would seem as if all the abdominal muscles, but more especially
the diaphragm, were concerned in producing an appearance exactly
resembling that caused by a large foreign body.

As far as my experience goes, these large phantom tumours
occur only in the female sex. The pseudo-growth varies in size
from an ordinary melon to that of a fetus at the full term. In
some women the enlargements give rise to many of the symptoms
produced by gestation; so that we have the condition known as
spurious pregnancy,—the grossesse simulée par illusion pure of
French writers. Occasionally, the imaginary gestation is followed
by a spurious parturition; and I have seen a lady walking about
her apartment, with sharp and frequently recurring pains of labour,
and surrounded by all the paraphernalia of the lying-in room,
where there was no pregnancy nor even a real abdominal tumour.

The muscular tumours which simulate disease will appear
entirely or partially to fill the abdominal cavity. They are either
stationary and firm and unyielding, or they change their relative
position from day to day, or they seem moveable and as if attached
by a long pedicle. Moreover, they may be insensible to the touch,
or acutely tender; and they perhaps temporarily melt away under
the influence of steady and prolonged manipulation, or they dis-
appear for many days or even weeks and then return, or they
remain persistent for years.

The question naturally arises—What is the nature of the abdo-
minal swelling in this affection? It was long thought that the
symptoms of phantom tumours or of spurious pregnant uteri were
due simply to the distension of the intestines by flatus, combined
with the excessive deposition of fat in the abdominal integuments
and in the omentum. We are told, that on examining the body
of Joanna Southcott after death, the womb appeared smaller than
natural, free from disease, and containing neither "the promised
Shiloh, nor any other fetus;" but the walls of the abdomen were
four inches thick from fat, the intestines were distended with gas,
and the omentum was one large mass of adipose tissue. Very
possibly the combination of these conditions may alone have
sufficed to produce the disorder in other instances; but without a
doubt in the majority of cases there is something more. This
additional something is probably irregular or excessive action of
the diaphragm and other abdominal muscles, by which the intestines
are forced low down in the cavity of the abdomen. In many
instances also, it has been thought that irritation or chronic in-
flammation of one or both ovaries existed; this irritation pro-
ducing contraction of the muscles by reflex action. And again, it
has not unfrequently been found that the patient was suffering
from some displacement of the uterus—retroflexion, or anteflexion,
or retroversion.

That the diagnosis is often a matter of difficulty is certain from
the serious mistakes which have been made by eminent men. In

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the statistical account of eighty-one cases of ovariotomy collected by Mr. Benjamin Phillips,* it is shown that in as many as five instances no tumour at all was found upon cutting into the abdomen; and at least two more examples of this blunder have occurred since this gentleman’s report was published. When these swellings seem to shift their position, they have now and then been mistaken for moveable kidneys. It is well known that occasionally both the renal organs present an unusual degree of mobility; or one kidney may be moveable to a considerable extent, while the other is stationary. So also a spleen displaced downwards can form a palpable tumour, as low as the left iliac region; while should there also happen to be any displacement or hypertrophy of the pancreas, a very puzzling enlargement will result.

The chief points, by attention to which the practitioner can reasonably hope to avoid error, are the following:—(1) As the patient lies upon her back, with the abdomen exposed, there will be all the appearance of a solid tumour; nevertheless, on practising percussion, a resonant sound will generally be obtained. This test, however, is often rendered uncertain by the excessive deposition of fat in the abdominal walls or in the omentum; while there may be such great intolerance of pressure, that it will be hardly possible to make a satisfactory tactile examination. (2) There is usually a considerable arching forwards of the lower dorsal and upper lumbar vertebrae; so that the practitioner can easily pass his hands under the patient’s loins. (3) Very often, positive symptoms of ovarian or uterine irritation are present. The chief of these consist of tenderness on manipulation over one iliac region, or above the pubes; irregularity or suppression of the catamenia, with an abundant leucorrhoeal discharge; piles and tenesmus, or troublesome irritability of the bladder; intense and almost constant backache; and neuralgic pain extending down one leg, combined perhaps with retraction of the limb. And (4), if the patient be slowly, but thoroughly placed under the influence of chloroform or of ether, the abdomen will be seen to flatten and the tumour to entirely subside; the latter slowly melting away, in proportion as the anaesthetic relieves the diaphragmatic and abdominal muscles from the influence of the reflex nervous action. As consciousness returns, however, the muscles become tense and prominent, and the swelling gradually forms again; until the tumour is found possessing all its original characters, by the time the insensibility has completely passed off.

The general symptoms presented in these cases demand a short notice. The patients are generally in bad health, being often anaemic; while they are also sufferers from those varied phenomena which are so constantly set down as due to hysteria, or to the so-called “spinal irritation.” They are not unfrequently the victims

of neuralgia; and they either have amenorrhea, or dysmenorrhea, or leucorrhea. They suffer from mental anxiety, independently of the uneasiness produced by their health. The digestive functions are ill-performed, and the bowels are consequently constipated. The disposition is often tranquil; the patients like to be quiet and rather shun the society of their friends; and, if allowed, they will pass much of their time in bed. Doubtless, in some cases, bad practices are resorted to. But in none of the examples which have fallen under my notice have there been any indications of an attempt at feigning disease. Indeed, the swelling always gives rise to great general uneasiness and mental depression, and is the cause of advice being sought.

The treatment of these phantom tumours requires to be carried out with care and patience. Where there is any chronic inflammation or irritation about the uterus or ovaries, the morbid state must be removed according to the rules which are laid down in the subsequent pages of this volume. Until the uterine functions are naturally performed, it will be useless to hope for much benefit. Then, the general health is to be improved; which can generally be effected by the employment of bark and one of the mineral acids, or of ferruginous tonics, or of zinc with strychnia or nux vomica, and of mild aperients. A good nourishing diet must be allowed; while the power of the digestive organs is to be restored by pepsine or other drugs. It will often prove of great advantage if the patient can be sent to the seaside. The nature of the case ought to be fully explained to her; while she must be led to feel confidence in the ability of her physician to effect a perfect cure. And lastly, the abdominal muscles are to have their abnormal irritability removed by the frequent use of galvanism, by shampooing, by giving support to them with a well-adjusted belt, and by the employment of tepid salt water baths.
PART XII.

DISEASES OF THE URINARY ORGANS.

Under this head it is proposed to treat of the diseases of the kidneys, ureters, and bladder.

The kidneys are ovoid bodies, deeply situated one on each side of the vertebral column, in the lumbar region. Each kidney is about four or five inches long, and two broad; the weight varying between four and six ounces. Each gland receives blood from the aorta by the renal artery. From this blood, as it flows through the kidney to be carried back by the emulgent vein into the inferior vena cava, the ingredients of the urine are separated or formed. The average quantity of urine passed per diem is about two pints. It should be transparent and of a pale sherry colour; should have a specific gravity of about 1020, and a faintly acid reaction.

It consists of water holding in solution inorganic salts, urea, urates of ammonia, soda and lime, with other organic substances and colouring matter. The water holding in solution some of the inorganic salts distils from the Malpighian tuft of blood-vessels into the flask-like dilatations of the tubes in which they are enclosed; while the characteristic urinary substances are secreted by the epithelial cells of the convoluted tubes, and are carried off by the water flowing through them.

The urine affords valuable indications of the general condition of the system as well as of disease of the kidney and urinary tract by variations in quantity, colour, specific gravity, and reaction, and by deposits of various kinds. Many deviations from the usual condition of the urine are perfectly compatible with health, and are explained by physiological considerations.

The quantity will be greatly influenced by the amount of fluid drunk, and by the amount passing off from the skin and by the bowels. It will be large when much fluid is taken, and vice versa, will be diminished by free perspiration, whence more urine is passed in winter than in summer; it will be diminished again by diarrhoea. It is well known also that certain foods and drinks promote the flow of urine.

The colour will usually vary inversely with the quantity, being pale when the amount passed is large, and darker by concentration when it is small. Much nitrogenized food increases the solid constituents of the urine, and consequently makes its colour deeper.
and the specific gravity higher. The specific gravity, like the colour, varies inversely with the quantity passed, and when it is wished to estimate the amount of urinary solids excreted, note must be taken both of quantity and specific gravity. In diabetes the quantity is large and the specific gravity high; in contracted granular disease of the kidney, the quantity is above the average, but the specific gravity is low.

The reaction, which is normally acid, may be rendered alkaline by non-nitrogenized food, or by food containing a large proportion of vegetable salts of potash. It is also temporarily alkaline for a short time after a meal. Alkalinity not accounted for in this way may be due to ammoniacal decomposition of the urine or to the presence of fixed alkaline salts in excess.

Not only may there be variations in quantity, colour, reaction, and specific gravity, but deposits may be present without any departure from health. The urates are only sparingly soluble in cold water, and in the presence of an acid; when therefore the urine is concentrated, either in consequence of little water being drunk, or of much food having been consumed, or from perspiration or diarrhoea, it may deposit urates on cooling; or in very cold weather the urates may be thrown down when in proper proportion to the water; or a slight excess of acid may cause them to be precipitated when not themselves in excess. The phosphate of lime again, which is a normal constituent of the urine, is insoluble in water, but in the urine is held in solution by the acid phosphate of soda; when this is neutralized by food or otherwise, and the urine is rendered alkaline, the lime salt is precipitated without there being any disease.

The most important urinary deposits are as follows:

1. Urates of soda, potash, lime and ammonia, often extremely copious and appearing as the urine cools. They are redissolved by heat or alkalis or by addition of water, not by acids which set free uric acid. Under the microscope they appear like groups of dark granules, sometimes mixed with minute spiked balls, considered to be urate of soda.

Urates may be deposited in a state of health, as mentioned above, when they are generally pale; they are present in most febrile disorders, but especially in rheumatic fever, when they are usually of a red colour, sometimes like brickdust; they are seen also in wasting diseases, as of lungs and liver, and are then often pink; while they often accompany dyspepsia and debility, being mostly pale. The varying colour is due to changes in the urinary colouring matters which stain the lithates.

2. Uric acid, usually visible in the form of crystals of a yellow or red colour, not as a rule present as such when the urine is secreted by the kidneys, but precipitated from its combination with one of the bases mentioned above by some acid, either in the pelvis of the kidney, the ureter or bladder, or after the urine is passed.
When the precipitation takes place within the body, the crystals form gravel or sand, according to the size of the concretions formed by the crystals. Uric acid does not often form a very copious deposit; it is much heavier than the urates, is insoluble by heat or acids, but soluble by alkalies. It presents under the microscope a great variety of crystalline forms, usually modifications of a rhombic prism, and almost invariably coloured by the urinary pigment.

Free uric acid is most commonly met with in gouty states of system, or when the liver acts imperfectly. Precipitation within the urinary passages can generally be prevented by the administration of the carbonate or citrate or acetate of potash, or of some similar salt of lithia. The tendency to excessive formation of uric acid must be corrected by remedies appropriate to the particular condition of system from which it arises.

3. Oxalate of lime, rarely distinctly visible to the naked eye, but appearing under the microscope either in the form of octahedra or of dumb bells. The former are apparently gradually precipitated after the urine is secreted, and usually increase in number and size from day to day for some time after it is passed; the latter are apparently formed in the renal tubules themselves and not afterwards. Oxalates are not stained by the colouring matter of the urine, but are colourless and bright. Oxalates may be due to food containing oxalic acid; when not so caused they are usually associated with a depressed condition of the system, nervousness, dyspepsia, and often with an excess of urea or urates in the urine.

Acids and tonics are usually required in oxaluria.

4. Phosphates appear in the urine under two distinct conditions:—(1) When the urine has been retained and has undergone ammoniacal decomposition, the ammonia combining with the phosphate of magnesia to form the ammoniaco-magnesian phosphate, and also causing the precipitation of phosphate of lime. (2) When the urine is rendered alkaline by salts of potash or soda. The latter condition is usually associated with weakness, depression, and dyspepsia; the former is merely an indication of local disease in the genito-urinary tract. At one time phosphatic deposits were considered to indicate a particular condition of system which was called the phosphatic diathesis.

