either pass into the bladder and are discharged with the urine, or they escape from the prostatic part of the urethra at each micturition. They frequently exist in the gland, without exciting any irritation until they enter the bladder, when they give rise to the ordinary symptoms of stone. They vary in size from that of a very small shot to that of a grain of barley. They are usually of a rounded form, but by attrition one against the other, they become flattened at the side, but the flattening occurs usually after their residence in the bladder for a short time. They present for the most part a smooth homogeneous appearance externally, and when collected in large numbers they look like a collection of turnip seeds. An old sportsman, whom I attended for retention of urine from hypertrophied prostate, and who passed a large quantity of these calculi, compared them to snipe-shot. They sometimes put on a pearly semi-transparent appearance, and in this state Dr. Woollaston compared them to grains of pearl barley. They are generally smooth, and attain a high polish by rubbing against one another, and resemble porcelain. They continue to increase in size, by deposition on their surfrce, if not discharged from the follicles of the gland, and inducing absorption of the glandular tissue by pressure they are

brought into contact. Their increase is, of course, due to a deposit from the natural secretion of the gland, which gives them a brownish aspect. It happens occasionally, that by this increase in size they cannot escape by the orifices of the follicles, and if under these circumstances the gland be examined after death, the openings of the prostatic ducts are found blocked up by small calculi arrested *in transitu*.

The continued increase in size occasions so great an absorption of glandular structure, that one or both lateral lobes of the prostate is converted into a single bag, containing numerous calculi of different sizes. In this condition, if the gland be examined *per anum*, the sensation conveyed to the finger of the surgeon is like that which a bag of marbles would give; in a case which Mr. Crosse examined, the feeling was that as if coagulated blood were effused into the cellular tissue of the gland. The impression, which is not unlike the crackling in emphysema, was found, after death, to have arisen from a collection of numerous small calculi, a tea-spoonful at least, in a large cyst, at the posterior and lateral part of the prostate.

On making a section of prostatic calculi, they present a radiating and lamellated aspect, and the outer crust, which is now and then covered with a whitish coating (probably a slight deposit of triple phosphate), is apparently more dense than the centre. As to their chemical nature, there are usually two varieties of salts in their composition, namely, the neutral phosphate or diphosphate of lime, and the basic phosphate; the former are partly fusible before

the blow-pipe, the latter are completely infusible. According to Vogel, they are formed by a precipitate of phosphate of lime. Lassaigne says they contain, in 100 parts:

Basic phosphate of lime . .	84·5
Carbonate of lime . . .	0·5
Animal matter, mucus, &c. . .	15·0

Some calculi in my own possession have been examined by my friend Dr. Letheby, and have been found entirely composed of lithate of ammonia.

It might possibly be supposed that there was some fallacy in this, and that the calculi were renal instead of prostatic, but I am convinced that they came from the prostate gland, both from their size and external appearance, and from the fact that the patient who passed them was labouring under retention of urine from hypertrophied prostate, and this condition was attended with great irritation about the neck of the bladder.

So long as these calculi remain imbedded in the gland they give rise to no characteristic symptoms, and no doubt they very frequently remain undetected in the lobes of the prostate, exciting no inconvenience whatever; but, as the prostate itself is usually more or less hypertrophied when calculi exist in its interior, the symptoms merge into those which characterize the enlargement of the prostate. They sometimes, however, give rise to irritation, and produce inflammation of the tissue of the prostate, which terminates in the formation of abscess, and, on the bursting of the abscess, which takes place either into the rectum or through the perinæum, the calculi make their escape.

When they pass into the bladder, they are usually quickly expelled with the urine under some slight irritability of this viscus; but if, from any mechanical cause, as a considerable projection of the middle lobe of the gland, they cannot make their escape, they give rise to the ordinary symptoms of stone in the bladder. I lately witnessed a case of this description in a gentleman between fifty and sixty years of age; the symptoms of calculus were so well marked, that the presence of an ordinary calculus was anticipated; but on sounding, there was much difficulty in feeling anything like a stone; indeed, on repeated examinations, it often happened that no stone could be felt; however, the symptoms were so urgent that, under the impression that at least something more than prostatic calculi was present, the operation of lithotomy was had recourse to, as, from the excessive irritability of the bladder, the milder method of lithotrity could not be adopted. To the astonishment of all present, when the opening was made into the bladder, only four or five small prostatic calculi were discoverable.

During the passage of prostatic calculi, some trifling pain is experienced along the course of the urethra, and the flow of urine will be occasionally arrested by the sticking of the stone at some part of the canal; thus, if larger than usual, they become impacted either in the membranous part of the urethra, or what is more common, in that part of the spongy portion at the base of the glans, or at the meatus urinarius itself; but in this they in no respect differ from ordinary calculi of small size.