Phosphate of lime forms a pale, heavy, amorphous deposit, differing from urates in being insoluble by heat and alkalies, and by dissolving on the addition of acids. Under the microscope they present fine granules. The ammoniaco-magnesian phosphate takes the form of beautiful triangular prisms, which are colourless and transparent. They have been called knife-rest prisms, from their resemblance to the prisms of glass sometimes used as knife-rests.

Other urinary deposits, such as cystic or xanthic oxide, or hippuric acid, are rare and need not be described here, while mucus, blood, and bile appear in the urine under circumstances considered in treating of the diseases in which they occur.
From time to time subjects are met with in which there are three kidneys, and I believe that four have been discovered. When the number of these glands has been natural, their situation has in a few instances been found to be unnatural; both kidneys having been seen lying close together on the left side. A more frequent abnormality is the presence of only one kidney, which seems to be placed indifferently on the right or left side, and is generally more or less enlarged—perhaps very considerably, so as to weigh four or even five pounds; while it may possibly have two ureters, and either one large renal artery and vein, or two or three arteries and the same number of veins. Again, the two glands are now and then united together; the junction occasioned by a flat band of true renal tissue extending across the vertebral column, producing the so-called "horseshoe kidney." Sometimes the fusion of the two organs into one is still more complete; and then a large kidney is found lying in the median line, rather than in one of the lumbar regions. And besides, one kidney may occupy its normal site, while the other is moveable; or in a few instances, an extreme mobility of both the glands has been found. The moveable organ can be detected, feeling like a tumour; it may generally be shifted to a certain degree, downwards and forwards; and compression with the hand usually gives rise to a peculiar faint or sick sensation. Lastly, the infant born dead at the full term, as well as the prematurely expelled foetus, has been found destitute of any kidneys, on several occasions; while one almost incredible case has been recorded by Dr. Moulon,* physician to the Hospital at Trieste, of a girl living to be fourteen years of age, who had neither kidneys nor ureters nor urinary bladder. In this extraordinary instance, the liver was supposed to act vicariously; inasmuch as the umbilical vein proved to be enlarged, and there was a constant dripping of urinous-smelling fluid from the umbilicus which was situated just above the mons Veneris. The girl died from causes independent of her anomalous structure.

One or other kidney has been removed by surgical operation several times—by Simon of Heidelberg successfully for a fistula of the ureter, by other surgeons for renal calculus or in mistake for an ovarian cyst or other tumour, usually with fatal results.

Occasionally, the trunk of one renal artery is blocked up by an embolus, or its canal is nearly obliterated by some malformation or the pressure of a tumour; under which circumstances the corresponding kidney undergoes degeneration, and has its work performed by the opposite gland. The effects of suppression of urine (ischuria renalis) when both glands cease to act, have already been described in the section on uremia.

I. SUPPURATIVE NEPHRITIS.

Suppurative nephritis [from Νεφρός = the kidney; terminal -itis], or acute inflammation of the substance of the kidneys, sometimes sets in without any appreciable exciting cause, especially perhaps in strumous subjects. More frequently it arises from exposure to cold and damp, from the formation of calculous matter, from various mechanical injuries, from poor living combined with intemperance, and from the abuse of diuretics: as well as from the administration of such renal irritants as copaiba and cubeb, cantharides and oil of turpentine, &c. It is comparatively a rare disease. As in inflammation of other organs, so in the kidney the morbid action may end in resolution, or it will go on to suppuration; in the latter case abscesses of a variable size resulting, which sometimes cause entire destruction of the gland. In most examples of nephritis, the mucous membrane lining the pelvis and infundibula is involved in the disease; inflammation of this tissue being known as μελίτις [Μελός = a trough; terminal -itis].

The symptoms of nephritis are chiefly these:—Deep-seated pains in the loin on the affected side, more especially in the region of the kidney; the pain sometimes extending along the ureter to the neck of the bladder, or to the groin or scrotum or testicle, and being increased by pressure or by exercise. There is often also numbness of the thigh; and, in men, retraction of the testicle on the affected side. In addition, there is much constitutional disturbance,—usually indicated by shivering, fever, nausea and vomiting, with great thirst; a hard, frequent, and full pulse; as well as by constipation and tympanites. Occasionally complete suppression of urine takes place; but more commonly, though the desire to empty the bladder is frequent and urgent, yet the secretion is scanty and high coloured, and often contains blood and pus corpuscles.

The prognosis during the acute stage is always grave; while if this period be survived, there is still great risk from the changes produced in the glandular structure. The morbid action, if severe, may cause death by the general constitutional disturbance which it sets up. Sometimes it proves fatal at an early stage, by inducing coma; owing to the retention of ura in the blood, and the consequent poisoning of the system. In other examples, again, typhoid symptoms appear, and the patient gradually sinks from pure exhaustion.

The termination of the inflammation in suppuration is much to be feared. If, fortunately, the mischief should end in resolution, the sufferer appears to get well; although the gland is often left somewhat indurated, and thus perhaps is laid the foundation for
future disease. But where one or more abscesses form, then they lead frequently to ulceration, perforation of the capsule, the formation of renal fistula, and the establishment of a purulent discharge; these consequences being accompanied by a prostrating hectic fever, which most times ends fatally after a longer or shorter interval. In a few more favourable cases, however, the pus passes out by the natural passages, and is found in the urine sometimes in very large quantity; not unfrequently continuing to be thus discharged either at intervals or continuously for months or even years, before a complete cure (or death) takes place.

The kidney is liable to be affected by disseminated suppuration from retention and ammoniacal decomposition of the urine caused by stricture, prostatic disease, stone in the bladder, &c., or when the bladder is paralysed from injury or disease of the spine. This form of disease has been called the surgical kidney, from the fact that it is a frequent cause of death after operations on the bladder or urethra, and has frequently been described by surgeons. A full account of it has been given by Dr. Dickenson,* who shows that it has its origin in an ammoniacal and putrid state of the urine however induced, poison from which is conveyed by the veins into the substance of the kidney, there setting up the disseminated suppuration. The symptoms are general rather than local. There may be pain in the loins but this is often absent, while there is shivering, fever of typhoid character, sometimes with profuse perspiration, vomiting, and occasionally hiccup or diarrhoea. The disease is usually rapidly fatal.

The diagnosis requires care, lest the suffering from congestion and inflammation be confounded with that which arises from mechanical irritation of the kidney, perinephritis, spinal disease, or lumbago. Now touching irritation of the kidney from a stone —calculus nephralgia—the symptoms of this closely resemble those described. But as the calculus passes along the ureter to the bladder, the local suffering is much greater than in nephritis, while the systemic disturbance is less. The sudden relief which follows the entry of the stone into the bladder, will reveal the true nature of the attack when there has been any doubt. Then in respect to perinephritis [Περιπ - around + νεφρός; terminal -ilis], and spinal disease, the symptoms are less acute, come on much more insidiously, and give rise only to pain in the affected part, the bladder seldom being irritable, while there is no retraction of the testicle. And so with regard to lumbago, we find neither nausea nor vomiting, the appetite remains unaffected, the bowels are not constipated, and there is no fever. Furthermore, the urine does not contain renal casts, nor albumen, nor pus; although it may be loaded with urates.

On making an examination of the urine for pus, reliance is mainly to be placed on the evidence obtained by the microscope.

and partly on that derived from a chemical analysis. Pus corpuscles are round, pale, granular, and indistinctly nucleated. Under the influence of a drop of dilute acetic acid they lose their granulated appearance, swell considerably, and have their nuclei made much more distinct, and usually at the same time fissured. An instrument with a ¼ inch object-glass will suffice for the examination, though the ⅛ of an inch glass is better.—The best chemical test for pus is the solution of potash (K₂CO₃ according to the new method of notation); on the addition of which a mucogelatinous mass is formed, more or less viscid according to the proportion of the abnormal ingredient. Nitric acid (HNO₃) also shows the presence of a small quantity of albumen, which is derived from the serum of the pus. The fact must not be overlooked, however, that the detection of pus in the urine is by no means a proof that the secreting structure of the kidney or its pelvis is affected; for the purulent matter may be derived from the mucous lining of the urethra, bladder, or ureters. In women suffering from leucorrhoea, a small quantity of pus is often found, which has its origin in the lining coat of the vagina. Moreover, an abscess situated in other parts occasionally bursts into the urinary passages; as examples of which can be mentioned a psoas abscess opening into one ureter, the pus in pelvic cellulitis making its way into the bladder, a prostatic abscess discharging its contents into the urethra, &c.

The treatment of nephritis ought to consist in the use of poultices or fomentations to the loins, frequent hot hip-baths medicated with extract of poppies, the vapour or hot-air bath, mild purgatives, and diaphoretics—especially those containing opium, such as the compound powder of ippecacuanha made with the nitrate instead of the sulphate of potash. Our object, indeed, should be to rest the inflamed gland; and to get its work done by the skin, and by the mucous membrane of the bowels. Among the various purgatives, few will answer better than the resin of jalap; two or three grains of which, with half a grain of the resin of podophyllum, will usually act well in spite of the constipating effect of the opium. The patient had better be kept warm in bed; his diet ought to be low, with a free allowance of simple diluents; while if there be urgent sickness, sinapisms may be applied to the epigastrium, and ice given to suck.

As soon as symptoms of prostration set in, or immediately there are any indications of suppuration, support must be had recourse to. Milk, cream, raw eggs, essence of beef, cod liver oil, and the liquid extract of bark are all of great service. Solid food is to be freely allowed directly there is sufficient power to digest and assimilate it. When there is great irritation of the bladder from the contact of the pus, relief may be afforded by washing out this organ with a weak solution of carbolic acid.
II. ACUTE BRIGHT'S DISEASE.

During the year 1827, Dr Richard Bright first pointed out the frequent connexion of anasarca and other dropsical affections with albuminuria and a degeneration of the structure of the kidneys; the prominent character of which degeneration was believed to consist in the deposition of a peculiar granular matter in the substance of the renal gland, together with the gradual atrophy of its cortical and tubular structure. Since this time the pathology of these diseases has engaged the attention of several of the most distinguished workers in the profession; the revolution which has taken place in our views concerning albuminuria and its causes being due to the chemical and microscopical investigations, as well as to the clinical studies of Bowman, Christison, R. B. Todd, John Simon, George Johnson, Owen Rees, Virchow, Parkes, Goodfellow, Basham, George Harley, Begbie, Rosenstein, Wilkes, William Aitken, Lionel Beale, Wm. Roberts, W. H. Dickinson, and Grainger Stewart. To perpetuate the honourable name of the physician who originally proved the association of renal disease with albuminuria and dropsy, the Fellows of the Royal College of Physicians of London have decided by their Provisional Nomenclature Report that all kidney diseases which are productive of albuminuria shall be classed together under the head of Bright's disease. Of this there are, as will now be explained, two forms—the acute and chronic; the latter including three distinct affections.

Acute Bright's disease, or acute albuminuria, or acute desquamative nephritis, or acute renal dropsy, or acute tubal nephritis, is a very important disorder which may originate from several causes—as intemperance, starvation, exposure to wet and cold, crysipelas, and the cholera poison, &c.; but especially is it often due to scarlet fever.

Pathology.—Acute Bright's disease consists essentially of an affection of the epithelial or gland cells lining the convoluted uriniferous tubes, probably induced by their having to eliminate from the blood some matter which is not naturally excreted by the kidneys; or if natural, is present to a morbid excess. The cells, having their functions thus modified, suffer changes as regards their nutrition; they proliferate with undue rapidity; while from their rapid desquamation they tend to check secretion by mechanically obstructing the tubes. During the time that the gland cells are undergoing these changes, the materials which ought to be withdrawn from the system by the kidneys are more or less retained; their accumulation in the blood increasing its deterioration, so that this again aggravates the original mischief. The circulation through the vessels of the Malpighian tuft also
becomes impeded; and consequently an effusion of serum and fibrin takes place into the cavities of the tubes. The serum which exudes from the congested Malpighian capillaries mingles with the urine, and renders this fluid albuminous; while the fibrinous material solidifies, entangles in its substance the cast-off epithelial cells, and escaping with the urine is detected in this secretion in the shape of epithelial tube-casts. If any of the walls of the vessels give way, as they will do under the influence of the pressure to which they are exposed, blood corpuscles will also be found entangled in the casts, while the urine will present a dark-coloured sediment. It has been shown by Mr. F. A. Mahomed that a high degree of arterial tension precedes the occurrence of these changes in the kidney, and is probably an intermediate step in their production, while with this arterial tension and before the appearance of albumen, some of the crystalloids of the blood can be detected in the urine by means of gauaeicum and ozonic ether.

In the event of the disease terminating fatally, both kidneys will be found much congested. They are usually considerably increased in size and weight, are of a pale yellow or even cream-coloured hue, and are marked with irregular extra-vascular patches. Minutely examined, the convoluted tubes of the cortical portion of the gland are seen to be widened and crowded with desquamated epithelial cells, with blood corpuscles, and with amorphous granular matter; some tubes being more distended than others, and having their channels completely blocked up. The straight tubes of the medullary cones are comparatively unaffected. The Malpighian bodies are found engorged.

Every now and then it happens that the subject of general dropsy with albuminuria has no desquamation of the renal epithelium; just as cases of scarlet fever, small-pox, &c., are met with in which the eruption is very slight or entirely absent. In these examples of non-desquamative disease of the kidney, there are often prominent symptoms of blood-poisoning; owing as Dr. George Johnson has shewn to some failure and imperfection in the effort to eliminate the morbid material from the system.

A few years since, Dr. Basham expressed his doubts as to the correctness of the terms desquamative and non-desquamative nephritis. He suggested, as more applicable, the names of acute and chronic albuminous nephritis; or (out of respect to the distinguished physician who first discovered this form of disease) that of morbus Brightii in its acute or chronic form. Dr. Basham well remarked that this copious shedding of epithelium is common to all fresh epithelial mucous surfaces, when they are the seat of inflammatory engorgement or irritation; and that consequently we might as reasonably speak of desquamative bronchitis, or of desquamative catarrh, as of desquamative nephritis.* Allowing the

justice of these observations, it might still have been urged that
the mechanical consequences of the desquamation are so much
more serious in the case of the kidneys than of the bronchi, that
extra attention could well be fixed upon the occurrence in the former
instances. The difference between catarrhal inflammation of a
mucous surface which is free, and one which lines minute complex
canals must be obvious to every one. In the first case, there is no
trouble in the membrane getting rid of any quantity of cast-off
cells and morbid secretions; in the second, these products can
only be eliminated slowly and with difficulty, while by their presence
and accumulation they are obstructing important passages and
embarrassing the action of the whole gland. The soundness of
this plea, I venture to think, remains good, even though it be ren-
dered unnecessary owing to Dr. Basham's views having been
adopted by the London College of Physicians. And since the
advantages of one uniform system of nomenclature are obviously
so great, it cannot be wise to be hypercritical as to the names
employed, provided we are all agreed about the nature of the
diseases to which they apply.

Symptoms.—As a general rule, acute Bright's disease is ushered
in with rigors and chilliness. These symptoms are soon followed
by feverish reaction, headache, restlessness, a sense of weight or
dull pain with tenderness in the loins, and nausea or even vomiting.
The dropsy which it gives rise to is an early symptom: the face
first becomes puffy, followed by general swelling of the connective
tissue throughout the body, and sometimes by effusion of fluid
into the pleura or one of the other serous cavities. In extremely
rare instances there is no dropsey; the absence of this being due,
according to Dr. George Harley, to only one kidney being attacked.
So long as one gland can act and prevent the accumulation of
urinary materials in the blood, dropsy does not set in. Whether,
however, any anasarca be present or not, there is a frequent desire
to pass urine, which is usually very scanty, of a dark smoky colour,
and on being tested by heat and nitric acid proves to be highly
albuminous. Later the urine becomes paler, and as the disease
takes a favourable turn very abundant. Examined microscopically,
it is seen to contain tube casts of coagulated fibrin, epithelial casts
and cells, blood corpuscles, exudation cells, and occasionally
crystals of uric acid. The fibrinous casts may be large or small
according as they have been formed in a tube which has been
denuded of its epithelium, or in one in which the epithelium re-
 mains. Blood corpuscles are usually most abundant in the early
stage, and may be free or entangled in casts. The exudation cor-
puscles vary in number in different cases. The epithelial casts
and cells sometimes enclose a small quantity of fatty matter; but
as fatty change is common in inflammatory products, this circum-
stance need not lead to an unfavourable prognosis unless a large
proportion of the cells are seen distended with oil, when it must be
feared that the kidney is passing into a state of fatty degeneration. The more acute and extensive the renal mischief, the greater is the diminution in the amount of urine; while of course the risk of blood poisoning and fatal coma becomes proportionately considerable. Such cases are, however, the exception; recovery being the rule.

The earliest signs of improvement are a more natural appearance of the urine to the naked eye; a diminution of the albumen and renal epithelium; and an increase of all those urinary constituents which have been previously lessened,—the water and urea and chlorides especially. As such increase takes place, the dropsy quickly diminishes. It is not uncommon for a patient during convalescence from this disease, to pass from four to six pints of urine during the twenty-four hours; the natural quantity averaging only from two to two and a half or three pints.

The very unfavourable phenomena which follow a suppression of the functions of the kidneys have already been described. It may, however, be remarked, that when the blood becomes loaded with urea a strong urinous odour is often to be detected in the perspiration, and in the breath, as well as in the matters vomited. In one marked case of uræmic toxæmia, occurring after scarlet fever, which I saw in consultation with Mr. Kingsford, of Sunbury, a large linseed poultice applied over the loins gave out a sickening and very disgusting smell; the effluvium being so powerful that it pervaded a large house.

The curious circumstance that acute desquamative nephritis from scarlatina is more frequent after a mild than after a severe attack, is probably explained by the want of caution which is often observed in such cases during the period of desquamation. The patient gets exposed to cold, and immediately the escape of the fever-poison through the pores of the skin is checked; which poison, as a consequence, is directed to the kidneys in larger quantities than they can bear. The disorder usually commences somewhere about the twenty-second day from the setting-in of the fever.

Diagnosis.—The preceding observations leave nothing to be noticed under this head, except as to the presence of albumen and casts of the tubes in the urine. Now it must be remembered that the former substance, though very frequently, is not always the result of temporary or permanent disease in the secreting structure of the kidney. On the contrary, it may originate from a depraved or unduly watery condition of the blood; from some transient congestion of the renal capillaries, the consequence of cold, or of an eruptive fever, or of inflammation of some internal organ; from passive venous congestion consequent upon long-standing cardiac or hepatic disease; from lesions or reflex irritations of the nerve fibres that regulate the calibre of the renal bloodvessels, such as happen sometimes in hemiplegia and paraplegia; from diseases of
the pelvis, of the kidney, or of the ureter, or of the bladder, or of the urethra; as well as from pressure upon the vena cava, or on the emunctory veins of the kidney, by an abdominal tumour, by a pregnant uterus (?), or by disease in the connective tissue surrounding the kidney. Nevertheless, when albuminuria is long persistent, we may be sure that it is associated with organic disease of the kidney. Under these circumstances a minute examination of the urine reveals the presence of casts,—moulds of the tubes taken in some coagulable material. As this matter is effused, it entangles in its structure the contents of the tube. Hence we have several kinds of casts,—the waxy or fibrinous, the fatty, the epithelial, the granular (consisting of disintegrated epithelium), the bloody, &c.

When analysing the urine for albumen, two tests must be employed—heat and nitric acid. On applying heat, 150° to 175° Fahr., to albuminous urine in a clean test-tube, the albumen coagulates and produces a cloud varying in density. This cloud commences at the surface, and can be seen to gradually extend through the fluid as the boiling point is gradually approached. Coagulation only takes place, however, when the urine is acid; for alkaline, or even neutral urine may be loaded with albumen, and yet heat will produce no deposit. In such a case the secretion must be rendered acid by the addition of nitric acid until the deposit is thrown down; heat being then applied to make sure that the precipitate remains unchanged. It does not answer merely to add a drop or two of acid and then to apply heat, for under these circumstances the urine may be loaded with albumen and yet no deposit be formed; a circumstance that Dr. Bence Jones has supposed to be due to the formation of a nitrate of albumen, which is soluble in a weak and even boiling solution of nitric acid, but is insoluble in a more acid mixture. This explanation has seemed unsatisfactory to Dr. Beale; who concludes from some experiments that a trace of nitric acid prevents the coagulation of a moderately strong solution of albumen by heat, in consequence of its decomposing the phosphates and setting free phosphoric acid in which albumen is soluble. When an excess of nitric acid is added its action overpowers that of the phosphoric acid, and albumen is precipitated. The nitric seems preferable to the acetic acid, which is sometimes recommended for acidulating neutral or alkaline urine; because an excess of the vegetable acid dissolves albumen during boiling. Moreover, heat alone must not be trusted to in any case, since it renders the urine cloudy when there is an excess of earthy phosphates; this cloud being dissolved by nitric acid, while the albuminous deposit continues permanent. Again, nitric acid alone may give rise to turbidity, owing to the decomposition of the urates held in solution, and the precipitation of amorphous uric acid; the latter being decomposed, and the urine rendered clear though of a brown tint, on using heat. It
may be worth remembering also, that the use of copaiba, or of cubebs, sometimes produces in the urine a substance which is precipitated by nitric acid, and which thus looks like albumen.

In order to form a rough and ready estimate of the quantity of albumen passed in the urine, we may note the proportion of sediment to clear urine after boiling and settling in the test tube,—such as three-fourths, or one-half, or one-fourth, or one-eighth, and so forth. This is better than Dr. Christison’s seven degrees of coagulability, and more exact than the plan I have long adopted of such a quaternary division as the following:—

1. Completely coagulable by heat,—the albumen occupying nearly the whole quantity of urine boiled.
2. Strongly coagulable,—half the quantity.
3. Moderately coagulable,—a fourth of the quantity.
4. Slightly coagulable,—only a hazy appearance, undistinguishable from a deposit of phosphates until after the addition of nitric acid.

Prognosis.—This may generally be favourable. The chief points to be feared are the occurrence of uremic convulsions or coma, owing to suppression of the functions of the kidneys; or the setting up of acute inflammation in one of the serous membranes, or in the air tubes, or in the lungs: or of uncontrollable sickness or diarrhoea being induced. There is likewise some risk lest abundant effusion into the pleura or pericardium should prove fatal; as well as of apoplexy happening from effusion into the cerebral ventricles, or into the meshes of the pia mater. Another rare cause of death is the formation of a thrombus or clot in the pulmonary artery. Assuming that these dangers are avoided or got over, there must still be felt some anxiety lest permanent structural disease of the gland should set in. Care ought to be taken not to discontinue treatment until the urine is found by chemical and microscopical examination to be quite healthy, which may require six months or more.

Treatment.—In seeking to cure acute inflammation of the kidney, we have to remember—as Dr. George Johnson remarks—"that there has been, first, a morbid condition of the blood, which has excited disease in the kidney; and that, as a secondary consequence of the renal disease, the blood has become contaminated by the retention in it of urea and other excrementitious matters."* Our double object must therefore be to rest the affected glands, while we purify the blood by means of the other excretory organs. To carry this plan into practice, the patient ought to rest in bed, in a moderately warm room, and be placed on milk diet; at the same time allowing him an abundance of simple drink—water, tea, or barley water. In order to get the skin and bowels to act freely, the hot air or hot-water bath (F. 119, 130) must be used once daily for three or four times; while diaphoretic medicines

Granular Kidney.