Treatment of Prostatic Calculi.—Should no irritation arise, or any inconvenience result from their residence in the prostate, it is better to leave them entirely alone, trusting to the natural efforts for their escape into the prostatic sinus of the urethra, whence they will become speedily expelled on the first attempt to pass water. If they are of very small size, most probably they will be gradually got rid of in this manner. But it happens frequently that, from some mechanical cause, possibly from spasm of the muscles surrounding the membranous part of the urethra, instead of passing forwards, they take a retrograde course into the bladder.

It is by no means clearly ascertained whether, on reaching the bladder, they increase in size by the deposition of other calculous matter from the urine on their surface: I do not think that this is very common, but I am by no means disposed to deny it, as it is well known that a phosphatic calculus may become incrusted with the lithates; nay, I would even suggest the possibility of a prostatic calculus becoming occasionally the nucleus of a larger urinary calculus; but my experience does not warrant me in speaking with any confidence on this subject. I have already stated that on reaching the bladder they immediately begin to excite irritation of this viscus, and give rise to the ordinary symptoms of stone in the bladder. It becomes requisite now to effect their removal by some mechanical means, as solvents are not calculated to assist us, and especially as from the improvement in the construction of surgical instruments this can be accomplished with the utmost facility.

To Sir Astley Cooper is due the credit of the idea of extracting small calculi from the bladder without incision; and the first case on which he operated in this manner is detailed in the 11th volume of the Medico-Chirurgical Transactions. The patient was a clergyman, of the name of Bullen, who had been the subject of symptoms of stone in the bladder for some time. Sir Astley was on the point of performing the ordinary operation, when the notion struck him that as the stone was small, it might be got rid of by the urethra. A full-sized bougie was directed to be passed daily, with the view of dilating the urethra, but this gave rise to inflammation of the prostate and neck of the bladder, which produced retention of urine. For the relief of this, it became necessary to pass a catheter, into the opening of which, on several occasions, small white stones had passed; the circumstance was mentioned to Sir Astley Cooper, and the idea suggested itself to him, that an instrument could be easily invented by which the calculi could be seized and extracted; on the first attempt he was fortunate enough to remove in this manner eight calculi; and with various successful applications of the forceps, he removed, in all, eighty-four calculi; and thus the disease was entirely cured.

It becomes advisable, therefore, to attempt the removal of all prostatic calculi, when they have passed into the bladder, either by Weiss's forceps, as used by Sir Astley Cooper, or by the ordinary scoop lithotrite; and for this purpose, either the urine may be first drawn off, as in the case just related, or, the urine being allowed to remain, the calculi may be

successively seized, and withdrawn through the urethra. Whether the bladder is empty of its urine or not does not seem to be of much consequence, as no operation beyond the mere seizing of the stones is requisite. For my own part, I prefer that the bladder should be partially distended. There is one point of importance in the operation necessary to bear in mind, namely, that, inasmuch as there is always some hypertrophy of the prostate, it is necessary to direct forcibly the instrument to the *bas-fond* of the bladder. With due attention to such precautions as are commonly requisite in the simple operation of lithotrity, the extraction of prostatic calculi, however numerous, may be readily accomplished. Should there be any difficulty in reaching the calculi, owing to the depth of the *bas-fond* behind the enlarged prostate, the instrument may be reversed, and the patient directed to fix himself on his hands and knees, and thus the seizing of the calculi would be facilitated.

CHAPTER VIII.

NEURALGIA OF THE PROSTATE.

The prostate gland is involved with the neck of the bladder and adjacent portion of the urethra in a form of neuralgia, which gives rise to a train of symptoms so much resembling those indicative of positive organic disease, that it is often exceedingly difficult to form an accurate diagnosis between them. The affection, to which I now allude, seldom attacks a patient prior to the age of 50, and generally singles out those of a melancholic or bilious temperament. I have lately witnessed an instance of this affection, and a brief detail of the symptoms in this case will afford an idea of its general characters. A gentleman, 50 years of age, was brought by Mr. Rutherford, of Ratcliffe, to consult me in consequence of great irritation about the urinary and genital organs. He had labored under the affection for more than two years, and I had been consulted before on his case; his symptoms did not appear to have undergone any material change between the time I first saw him, which was more than a year ago, and