(F. 209, 211, 217) are to be administered, together with saline or other purgatives (F., 141, 151, 160, or 169). In many instances, elaterium (F. 157), given so as to produce free purging, is very beneficial; but for children I usually prefer the compound jalap powder, in doses varying from fifteen to forty grains. Dry cupping over the loins often seems to be useful; or a few leeches may be applied, using hot fomentations or large instilled poultices for many hours subsequently. Powerful diuretics should never be had recourse to in this disease; since in the early stages they do great mischief, while in the latter they are unnecessary. Supposing a drug of this class to be needed, however, not one can compare with digitalis; inasmuch as it acts well without irritating the kidney. Astringents have been employed in this stage, such as tannic and gallic acids, and apparently with success. Where symptoms of uremic toxaemia set in, the remedies already mentioned in treating of uraemia are to be resorted to.

Directly the feverish phenomena have subsided, attempts ought to be made to improve the quality of the blood, as well as to diminish the escape of the albumen, by the administration of steel; no preparation answering this double purpose better than the tincture of perchloride of iron (F. 392). At the same time, the patient can be permitted to leave his bedroom, though he is to be confined to the house. He may have tender animal food, with plenty of milk and one or two raw eggs daily. Spirits and beer had better be avoided; while wine, freely diluted, ought only to be allowed if it seem really required. Under this treatment the dropsy will completely subside, while the albumen and tube-casts gradually diminish until none can be detected in the urine. It is always advisable to examine the latter, both chemically and microscopically, every few weeks for some time after a cure appears to have been effected. Moreover, the patient will have to clothe warmly, wearing flannel next the skin; while he must long avoid exposure to cold and damp.

III. CHRONIC BRIGHT'S DISEASE.

Chronic Bright's disease, or chronic albuminuria, is a generic term for three very different renal affections which are accompanied by one prominent symptom—the presence of albumen in the urine. There is likewise a tendency to dropsy, with various secondary tissue degenerations. The diseases of this class are,—(1) The granular kidney; (2) The fatty kidney; and (3) the lardaceous kidney.

1. GRANULAR KIDNEY.

This disease has several synonyms,—the contracted granular kidney, the gouty kidney, the cirrhotic kidney, and chronic des-
quamative nephritis. Under the latter name it was first minutely described by Dr. George Johnson;* and to his researches we are consequently greatly indebted.

The granular or cirrhotic kidney is most frequently met with in the male sex; it is very rare before the age of thirty; it is sometimes associated with cirrhosis of the liver, and perhaps with thickening of the capsule of the spleen; and it is a morbid condition which comes on very gradually. It is frequently a consequence of chronic gout (Dr. Todd used to speak of it as the gouty kidney) or of some allied disorder of the general health; it will perhaps be the product of a long continued course of dissipation, with abuse of intoxicating drinks; while it may happen as a result of chronic congestion of the venous system, such as is met with in cardiac valvular disease. In some instances it comes on so insidiously that unless the urine be examined it may escape detection, until perhaps the patient is seized with a fatal attack of uremia.

The disease, according to Dr. Johnson, is characterized by a long-continued shedding of the renal epithelium, which appears in the urine in a more or less disintegrated state. The tubes gradually lose their epithelial lining, and subsequently are atrophied or filled with a new material; while the connective tissue of the gland becomes hypertrophied, and all the other structures waste. The renal bloodvessels undergo changes; the coats of the smaller arteries especially getting thickened, while the capillaries become contracted and many of them impervious. The entire kidney becomes small and wasted and indurated: the Malpighian bodies seem to atrophy. Cysts are often seen in the cortical substance. According to Dr. Dickinson the disease does not affect the tubes primarily, but the intertubular connective tissue. There is proliferation of its elements, and production of fibres, beginning at the surface and advancing inwards, and it is by the contraction of the fibres that the vessels and tubes are strangulated and obliterated.

After death the kidneys are found contracted—possibly to less than half their natural size, according to the length of time the disease has existed. Their surfaces are uneven and perhaps puckered, their fibrous capsules are thickened and morbidly adherent so that they cannot be cleanly peeled off, while their cortical portions especially are shrivelled.

The urine is, for the most part, slightly albuminous; while it is pale, greater in quantity and of a less density than in health, varying from 1005 to 1015. If we examine it microscopically, we shall find particles of degenerated epithelium; abundant scattered amorphous granular matters and cylinders, which have evidently come from the renal tubes, and which are known as granular epithelial casts.

GRANULAR KIDNEY.

This affection produces great changes in the blood, and many and various constitutional disorders consequent upon these changes; amongst which the most frequent are hypertrophy of the heart—with or without disease of the valves—inflammation of the serous membranes, dropsy of one or more serous cavities, anasarca, and lastly, either structural changes, or great functional disturbances of the nervous centres.

To speak rather more in detail, granular kidney will possibly exist for some time without producing any marked symptoms; or the renal disease may be masked by the progress of some pre-existent and causative malady. Thus, I have seen instances of chronic gout where the disease of the kidney has become far advanced without having manifested itself by any special signs; and hence in all such cases the urine should be frequently tested. On the other hand, many examples of this form of nephritis are attended with failing health and strength; the skin is harsh, dry, and sallow; the appetite is variable, sometimes bad, at other times voracious; there may be dyspepsia, mental depression, rheumatic pains, or some pulmonary derangement; and in several instances there have been frequent attacks of bleeding from the nose, and even of gastric or cerebral hæmorrhage. Impairment of vision is common in this, as in other varieties of chronic kidney disease; the changes in the vessels and nerve tissues of the retina sometimes progressing to such an extent as to cause total blindness. By the use of the ophthalmoscope in nephritic retinitis, effusions of serum or of blood have been found in the retina, especially in the neighbourhood of the disc; and a peculiar form of degeneration of the retinal elements is seen giving rise to numerous white spots around the optic disc and the macula lutea.

As the renal mischief progresses, the patient loses flesh; but such a loss may occasionally be concealed by the anasarcarous swelling of the body, though dropsy is by no means a constant feature of this affection. Indeed, many cases prove fatal without the occurrence of dropsy in any form; while in others there will perhaps be merely a puffiness about the face and eyelids, with slight swelling of the ankles. Dyspepsia is almost always present. Sickness is sometimes troublesome, but diarrhœa is uncommon. The urine is larger in quantity, and is passed more frequently than in health; and especially has the patient to rise once or oftener in the night to empty the bladder. On testing this fluid it may be found of normal colour, reaction, specific gravity, and free from any blood; while where the disease is in an early stage there need not necessarily be any albumen. As a rule, however, the urine is pale and has a low specific gravity, even before albumen appears in the urine, and perhaps before disease is actually present in the kidney. But in all instances, if the secretion be allowed to stand, and the sediment be minutely examined, the microscopist will detect a granular material in small masses, and coarse opaque
cylinders, which consist of disintegrated epithelium from the basement membrane of the tubes, washed out with urine. As the disorder advances the epithelium becomes shed more abundantly, and the urine gets decidedly albuminous, though rarely to any considerable degree.

This affection often makes but slow progress, especially at first. Where it happens as a secondary disorder, the cure or retardation of the latter will have a very beneficial influence in mitigating the kidney complaint. But when it gradually advances, the patient becomes thin and anaemic, and complications arise. From the resistance to the circulation of the blood contaminated by the results of imperfect elimination, additional work is thrown upon the heart, which becomes hypertrophied in consequence; the minute arterioles are also thickened, and exhibit hypertrophy of their muscular coats, as was first shown by Dr. Johnson. By the increased propulsive power of the heart and the increased resistance in the capillaries and arterioles, an extreme degree of tension is produced in the entire arterial system, which leads to disease both in the heart and arteries from strain, and to cerebral and other hemorrhage. Pneumonia, or pleurisy, or pericarditis may come on, or anaemia may set in. Of course the prognosis must be partly regulated by the mode of living which the patient adopts, and the steadiness with which he will follow the rules prescribed for him.

With regard to the formation of cysts in the structure of the kidney there is much still to be learnt. Probably they are produced in several ways. The principal are,—obstruction of tubes, from too rapid or abundant desquamation of the secreting cells, with dilatation of the portions above the plug; dilatation of tubes which have permanently lost their epithelial lining into cysts, in consequence of the basement membrane continuing to be nourished and to secrete serum into their channels; and lastly, the wasting and disintegration of circumscribed patches of renal tissue causing small cavities. When the tubes get obliterated near the Malpighian bodies, the vessels will probably waste, while the flask-like terminations of the tubes become expanded and transformed into cysts. In whatever manner produced, these simple cysts are found to be few and scattered, or very abundant; while they can either be of considerable size, or so minute as to be invisible to the naked eye. In adults it is far from uncommon to find numerous small cysts, which are filled with limpid, colourless serum. Now and then the whole of the gland appears to be converted into a congeries of these sacs. This has been found to be the case in the new-born infant. Thus, in April, 1857, Mr. J. Jardine Murray delivered a half-witted girl of a monstrous child in the Royal Maternity Hospital of Edinburgh. The labour was tedious, considerable force being required to extract the greatly enlarged abdomen of the child after the head and arms had been expelled. The cause of this enormous size proved, on dissection, to be a cystic
disease of the kidneys. Both kidneys were equally affected. The right weighed very nearly 14 oz. Its vessels and ureter were normal in size and appearance: the external surface was smooth. On making a section of the organ, the whole substance seemed to consist of pearly cysts containing serous fluid; their average size being that of a pea.*

The treatment of granular kidney, for the most part, resolves itself into the adoption of means for the removal of that morbid state of the blood and constitution generally, of which the renal affection is only a result and a manifestation. When the disease is the consequence of gout, we must regulate the diet—disallowing sugar and all fermented liquors; attention should be paid to the various excretory functions; while such remedies ought to be employed as are indicated by the patient's general mode of life and state of health. Great benefit will always be derived from keeping the skin warm, and from the occasional use of the warm water, hot air or vapour bath: diaphoretic medicines (F. 209, 211) are also useful. Gentle aperients; dry cupping over the loins frequently repeated, or counter-irritation to the same part by sinapisms, ointment of tartarated antimony, or ammonia liniments; quinine, iron, and other tonics—these are all remedies which often afford considerable relief. Mercurials, and all diuretic medicines, except digitalis, are strictly to be avoided. Opium is not to be given in any form without great caution. Even small doses may cause fatal suppression of urine.

In cases attended with dropsy, we may every now and then use those purgatives which produce copious watery stools, such as elaterium, gamboge, jalap, scammony, &c. (F. 151, 157, 158, or 168). These are, however, not often required, since decided dropsy is not common. Only exceptionally is there spontaneous diarrhoea; but if this should set in, it is not to be checked, unless it be producing exhaustion. Where there is much depression, as there usually is after a time, we must avoid drastic purgatives, and simply get the skin to act freely by the exhibition of some diaphoretic draught at bedtime; or especially by the use of the hot air bath, repeated every night, or on alternate nights. The mineral acids with bark (F. 376), or salicin (F. 388), or steel and pepsine (F. 394), may temporarily impart a sense of renovation; while cod liver oil (F. 389), will often prove beneficial. The diet should be generous; with milk and eggs and vegetables, white fish, and mutton or poultry or game if such can be digested. A moderate quantity of wine can perhaps be allowed without detriment if the patient have been much accustomed to alcoholic drinks; but in a large number of cases I am sure it is better to dispense with all stimulants. Flannel drawers and waistcoats ought to be worn all the year.

round. Change of air, particularly a sea-voyage, often proves very valuable.

2. FATTY KIDNEY.

The epithelial cells of the kidney in health contain a small proportion of fat. Under the conditions now to be described, this proportion becomes abnormally increased.

There are two forms of fatty kidney; the gland being enlarged in one variety, and contracted in the other. The enlarged pale and mottled kidney is a result of subacute inflammatory action and fatty degeneration. In a typical example of this condition, the uriniferous tubes may be almost choked with oil-globules; the walls of the capillaries being also affected. This form of disease has been thought by several pathologists to be an early stage of the fatty contracting kidney, but it is most likely that the two conditions are distinct. Although it cannot be positively affirmed that the mottled kidney never undergoes atrophy, yet (as was remarked by Mr. Simon in 1817) in an infinitely large proportion of cases such a gland remains large and mottled to the end. According to Dr. Dickinson the importance to be attached to a fatty condition of the renal epithelium has been much exaggerated: the epithelium though fatty for a time, may recover its natural characters. Certainly it has been known for several years, that in the domestic cat, as found in London, the tubes of the kidney are almost invariably loaded with oil. That this state is an abnormal one seems probable. Yet it does not seem to interfere with the action of the kidneys, or with the health of the animal.

Renal fatty degeneration is often seen in connexion with some exhausting disease, such as tubercle or cancer. It also sometimes occurs during the wasting of old age. Fatty infiltration of the kidney—a state of fatty accumulation—may result from the excessive consumption of food rich in oily matter.

A fatty contracting kidney is a very serious form of disease; and one which is as sure to cause death as any other grave structural affection of a vital organ. The gland loses bulk and weight. The cells of the uriniferous tubes get loaded with oil globules; while the latter, with degenerated cells, are also found free in the tubes, perhaps to such an extent as at parts to choke up the channels. The size of the tubes undergoes changes,—increased in one part, diminished in another. The coats of the small arteries become thickened and degenerated, as happens in most instances of chronic renal disease; while here and there the canals of these vessels are perhaps obstructed by small masses of fibrin—emboli, which have been carried in the circulation from the lining membrane of the heart or large vessels.

Fatty degeneration of the kidney may be the consequence of acute desquamative nephritis. According to some authorities it is really the second stage of this tubular inflammation. Fatty trans-
formation, however, undoubtedly happens where no evidence of pre-existent inflammation can be traced. Sometimes it occurs in connexion with fatty degeneration of the muscular fibres of the heart. It has been found frequently with fatty liver; and now and then after death from diabetes. Cases are not rare of its association with scrofula: or with the development of tubercular disease in the membranes of the brain, in the lungs, or in the glands of the mesentery, &c. It also occasionally arises from the effects of one of the eruptive fevers, or from bad living, constant exposure to wet and cold, intemperance, &c. Hence the renal textural changes are but the expression of that which no doubt primarily is a blood disease.

The appearances in the urine characteristic of this disorder are the following:—A scanty secretion, which is highly albuminous and of low specific gravity. It is generally, in the early stages, free from sediment; and, when examined by the microscope, is found to contain neither renal epithelium, nor casts of tubes—or if any, only small waxy (hyaline) casts. After an interval which is variable in different cases, while the general characters of the urine remain unaltered, there appears a light and cloudy sediment. In this deposit there are usually discovered numerous granular casts, with perhaps some of the small waxy casts; while in these moulds are entangled globular or oval cells enclosing a considerable number of oil globules, several of the cells being completely filled with oil, and presenting the appearance of dark opaque masses. Usually, several of the casts have adhering to their surface many small oil globules, which have probably escaped from ruptured cells: while numerous cells containing oil, together with detached fat globules, are scattered over the field of the microscope.

Where the urine is of a natural colour, highly albuminous, of a low specific gravity, and presenting a large number of oily casts and cells, the prognosis is most unfavourable. Dr. George Johnson says that these appearances indicate as serious and intractable a malady as tubercular disease of the lung. He has examined the urine in a considerable number of these cases, and in no one instance did he find that this secretion regained its normal condition, or ceased to be albuminous. The patient's life may be prolonged by careful management, but he cannot hope to be cured.

The odour imparted to healthy urine by the digestion of asparagus must have been noticed by every one; while most practitioners are doubtless familiar with the smell of violets which the renal secretion gives off in patients who are taking turpentine, as well as with that of pepper when attempts are being made to check a gonorrhoea by cubeb. It has been stated by De Beauvais, that in albuminuria these effects are not produced; and from experiments which have been performed it would seem that, with a few exceptions, the observation is correct.

The chief symptoms produced by this disease are—gradually
increasing debility; feeble action of the heart, with a frequent and irritable pulse; a striking pallor of the face, as well as of the skin generally; perhaps combined with puffiness of the former; a disposition to frequent micturition, the patient having to rise once or oftener in the night to pass water; and dyspnoea, with attacks of obstinate vomiting. Troublesome headaches are sometimes complained of, with dimness of sight and fits of vertigo. There is always a tendency to grave inflammations of the serous membranes—such as pericarditis, peritonitis, meningitis, and pleurisy; and occasionally to amaurosis, sometimes attacking both eyes, and perhaps due to fatty degeneration of the retina. Then we have anaæsæa of the limbs, with dropsy of the different cavities, much more frequently than in contracted granular kidney; in rare cases (unless there be coexistent heart disease, when such a result is more common) oedema of the lungs setting in suddenly, and rapidly producing serious dyspnoea; severe sickness and head symptoms and perhaps epileptic convulsions, probably due to the effects of the retained urea upon the nervous system; and ultimately coma, which soon ends in death.

Occasionally cases are met with where almost all these symptoms are wanting. A moderately healthy looking individual has to rise two or three times in the night to micturate; he suffers from attacks of headache; and he perhaps complains of languor. There is neither great anaemia, nor loss of flesh, nor any dropsy. Perhaps he does not think it necessary to have medical advice; so that the albuminous state of his urine, which is sure to be present, is not detected. Yet suddenly, while in what the friends regard as his usual state of health, he has a severe fit of convulsions; from which he seldom if ever recovers. In fact, consciousness is not restored, and he dies in from eighteen to thirty-six hours.

In the treatment of the ordinary cases of fatty kidney, we can do little more than palliate the symptoms, and so hope to prolong life. 'The diet should be regulated; and abstinence from every kind of intoxicating drink, from starch and sugar, and perhaps from fatty articles of food, insisted upon. As a rule, there is considerable risk in administering any preparation of opium, where the urea is imperfectly eliminated from the blood; although in hopeless cases, when we find great irritability and restlessness, an opiate may be prescribed on the principle of choosing the least of two evils. Where the anaæsæa of the lower extremities is considerable, punctures should be made with a sharp-pointed lancet on the outside of the legs; afterwards wrapping the limbs completely in chamois leather. In other respects, the rules laid down in the preceding section must be attended to.
3. LARDACEOUS KIDNEY.

This disease comes on insidiously, and runs a sluggish course. It is most frequently met with between the ages of twenty-one and fifty, though not peculiar to any period of life; and it attacks both sexes nearly equally. At the end of a variable number of years, it proves fatal; the time being in a great measure dependent upon the presence or absence of any scrofulous caries, or of the tubercular or syphilitic cachexia, or of persistent suppuration.

To say much upon the general nature of this disorder would only be to repeat in a wearisome manner the remarks which have already been made. Suffice it therefore to notice that waxy, lardaceous, or amyloid degeneration of the kidney probably never exists alone. It is a constitutional affection; in which several other organs, but particularly the liver and spleen, are almost simultaneously and similarly attacked. These glands become infiltrated with a translucent waxy material. The infiltration or degeneration begins in the kidneys in the capillary tufts of the Malpighian bodies, and in the coats of the small arteries; the tubes subsequently being affected, and getting filled with a transparent material. The effect on the kidney is at first to render it slightly firmer and paler than natural; then to increase it in bulk and weight, in pallor and density; and lastly to lessen the weight, and contract the gland. The latter also becomes more and more inefficient as an excreting organ and ultimately useless. The disease causes the urine to be albuminous, while there may sometimes be found waxy or hyaline casts of the tubes, but little or no renal epithelium. And then the victims of it present all those marked symptoms which are usually set down as due to Bright’s disease, among which dropsy is prominent.

The lardaceous kidney is met with in connexion with tubercular phthisis, advanced constitutional syphilis, and prolonged suppuration—often such as is due to scrofulous caries of the bones. I have also twice observed it in consequence of the suppuration of ovarian tumours. In one, the ovarian cyst opened spontaneously through the abdominal wall, discharged a large quantity of putrid pus, and for quite six months continued to throw off small quantities of thin purulent matter. In the second case, the tumour was tapped by a distinguished surgeon, the cyst-wall seemed to inflame and suppurate, and for months a flow of pus continued daily through the wound left by the trocar and cannula. In both cases, the urine became highly albuminous; while it contained waxy casts. Prior to the morbid action in the ovarian tumours, the urine was healthy.

Professor Virchow states that a large proportion of the cases of Bright’s disease, and especially of the chronic ones, are assignable
to this change. The changes which the kidney undergoes cannot be distinguished immediately with the naked eye; so that not until iodine has been employed, can it be said what the disease really is. If a solution of iodine (the official liquor iodi answers well) be applied to the anaemic cortical substance, a number of brownish-red points appear, corresponding to the Malpighian bodies, with sometimes the streaks also which are the afferent arteries; and next to this, when the disease is very severe, red parallel lines are also seen within the medullary cones, lying very close to one another. These are all arteries.

Two excellent essays on this disease, illustrated by the reports of thirty-four cases, have been published by Dr. T. Grainger Stewart of Edinburgh.* From these examples, the symptoms appear to run the following course:—An individual who has had syphillis, prolonged suppuration from disease of the bones, or syphilis, or perhaps who is merely of a weak constitution naturally, finds that he is losing strength, that he suffers from thirst, and that he passes large quantities of urine. He has to rise in the night to micturate; and altogether three or four times the natural amount (fl. oz. 50) of urine may be excreted in the twenty-four hours. At the end of the day, the feet and ankles are observed to be more or less swollen; but a night’s rest removes the edema. As the lassitude increases, a swelling and hardness about the hepatic and splenic regions can be detected, owing to enlargement of the liver and spleen. On examining the urine it is found albuminous, of a low specific gravity, pale in colour, and of an acid reaction; while on placing a portion of the scanty sediment which it contains under a quarter of an inch object-glass a few delicate, transparent, waxy or hyaline tube-casts are seen. These casts are formed by the coagulation of an exudation from the blood-vessels into tubules denuded of epithelium: if the affected tubules contain a few cells, epithelial elements will be observed enclosed within the casts. This state of affairs may continue for months, or under favourable circumstances for a few years. But sooner or later, very distinct evidence of anaemia is observable; the amount of albumen increases considerably, while the quantity of urine diminishes; attacks of diarrhoea increase the debility, where the intestinal mucous membrane becomes affected with waxy degeneration; and ascites or general dropsy sets in. Ultimately the patient sinks, either from persistent diarrhoea, from effusion into the serous cavities, from bronchitis or pneumonia, from pulmonary consumption, from exhaustion, or from convulsions and coma due to uraemic poisoning.

Concerning the nature of the new material which is deposited

or formed in the walls of the small arteries and in the surrounding tissues, we have no very precise information. According to Dr. Dickinson it consists of fibrin, which has been thus deposited in consequence of the loss of the free alkali which is naturally associated with it. The dealkalized fibrin has its origin in protracted suppuration; the discharges removing the alkalis from the system, and at the same time causing a relative increase in the amount of fibrin.*—Dr. Grainger Stewart believes that as to the real nature of the disease we must confess ignorance, and he doubts the correctness of some of Dr. Dickinson's views. The points which seem to Dr. Steward well-established are,—(1) That it is a true degeneration or transformation of tissue, and not an infiltration. (2) That it consists of an albuminous material, probably deficient in alkali. And (3) that it results from long-continued exhausting diseases; such as syphilis, tuberculous, caries, and chronic suppuration.†—In partial confirmation of the foregoing, it may be added that several chemists, particularly Kekulé and Kühne, have expressed an opinion that the material is closely allied to albumen; and that since it has no relation to cellulose or starch, it cannot with propriety be termed amyloid.

As regards the treatment, much good may be effected in the early stages by a nourishing diet, by residence at the seaside, and by the persevering employment of ferruginous tonics. Where there is any evidence of the previous existence of syphilis, iodide of potassium and some bitter infusion (F. 31), or iodide of iron (F. 32, 390), will often prove of great service. Occasionally, in these syphilitic cases, I have seen benefit result from the employment of the mercurial vapour bath (F. 131); but the effect of this remedy ought to be watched. Certainly, in no other form of albuminuria is mercury in any shape to be prescribed.