now. He was a man of rather spare habit, bearing on his countenance marks of great anxiety, excessively depressed in spirits, except when actively engaged in business, when his symptoms generally subsided, and his mind became more cheerful. He complained of great pain of a dull character over the hypogastric region, the pain extended along the penis, into the perinæum around the anus, in the loins, and over the sacrum. He had a frequent desire to pass his water, and this was accomplished without difficulty, but he always had a sensation as if he had not completely emptied his bladder. He complained also of a sense of hardness about the anus, but in this part I could distinguish nothing but what seemed to me a rigid state of the sphincter ani. He was in a dejected state of mind, but not without hope that his disease might be cured, notwithstanding the remedies hitherto employed had afforded him little or no relief. His symptoms were occasionally so severe that by his complaints he rendered his family around him quite miserable: his tongue was tolerably healthy in appearance, his appetite good, his skin was dry but not hot. I introduced an ordinary full-sized catheter without more difficulty than could fairly be attributed to spasm about the neck of the bladder, and drew off about an ounce of water: the urine was of a natural appearance, and I could detect nothing abnormal in it, perhaps it was more acid than it should be, but of this it is difficult to speak with precision, as no analysis of it was made. His bowels had a tendency to constipation, but they had been kept open by medicines and injections. From the

statement he made as to his having a short time previously passed his water, and from the quantity I was able to draw off by the catheter, I was under the impression that he could scarcely empty his bladder.

He had by my advice already used the various remedies which suggest themselves in the treatment, first of urinary diseases, and secondly of nervous affections: thus, a course of alkalies with the Pareira bravæ uva ursi, &c., was administered, and afterwards for these was substituted the carbonate of iron in combination with the alkaline treatment; he was advised to take a little blue pill and extract of conium, and failing to derive benefit from this, he took small doses of the acetous extract of colchicum; an elastic catheter was passed night and morning, and the urine remaining in the bladder after the ordinary evacuation was withdrawn: but this amounted to very little. The patient at my request had consulted Sir Benjamin Brodie, who took the same view of the case that we did, and prescribed similar means with the same result, that is with a certain amount of relief which was but temporary. On a recent occasion I found him much in the same condition, and, as the alkaline plan had been fairly tested and failed, I ordered him decoction of sarsaparilla with five minims of dilute nitric acid thrice daily, a belladonna plaster to his sacrum, and directed him to wash out the rectum with warm water and soap-suds every morning, and to take a hot bath twice a week: he was also advised to go into the country for a month: the effect of this treatment I am not aware of. I had made a careful

examination of the urethra, prostate gland, and neck of the bladder, but could detect nothing abnormal about them, with the exception of considerable spasm of the muscles about the membranous part of the urethra and neck of the bladder, as well as of the anus, I therefore regarded the case as one belonging to that class which are usually set down as nervous, and which no doubt in many instances are dependent on some depraved condition of the biliary and urinary secretions, which it is most difficult to comprehend, and therefore equally difficult to rectify.

A somewhat similar case has recently presented itself to my notice, in a gentleman of about the same age; but, in combination with his urethral and vesical symptoms, which are similar to those just related, he labors under the impression that he is the subject of the venereal disease. His symptoms are not so urgent as those of the preceding case, and are in a great measure superseded by what he believes to depend on the venereal affection.

Now I cannot believe that in either of these cases the symptoms are imaginary, but I am satisfied that they are not dependent on any organic disease of the parts to which they are referred: I therefore class them under the head of neuralgic affections of the prostate and neck of the bladder, and parts connected therewith. In neither case is there evidence of gouty diathesis: I make this remark because there is little doubt that in many of these anomalous cases there is a tendency to gout, and the employment of means calculated to rectify this condition, as colchicum combined with alkalines, and gentle purgatives, are

likely to be of service. Cases of neuralgia have been described by Civiale, who seems to have relieved them by the occasional and repeated introduction of the bougie, and injections of warm water into the bladder, with the use of alkalies, &c., &c.

Independent however of the condition just alluded to, there is no doubt that the prostate and parts adjacent are now and then subject to attacks of decided neuralgia, of the genuine intermittent form.

I have not had many opportunities of witnessing the latter disease, but it appears to me that the following are the plain indications in regard to diagnosis and treatment of these neuralgic affections. With respect to the first point, it should be well ascertained whether the symptoms depend on disease of other organs connected by continuous sympathy with the prostate and neck of the bladder: thus it is well known that diseases of the kidneys, especially stone in the kidney, may give rise to excessive irritation of the neck of the bladder and prostate, and may thus lead to a false impression as to the true seat and nature of the disease: this every surgeon of experience must have witnessed: the passage of a renal calculus along the ureter, attended, as it frequently is with remissions and exacerbations of pain, may be mistaken for genuine intermittent neuralgia of the neck of the bladder, an error of very serious import. An exceedingly acid condition of the urine also is a frequent cause of irritable bladder; I have known instances of extreme irritability of the neck of the bladder accompanied with pain in the