IV. DIURESIS.

The term Diuresis [(Διω = through + οὔρ = to pass urine)] is applied to that condition in which an excessive quantity of pale limpid urine is daily excreted. It is often spoken of as Diabetes Insipidus; the only objection to which is that it might lead to its being confused with saccharine diabetes, while there is not the least connexion between the two affections. For although it was at one time believed that the urine in cases of chronic diuresis contained a tasteless kind of sugar, yet this view has now been

completely disproved; and it is allowed on all hands that no saccharine matter of any kind is ever present.

The two chief symptoms in this affection are,—insatiable thirst (polydipsia), and the elimination of an excessive quantity of urine. Generally speaking, the watery constituent of the latter is alone increased, the total amount of urinary solids not being greater than in health. This was the case in a delicate young lady, suffering from uterine disease, seen by me in consultation with Dr. George May of Reading; in which instance eight quarts of pale urine were passed in the course of the twenty-four hours, sometimes for many days in succession. At the same time, a very few examples are recorded, where the urea and chloride of sodium have both been found considerably above the normal standard.

The amount of urine which comes away is sometimes so great, that it has been believed to be in excess of the fluid consumed. Patients, especially young females, will produce tables very clearly kept, showing that when the whole quantity of fluids drunk in the day has been two pints, the urinary secretion has amounted to as many quarts or even to much more. From a glance at a little note-book now before me I find Miss A. B. recording that on the 14th January the whole quantity of nourishment taken consisted of one pint and a half of fluids, half a pint of jelly, five small oranges, seven slices of toast or bread and butter, and one bun: while the urine discharged was seven quarts. On the following day, the consumption of fluids and solids was slightly lessened, and the urine fell to six quarts. And in this way the report goes on for many weeks, six and seven quarts of urine resulting from a pint and a half of cocoa or coffee. Discussion with patients thus infatuated answers no good purpose. It is much better quietly to suggest that the tables are by no means extraordinary; at the same time insisting that further observations of the kind are quite unnecessary, and must not be made. Nevertheless, it is really a question whether there may not be some excess of the urine over the liquid taken, under certain circumstances. If there be, one of three explanations—as Dr. Parkes points out—must be adopted:—(1) Either the body becomes poorer in water, and so loses weight. (2) Or, water is absorbed by the skin and lungs. (3) Or, water is formed in the system by the direct union of its elements—oxygen and hydrogen.—No reference is here made to the absorption of dropsical effusions, because the removal of these fluids in this manner has no bearing on the argument in question.

In the treatment of those cases where there is only an excess of the urinary water we cannot do better than employ one of the astringent preparations of steel. The tincture of the perchloride of iron with hydrochloric acid (F. 101), or the ammonia iron-alum (F. 116), will generally answer every purpose. Sometimes a dose of opium at night may do good; or if the action of the skin be
suppressed a few warm baths can be ordered. Trousseau gave large doses of valerian with good results, and should the iron fail to do good, 10 or 15 grains of powdered valerian may be given, first three times a day, then four, five, or six times, till an impression is made. Supposing that the urinary solids are increased, indicating undue waste of tissue, the cause must be sought before the effect can be removed. Especially ought the symptoms of nervous exhaustion to be looked for; while if such are present, cod liver oil, phosphoric acid and nux vomica (F. 376), and a diet of animal food with a little good beer, will probably prove useful. In all cases the amount of fluids consumed must be regulated.

A remarkable form of infantile diuresis, which has been well described by Dr. Prout* as not uncommonly happening soon after weaning, ought to claim attention. The symptoms are as follows:—From having been healthy until the change of food, the child begins to get dull and inactive, and to daily lose flesh. The skin feels harsh, dry, and hot. The bowels become irregular; the motions assuming an unnatural greenish appearance. The abdomen grows prominent, so as to lead to the suspicion of mesenteric disease. At this period, the urine is generally scanty and high coloured; becoming turbid immediately on cooling, and letting fall a pale and clay-coloured deposit of urates, sometimes intermixed with the oxalate of lime. Now and then there is an excess of phosphates. As the disease proceeds, the quantity of urine rapidly increases; and the thirst being commensurate, large quantities of fluid are consequently taken. Under these circumstances an infant about twelve months old will be often found to pass from two to four or five pints of urine in the twenty-four hours. The urine in this, and indeed in all the subsequent stages of the affection, is commonly transparent, and of a pale yellow or greenish tint. Its specific gravity varies from 1010 to 1025; while on examination it will be found to contain a great excess of urea, and occasionally even traces of albumen or sugar.

This form of diuresis must be considered as rather formidable; since, if it be neglected or maltreated, it most commonly ends in organic lesions of the kidneys, or in diabetes. It most frequently occurs in the children of strumous individuals, who are at the same time dyspeptic or gouty; especially if such children have been improperly nourished, or have been brought up in confined and imperfectly-ventilated apartments.

The general principles of treatment are,—removal to a pure country atmosphere, or to the seaside, where a bracing dry air can be breathed; the employment of tepid, or warm, sea water

baths; as well as attention to the diet—animal food (minced very fine or pounded in a mortar) and farinaceous matters being most suitable, with plenty of milk. As soon as possible, there should be a gradual but steady diminution in the quantity of fluids allowed. Now and then, the administration of small doses of Dover’s powder to increase the functions of the skin, as well as to relieve the general irritability, seems advisable. Gentle aperients will be needed to regulate the state of the bowels; pepsine should be tried, if any indications of dyspepsia present themselves; cod liver oil serves to remove all evidence of imperfect nutrition; and lastly, tonics of bark, quinine, or steel, will prove highly useful.

V. HÆMATORIA.

Hæmaturia [from ἄιμα = blood + ὅπωρ = urine] or hæmorrhage from the mucous membrane of the urinary passages, may proceed from the kidneys or bladder or urethra. It is common in the early stages of those forms of renal disease which have their origin in a morbid state of the blood: hence, as we have already seen, it is a frequent result of acute desquamative nephritis. It may also arise from malignant or tubercular disease of the kidney or bladder, or from a villous tumour here; from the presence of a calculus either in the kidney, ureter, bladder, or urethra; from cystitis; or from renal inflammation, as well as from granular degeneration. A blow over the loins has caused it; while irritating medicines, such as oil of turpentine and cantharides, can also produce it. Occasionally it sets in during the course of rheumatic fever, pneumonia, continued fever, malignant small-pox, scurvy, &c., just as epistaxis does. Having more than once seen urine contaminated with the menstrual discharge mistaken for real hæmaturia, it will hardly be deemed superfluous to give a word of caution. As a rule therefore, in any case of suspected renal disease occurring in women, the practitioner should not venture on stating a positive opinion while the patient has her courses on.

Urine containing blood in comparatively small quantity will be found of a peculiar smoky hue, or even of a black colour (owing to the action of the acid of the urine on the hæmatin), and loaded with albumen. If the escape of blood be free, the colour may vary from a port-wine hue to a bright arterial tint. The distinction between renal and cervical hæmorrhage is important. Dr. Pront states that when the “blood is derived from the kidney, it is in general equally diffused throughout the whole urine; on the contrary, when derived from the bladder, the blood for the most part comes away in greater or less quantity at the termination of the discharge, the urine having previously flowed off nearly pure.” Sir Thomas
Watson has also remarked that the expulsion of slender, cylindrical pieces of fibrin, which have evidently been moulded in the ureter, is characteristic of hæmorrhage from the kidney or commencement of the ureter. Moreover, in hæmorrhage from the secreting portion of the kidney (not the pelvis), the urine on being examined microscopically is usually found to contain casts of the renal tubes formed of coagulated blood (often spoken of as blood-casts); while there is also seen the delicate round renal epithelium, with casts composed of epithelial cells and blood corpuscles. When the bleeding is from the bladder, the blood corpuscles are observed mixed with the flat scaly vesical epithelium; and the urine may contain more or less muco-purulent matter. Supposing malignant disease to be the cause, cancer cells will not unfrequently be found in the urine, and so determine the diagnosis. If there be one or more calculi, the hæmorrhage will be lessened or entirely checked by rest, and increased or reproduced by any jolting exercise. While where the blood comes away in drops or in a stream, unmixed with urine, the urethra is in all probability its source.

During the last year or two, the histories of numerous cases of intermittent or paroxysmal hæmaturia have been recorded in the medical journals. Though of rare occurrence, this disorder did not escape the observation of Rayer, of Elliotson, &c. The pathology of it is involved in doubt. The precise cause of it is unknown. Sometimes this affection is apparently connected with marsh miasma, the blood appearing at regular intervals, and perhaps being accompanied by imperfect rigors. This form can often be cured by full doses of quinine or arsenic. In other instances, it seems to have had its origin in simple exposure to cold; and in these the usual remedies for malarial poisoning are valueless. The urine is quite healthy, except at the time of the attack. Then it is found of a deep brownish-red colour; it contains an excess of urates and mucus; a variable (as regards quantity) precipitate of albumen is thrown down by heat or nitric acid; while no blood corpuscles can be seen on a microscopic examination, but only disorganized blood constituents and possibly tube-casts of disintegrated blood; crystals of oxalate of lime are often present. The blood elements come from the kidneys; and possibly as an exudation from the Malpighian bodies. The absence of blood corpuscles looks like an indication that there has not been a rupture of any vessel.

A peculiar form of hæmaturia is sometimes met with in Egypt, Southern Africa, and the Mauritius, which is probably due to the Distoma hæmatobium. The eggs of this parasite are to be found in the urine, and sometimes the perfect entozoön may be discovered. The parasite is probably introduced into the system by drinking the waters of the district without filtering them.

The treatment will vary with the circumstances under which the hæmorrhage occurs. Where there is malignant disease, or a
calculus at any part of the urinary tract, astringents should be re-
sorted to; the best being the tincture of the perchloride of iron, gallic acid, Ruspini's styptic, the diluted sulphuric acid, &c. The fear of causing strangury must prevent the use of turpentine. Where there is some morbid poison in the blood, or actual renal disease, we ought to rest the kidneys, and promote elimination by the skin and bowels; for which purpose hot air or vapour baths, warm water baths, and purgatives, will prove the most effectual. Simple drinks, especially plain water, should be taken very copiously. Hæmorrhage from the urethra will often be checked by the application of ice; or by passing a large bougie, and leaving it in the passage for some hours. Lastly, in vesical hæmorr-
hage, a solution of alum or of tannic acid, of such a strength as to have a styptic taste, may be injected into the bladder; while the iron-alum can often be advantageously administered at the same time.

VI. CHYLOUS URINE.

Urine of a milky appearance from the presence of fatty matter, in a molecular state, is known as chylous urine—chyluria. In addition to the fatty matter there is generally present one or more of the following ingredients,—blood corpuscles, fibrin, albumen, and an imperfect albumen like that of chyle (albuminose ?). The urine after standing for a short time, and unfortunately sometimes whilst it is in the bladder, coagulates into a trembling mass resembling blancmange or common size.

The importance to be attached to the fact of the urine being chylous varies in different cases, and there can be no doubt that the cause and pathological conditions are diverse. The most favourable instances are those where at some time in the twenty-four hours the secretion is healthy, containing neither chyle nor albumen. In one of the examples of this disease, which has fallen under my notice, the urine passed in the morning before taking food has more often than otherwise been healthy; the chylous condition setting in with the digestion of the breakfast. Here it is probable that the appearance of chyle was due to the imperfect assimilation of the nitrogenized constituent of the food, a portion entering the blood in the form of peptones, and retaining the property of diffusibility. But in the instance of a lady under the care of Mr. Cubitt of Stroud (Beale's Archives of Medicine, vol. i. p. 11; London, 1857), the urine passed in the morning, after a night's rest, was milky; while at no time was it ever so during the day. Mr. Dutt has also recorded (Lancet, 26th July, 1862) a similar instance; the patient, a male Hindoo, passing urine free from chyle during the day, while that voided during the night and in the morning was deeply loaded with it. A microscopic examina-
tion of chyrous urine shows that the fatty matter is present in a molecular state; but if, in addition, cells of renal epithelium loaded with oil globules are found, such will indicate the co-existence of chronic Bright's disease.

On examining the kidneys after death in cases where the urine has been chyrous, no alteration perceptible to the naked eye has yet been discovered. Nevertheless, the disease may possibly depend upon some structural change in these glands, owing to which certain constituents of the blood filter through the vessels into the urine. Dr. Carter of Bombay has detailed (Medico-Chirurgical Transactions, vol. xlv. p. 189. London, 1862) the particulars of three instances which have led him to believe that this affection is the consequence of a direct admixture of chyle and urine—a leak from the lacteal tract into the urinary. With regard to these three cases it seems highly probable that the explanation is correct. Recently an important addition has been made to our knowledge by the discovery of Dr. T. R. Lewis that the chyrous urine not unfrequently met with in India is associated with and apparently due to the presence of an entozoon, the *filaria sanguinis hominis*, in the blood. It is supposed that the entozoa block up some of the lacteals and give rise to a communication between these and bloodvessels. Dr. G. R. Bouyoun, of Demerara, has described (Golding Bird's Urinary Deposita, 5th Edit. p. 422. London, 1857) some cases of this disease in which the chyrous state of the urine was always accompanied by attacks of irritation, fever, emaciation; while he seems to prove that the affection is often epidemic at Demerara, especially amongst creoles and negroes. Dr. Bouyoun refers it to some derangement of the assimilative functions; and he has been successful in curing it by the free administration of a decoction of the mangrove bark (Rhizophora racemosa), which acts freely on the skin, alters the character and increases the quantity of the urine, and improves the general health.

Examples of chyrous urine are rarely met with in Europe; more than half of the instances recorded having occurred in individuals resident in hot climates, or in the natives of the East and West Indies, Mauritius, Brazil, &c. The appearances presented by the urine are these:—It is usually opaque and of a cream colour, owing to the presence of molecular fat, which can be dissolved by ether; on cooling it forms into a trembling coagulum, though after several hours this substance breaks up and liquefies; the presence of albumen is shown by testing with nitric acid and heat; the specific gravity is low; and examined microscopically, minute fatty granules with numerous chyle corpuscles are seen.

The invasion of this disorder may be gradual or sudden. The symptoms are usually intermittent; that is to say, an attack lasts for a few days or weeks, and then passes off perhaps for months. The way in which the character of the urine varies at different times in the twenty-four hours has already been noticed. In the
intervals of health, the urine is natural; there is no albumen present, nor any abnormal ingredient. While the urine continues chalybs, the general state of the system is depressed. The patient complains not only of bodily weakness, but he is exceedingly anxious about himself. He loses flesh. There is considerable lassitude, taking away all desire for exertion of any kind. Moreover, there is often pain about the loins, tenderness in the epigastrium, a difficulty in digesting solid food, with a tendency to restless nights.

The remedies which can be opposed to this condition are few and for the most part ineffectual. So far as is at present known, astringents are the agents from which most is to be hoped; while of the different drugs of this class, gallic acid in large doses is the best. The tincture of perchloride of iron has now and then answered for a time. A decoction of mangrove bark (Rhizophora racemosa) seemed to cure one case. A tight belt, worn round the loins, gives relief to the backache. Residence in a bracing air ought also to be recommended.

VII. RENAL ENTOZOA.

The cutozoa which may infest the kidney are of three kinds—Hydatids, the Eustrongylus gigas, and the Bilharzia, or Distoma hematobium.

With reference to hydatid formations it is not necessary to detain the reader long; since these cutozoa, which are in reality the six-hooked embryos of the taenia echinococcus, have already been described, as they have their seat in the liver, an organ which they affect more frequently than all the other tissues combined. Hydatids in the kidneys are very rare. Only one gland is affected, and usually there is merely one parent cyst containing many secondary or daughter cysts. Sometimes a spontaneous cure seems to take place; but in other instances there is a continuous though slow development, until a tumour of considerable size gets formed. Under these circumstances, inflammation and ulceration are at length set up; and an opening takes place between the tough opaque walls of the cyst and the loins, or the bowel, or the pleura and perhaps a bronchus. Not uncommonly, the cyst bursts into the pelvis of the kidney; when probably small cysts and shreds of large ones, with echinococci and their hooklets, will pass down the ureter into the bladder, and thus be voided with the urine. During this transit they may cause pain and nausea, with sero-purulent or bloody urine, such as is produced by the passage of a renal calculus; while they are likewise apt to temporarily obstruct some portion of the urinary passages, and so to give rise to difficult micturition or even to complete retention of urine.
is probable that perfect recovery in these cases is not so rare an event as might be prognosticated.

The *Eustrongylus gigas* (known also as the Strongyulus gigas, Ascaris renalis, Lumbricus in renibus, &c.) occurs so seldom in the human subject that I do not think a single kidney containing it has been shown at the Pathological Society of London in twenty-two years; while I am not sure that there is more than one specimen of it in the Hunterian Museum. Nevertheless this endozen, the Anteius of the round worms, not unfrequently destroys the renal structure in the weasel, otter, raccoon, dog, ox, horse, &c.; while it has been found to be the origin of fatal mischief in man. The *cu-trongylus* has a cylindrical elastic body, is of a blood-red colour, and is slightly attenuated at both extremities; the male measuring about one foot in length and a quarter of an inch in breadth, while the female is three times as long and twice as broad. The symptoms produced by this worm very much resemble those caused by a renal calculus. Thus, there is pain in the loin, purulent and sometimes bloody urine, with considerable constitutional disturbance if the worm escapes into the ureter and blocks it up. If the impediment remain, hydronephrosis will result from the retention of urine in the pelvis of the kidney; thus giving rise ultimately to a tumour in the lumbar region. Where the ureter remains permeable, it has been suggested that a microscopical examination of the urine might lead to the detection of the oval-shaped ova; which are numerous, and measure the one three-hundredth of an inch in length. The patient, however, would not be likely to benefit very much by the discovery, if the second suggestion of an authority on these matters was followed—the making of an incision into the kidney to remove the intruder. The Distoma hematobium or Bilharzia capensis, is a small endozen which inhabits the kidney, and occasionally also the prostate or other parts, giving rise to hematuria, small in amount, but frequently repeated. Hematuria, having its origin in the presence of this parasite, is endemic at the Cape of Good Hope and other parts of Africa. Dr. John Harley was the first in this country to detect the cause of this form of renal hemorrhage by discovering the eggs in the urine of a case which came under his care. They are generally entangled in little blood clots, and these may give rise to obstruction in their passage along the urethra. Bilharz had previously described the same or a similar affection, and gave to the parasite the name of Distoma hematobium; it is still uncertain whether this is identical with the parasite whose eggs and embryos were found by Dr. Harley, and to which the name of Bilharzia was given.

No treatment has yet been found efficacious in destroying the parasite.
VIII. RENAL CALCULI.

Urinary calculi are found either in the kidneys, or in the bladder, or in the follicles of the prostate gland. In very rare cases one or more of the urinary salts become deposited in the ureters, or in the urethra; but usually the calculi found in these situations have travelled there from the kidneys or bladder. Urinary calculi are not peculiar to man; being also found in oxen, horses, sheep, pigs, and very frequently in rats. These concretions are formed of concentric layers of crystalline or earthy inorganic matters or salts, with a variable proportion of organic matter. A few are composed of only one constituent: others are of a composite nature, the composition of the different layers alternating. Thus urate of ammonia and oxalate of lime are frequently associated in the same stone.

The chief varieties of calculi are the Uric acid; the Urates of Soda and Ammonia and Lime; the Fusible calculus—Phosphate of Lime, with Phosphate of Magnesia and Ammonia; the Mulberry calculus—Oxalate of Lime; the Carbonate of Lime; and those very uncommon forms, the Cystic and Uric or Xanthic Oxides. Pseudo-calculi of fibrin or blood-coagula, or of urostealth (a resinous or fatty substance) are exceedingly rare.

Urinary concretions, whatever may be their composition, vary very much in size. Thus, they occasionally merely resemble grains of sand, being so small as to pass readily with the urine. Particles of gravel thus voided will be found made up of aggregated crystals of the urinary salts, so that they are really microscopic calculi. In other instances, however, they are discovered as large as a small orange. When a stone has formed in the pelvis of the kidney, it may, while of moderate size, enter the ureter and gradually be forced onwards towards the bladder. The suffering which takes place during the transit is very great, and is popularly known as "a fit of the gravel." But as soon as the calculus reaches the bladder, all pain is over for a time; and if it be true, as some philosopher has remarked, that the height of happiness is sudden relief from great suffering, the patient is indeed a happy man.

One or more calculi may, however, not only form in the kidney but remain there; gradually growing and filling the entire pelvis. Possibly this will happen in both glands. But in any case, the presence of one or more stones in the kidney is a most unfortunate circumstance. The concretions produce, by their mechanical action, well-marked symptoms; the chief of which are almost constant backache, bloody urine, and reflex irritation of distant organs. The pains, as well as the attacks of haemorrhage, are increased by walking exercise, and by a jolting drive. The
urine is usually albuminous, and by the microscope blood corpuscles and pus will be found, sometimes with epithelium which, by its characters aids in ascertaining the situation of the calculus. The blood corpuscles and epithelial particles are usually more numerous after exercise or jolting. Alcoholic drinks can rarely be taken with impunity. After a time, the general heath suffers to a considerable extent. As the foreign body increases in size, so it encroaches on the true structure of the kidney; and either converts the gland into a large cyst, or perhaps sets up suppurative inflammation. Now and then ulceration has extended through the kidney and the loins, one or more stones having passed out of the opening thus made. More commonly, however, death occurs from uremia; the secreting structure of the kidneys becoming entirely destroyed.

The symptoms attending the passage of a calculus along the ureter are often extremely severe. There is excruciating pain in the loin of that side shooting down into the bladder, testicle, and thigh, violent sympathetic vomiting, and sometimes marked collapse. The testicle is often drawn up and there may be blood in the urine.

In the treatment of cases of renal calculi we have, first, to relieve the general symptoms; secondly, to endeavour to prevent the formation of fresh stones, as well as to check the further increase in size of such as already exist; and thirdly, when a calculus enters the ureter we must facilitate its passage to the bladder.

The first indication is to be accomplished by supporting the health with a plain diet. Milk, cream, animal food, and raw eggs, are beneficial. I am convinced that alcoholic drinks usually prove injurious; but if something of this kind must be allowed, it will be best to prescribe certain specified quantities of brandy or whisky well diluted. All kinds of beer and wine had better be avoided. Cod liver oil will often be useful. The pain in the back may be best relieved by the application of belladonna plasters; and by wearing thick flannel, or chamois leather jackets next the skin. To check the haemorrhage we should order either the tincture of perchloride of iron (F. 101, 397), or the iron alum (F. 116); but at times, when the loss of blood is greater than usual, no remedy answers better than gallic acid (F. 103).

The plan to be pursued under the second head, must vary with the supposed nature of the calculus; although in all cases more than the customary quantity of fluids should be consumed. Pure water is most serviceable, but it is difficult to make some patients think so; and hence it is often advantageous to prescribe large quantities of simple aërated water. In the uric acid diathesis, a vegetable diet, avoidance of alcoholic drinks, the free use of simple diluents or of mucilaginous drinks, gentle exercise, attention to the bowels, and the employment of alkaline aërated waters—as those of Vichy or Carlsbad—will be beneficial. Alkalies often give
relief, and none can be employed so advantageously as the salts of potassa; since soda often combines with the uric acid to form a hard and insoluble salt, while magnesia in large doses is very apt to cause intestinal concretions. The bicarbonate of potass may be freely given, without any of these disadvantages, or the citrate, which being a neutral salt, is more grateful, and disturbs the stomach less, while it is decomposed in the system into carbonate of potash, which renders the urine alkaline; the liquor potassi in large doses (min. xxx in water fl. oz. 3) is also an agent possessing valuable properties which appear to have been generally overlooked. Its effect, however, in inducing alkalinity of the urine is less than that of the carbonate or citrate, but it oxidizes effete matters, and is a more powerful eliminant than the salts of potash. For the phosphatic diathesis, a directly opposite course of treatment will be necessary; but it must be borne in mind that alkalinity and phosphatic deposits due to decomposition of the urine with formation of carbonate of ammonia do not constitute this condition of system. In the phosphatic diathesis the urine is rendered alkaline by fixed salts, and the blue colour of litmus or brown of turmeric is not changed by drying and exposure to heat as in the case of ammoniacal urine. The diet ought to be generous, a moderate allowance of whisky or brandy may perhaps be allowed, and tonics (such as bark, iron, and the mineral acids, especially the nitro-muriatiæ) should be administered every now and then. Opium is also a valuable drug in these cases. Complete mental relaxation must be insisted on. As regards the oxalic-acid diathesis, all articles of food containing this agent—such as the common garden rhubarb—must be avoided; saccharine substances also ought to be disallowed. The nitro-hydrochloric acid will generally prove useful (F. 378) ; and tepid or cold bathing, change of air, &c., should be recommended.