prostate gland of a spasmodic character, induced by drinking old Hock and acid Madeira wine: a similar condition frequently depends on the presence of a large quantity of oxalate of lime in the urine. The continuous sympathy also between the prostate gland and the testicles is frequently evinced by pains in the former, occasionally resulting from the irritation of the testicles under long-continued excitement of the generative system, short of actual gratification. These and other sympathies from disorders of adjacent parts should never be lost sight of in the endeavour to establish a diagnosis between genuine neuralgia and those symptoms which can clearly be said to depend on true and direct nervous sympathy, consequent on disease of other organs. In the absence of evidence of disease of parts connected directly or indirectly with the prostate, our attention should then be directed to the state of the chylopoietic and assistant chylopoietic viscera: and the state of the liver especially, and the whole intestinal canal should be investigated with as much accuracy as our imperfect means can supply; and it will frequently be found that the symptoms are dependent on some derangement in the function of the organs of assimilation. The state of the colon, especially the lower part of this division of the large intestine and the rectum, should be carefully examined, as it will not unfrequently be found that the irritation of the prostate and neck of the bladder is wholly dependent on accumulation of fæcal matter in the lower bowels. If the pains assume an intermittent type, and all signs of positive disease in other organs are absent,

the existence of intermittent neuralgia may be fairly assumed, and we must resort to those remedies which seem to exert some specific influence on the nervous system through the medium of the gastro-pulmonary mucous membranes, and which all belong to the class of tonics, as the preparations of bark, iron, arsenic, &c.

CHAPTER IX.

DILATABILITY OF THE PROSTATE.

It is a fact of the highest importance, in a surgical point of view, that the prostate is capable of yielding to a great extent either before or after section. Thus the fore-finger may, without difficulty, be made to enter the bladder through the prostatic part of the urethra and neck of the bladder. After a slight incision the prostate is capable of still further dilatation, and, in the operation of lithotomy, where only a slight incision is made through the urethra into the gland, just sufficient to permit the introduction of the forceps, this instrument, with a large calculus in its jaws, can be made to pass through the opening, simply dilating the incision already made: the tissue of the prostate yields, or a slight laceration is produced, which, if it extends not beyond the capsule of the gland, is of no consequence whatever. This circumstance, which I cannot help considering as of the highest importance, coupled with another of no less import in a practical point of view, has induced many surgeons, from Le Cat and Scarpa, downwards to the present time, to lay down a rule in the

performance of the operation of lithotomy, by which the danger of the operation is most materially diminished. Sir Benjamin Brodie especially dwells on the importance of confining the lateral incision into the neck of the bladder within the limits of the prostate and its capsule, by which the risk of extravasation of urine into the cellular tissue of the pelvis is avoided, and constitutional irritation and fatal sloughing prevented. It is found that a comparatively trifling incision into the gland is sufficient to permit the extraction of even large calculi, the tissue of the gland yielding to a great extent, and the opening into the pelvic space being thus avoided. The rule applies with equal if not more force in the young subject than the adult, and it should be borne in mind, that the gland, at an early period of life, is very small, and the space for incision consequently proportionably limited.

I have made many experimental incisions into the prostatic part of the urethra and neck of the bladder after death, with a view to determine by how small an opening large calculi might be safely extracted, and, without giving the details of such observations which it is difficult to do with precision, I may say that I have been much astonished at the result of the experiments on the dead subject.

Now this fact, I mean the dilatability of the prostate, has induced some surgeons to sanction an operation for the removal of stone from the bladder without incision of its neck. I allude to the plan especially recommended by Dr. Willis, and in one case performed at his request, of gradually dilating the neck of the bladder by the employment of fluid pressure after

incision into the membranous part of the urethra. The case, unfortunately, terminated fatally, and I see no reason to repeat the experiment, as the incision through the prostate with the restrictions just dwelt upon can be made with comparative impunity, and the maintenance of a distending power in the sensitive neck of the bladder for any length of time must be attended with considerable distress, and is not devoid of danger. It appears, however, that this method of operating, which was first hinted at by Douglas,* has been successfully performed by Sir Astley Cooper and others, but it does not possess in my opinion any merit at all calculated to outweigh the disadvantages attaching to it; but on this subject it is out of my province to dilate, and I refer the reader for information on the subject to the work of Dr. Willis, "On the Treatment of Stone in the Bladder by Medical and Mechanical Means—1842."

* Phil. Trans. 1727, p. 318.

FINIS.

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