In the third place, we may be called upon to relieve the great suffering caused by the passage of a calculus down the ureter. This will perhaps be most readily effected by the prolonged use of the warm bath; by the free use of enollient diluents—especially by barley-water containing a couple of fluid drachms of the spirit of nitrous ether; as well as by putting the patient under the influence of chloroform, or else by the administration of full doses of opium. The subsequent passage of the stone from the bladder will be facilitated by the patient allowing the urine to accumulate, and then getting him to discharge it with force while he is in a hot bath; or by introducing a large silver catheter with an open extremity, and washing out the bladder with warm water. When the calculus is too large to be thus got rid of, surgical interference—lithotripsy or lithotomy—will subsequently be required; no satisfactory plan for producing solution within the bladder having yet been discovered. With regard to the selection of crushing or extraction, as well as for full information on the
mode of operating, reference should be made to the writings of Sir William Fergusson, the Messrs. Coulson, and Sir Henry Thompson.

IX. TUBERCLE AND CANCER OF THE KIDNEY.

Renal tuberculosis is rarely a primary disease, being usually associated with pulmonary phthisis. It may, however, be met with when there is no obvious disease of the lungs. The first symptom is usually an attack of haematuria, and the loss of blood may be considerable in amount, and may be repeated several times. There is more or less pain in the loin corresponding to the seat of the disease, occasionally of a burning character. The urine contains pus and blood, together with much albumen; sometimes the pus is present in large amount, giving rise to irritation of the bladder, and causing this organ to be suspected as the seat of the disease; sometimes also there are small cheesy-looking masses, visible to the naked eye; while a minute examination may perhaps detect tubercular matter, granular débris, and epithelial casts of the tubes. The gland may be much enlarged; owing either to the confluence of softened tubercular deposits, or to the gradual distension of the pelvis by retained urine and pus. There are night-sweats, rapid emaciation, and attacks of diarrhœa. Death usually occurs in from twelve to eighteen months after the commencement of the symptoms indicative of kidney affection; while the fatal result may be due to exhaustion, or more rarely to uræmia or pyæmia. Occasionally it happens that the disease gives rise to so little pain or inconvenience or impairment of health that the case only comes under observation when the symptoms of uræmia have set in. On examination after death the kidneys are found studded with masses of yellow tubercle, the pelves are also extensively affected, and contain pus and disintegrated tubercular matter. Tubercles will be found in other organs and in neighbouring parts; in females the Fallopian tubes especially are usually the seat of tubercular disease. In a few instances, the kidneys of newborn infants have been found in a state of disorganization from the degeneration of tubercle.

Cancer is probably the rarest form of renal disease. Dr. Walshe has collected forty cases of cancer of the kidney from different sources. In thirty-one of these, pure epheloid—or one of its varieties—was the species of cancer observed, while there were only five cases of scirrhous. The disease affected both organs sixteen times, the right alone thirteen times, the left alone six. Cancerous degeneration, like many other forms of renal disease, commences usually in the cortical substance, and thence extends to the medullary cones and to the walls of the pelvis and ureters.

In one instance of renal cancer about which I was consulted
by Dr. Greenhalgh (in 1849 and 1851), the gland was enlarged to such an extent, that it simulated in many respects a solid ovarian tumour, and had indeed been diagnosed as such. On the two occasions when I saw the patient she was pregnant; and consequently, as only an incomplete examination could be made no positive opinion was given, though I was certainly inclined to regard the tumour as ovarian. After death the right kidney was found to be the seat of disease, being enlarged at least to the extent of two adult heads.—I am acquainted also with the particulars of a similar case where the tumour was diagnosed as ovarian, and where tapping was had recourse to (in 1864). But although only a little blood came away through the cannula, the true nature of the affection was not suspected by the operator until an examination after death revealed it.—And I have heard of a third instance, in which the abdomen was opened (in 1865) for the removal of a supposed ovarian tumour. The patient died; and at the autopsy the disease was found to consist of an encephaloid (left) kidney.

Dr. Owen Rees states that the following are the chief points to be noticed in the diagnosis of malignant disease of the kidney from calculus:—1. In malignant disease the blood is generally passed in larger quantity than in calculus of the kidney. 2. There is more frequent tendency to nausea on slight occasion than in calculus of the disease. 3. Microscopical examination of the urine will frequently show pus or mucus in excess, if there be calculus; whereas in malignant disease this sign does not so frequently exist. 4. The appearance of those suffering from malignant disease of the kidney is nearly always indicative of a state of anaemia more or less advanced. 5. In calculus, haematuria generally follows upon some unwonted exertion. 6. Careful examination of the abdomen will frequently lead to a detection of tumour, if there be malignant disease of the kidney. It is not always an easy matter to distinguish tubercular disease of the kidney from cancer, but a consideration of the chief features presented by the former will be of assistance. Villous disease of the kidney has been met with, giving rise to haematuria, and ultimately to supplicative inflammation. This disease is extremely rare, and presents no characteristic feature by which it may be distinguished.

The connective tissue around one or other of the kidneys is now and then the seat of medullary cancer, giving rise to a tumour of perhaps very considerable size. The kidney itself may remain perfectly free from any malignant disease; though it will perhaps manifest indications of more or less advanced fatty or other degeneration, owing to its nutrition being impeded by the pressure of the surrounding disease. The amount of albumen in the urine, and the prominence of other symptoms of renal disease, will necessarily depend upon the duration of life after the pressure on the kidney or its bloodvessels has begun to be appreciable. Cancer in this situation has been found in young children more frequently
than in adults. Renal cancer itself, however, has been a cause of death during infancy.

If the urine be microscopically examined either in malignant disease of the kidney or bladder, it will generally be found to contain cancer cells; together with fibres of connective tissue, blood-corpuscles, &c. In renal calculus, the epithelium of the pelvis of the kidney is sometimes rapidly exfoliated; while as these cells are of a caudate and irregular form they are very likely to be mistaken for cancer cells. The spindle-shaped epithelial cells of the ureter also bear a close resemblance to the cells of scirrhus. The general symptoms will, however, aid the diagnosis; for in advanced renal cancer there is usually considerable pain in one or both loins, attacks of nausea and vomiting are very frequent, the malignant cachexia is present, the loss of flesh and strength increases daily, and the enlarged gland can be distinctly felt.

In the treatment we can only do good by supporting the patient’s strength; while every endeavour is made to relieve the suffering with subcutaneous injections of morphia, opiate suppositories, &c.

X. DISEASES OF THE URETERS.

I am not aware that disease of the ureters, occurring primarily, has ever been diagnosed during life. After death, one or both of these canals are not unfrequently found considerably dilated (perhaps to the size of the small intestine), or much contracted. Both these conditions may be due either to some congenital malformation, or to the pressure of morbid growths, or to obstruction from an impacted calculus or an entozoon, or to the extension of disease downwards from the kidney or upwards from the bladder. One remarkable case of hydronephrosis [\(\text{\textgamma} \delta \omega \rho = \text{water,} \\nu \varepsilon \theta \rho \omicron \omicron \varsigma = \text{the kidney}\)], or dropsy of the kidney, has been recorded by Rakitsky, and another by Kussmaul; in both of which the right ureter had become obstructed, owing to compression by an irregular branch of the renal artery. This form of sacculcation or dropsy of the kidney, the result of obstruction by calculi, tubercular, or malignant deposit, the pressure of tumours, &c., is not so very uncommon. The hydronephrosis is usually single, the obstruction occurring in only one ureter; but it will be double in the event of the obstructing medium being of such a nature that it influences both ureters. In the latter cases, the mischief most frequently consists of an impervious urethra; so that the bladder, ureters, and pelves and calyces of the kidneys all undergo dilatation. Children thus malformed, if born alive, only survive a few days; unless the canal of the urethra become pervious, as it may, and then life can be prolonged for some time.—Dr. H illier has reported the interesting history of a boy who, for five years derived relief from the repeated tappings of
a congenitally dilated kidney. So considerable had been the distension of the pelvis of the kidney, and so great the resulting abdominal enlargement, that the case was at first mistaken for ascites. The boy, when between eight and nine years of age, died (in 1869) from acute tuberculosis. The right kidney was found converted into an enormous cyst, containing more than five pints of urinous fluid.—Two remarkable cases of hydronephrosis have also happened, in which the cysts have been diagnosed as ovarian, and death has occurred from attempts at extirpation. The first, was a patient of Dr. Baum of Göttingen, and was operated upon on the 28th November, 1864. Twenty-five pints of fluid were removed from the cyst, and it was then tried to draw out the latter; a proceeding found to be impossible owing to the adhesions between the cyst and the transverse and descending colon. She died at the end of about fifty hours. At the autopsy the left kidney was found to form the tumour.—In the second instance, it was likewise a cystic development of the left kidney which several gentlemen regarded as an ovarian growth. Mr. Spencer Wells operated on the 3rd January, 1867. About fifteen pints of pea-soup-looking-fluid were withdrawn from the cyst; but this structure could not be extracted in consequence of its adherence to the intestines and abdominal wall &c. Death took place thirty hours afterwards. An examination afterwards revealed the true nature of the disease; the renal cyst being the size of an adult head.

XI. IRRITABILITY OF THE BLADDER.

Irritability of the bladder is said to exist when an individual is troubled with a much more frequent desire to pass urine than is natural. This condition not uncommonly arises from organic disease of the kidneys, bladder, prostate gland, or urethra; such as inflammation, abscess, tumour, cancer, stricture, and so forth. It may likewise be due to the pressure of the uterus when misplaced (as in anteflexion), or when enlarged from pregnancy or the growth of a fibroid tumour, or when diseased from infiltration with cancer; or it may be connected with the presence of a tumour or a calculus in the bladder; or it can be originated by the irritation of hæmorrhoids, by cancer of the rectum, by a painful ulcer of the sphincter ani, or by an abscess at the side of the rectum. Lastly, it may prove, as it very often does, to be merely functional—i.e., dependent on some morbid state of the urine, such as the presence of uric acid or urates in excess, or of oxalates, owing to derangement of the digestive organs or kidneys or bladder, or on some constitutional nervous affection.

Symptoms.—The desire to micturate comes on suddenly and very frequently, so that in many cases a patient has to pass urine every
thirty or forty minutes. There is generally an inability to resist the desire; but if this can be checked, uneasiness and pain are induced by doing so. The urine is seldom increased in quantity, except in hysterical subjects: in the latter the increase is often considerable and the secretion is pale and very watery, the proportion of solid constituents remaining as in health. After this affection has lasted some time, the bladder often diminishes very much in size; so that instead of being able to contain from fifteen to twenty ounces of urine as in health, it cannot hold more than two or three ounces.

In all cases the urine should be examined. Where it is found preternaturally acid or alkaline; loaded with urates, or phosphates, or oxalates; or when it contains pus, albumen, sugar, or any other morbid secretion, the disease must be traced to its origin. For under these circumstances the irritability of the bladder is a mere symptom of either some severe constitutional derangement, or else of dangerous organic disease.

Incontinence of urine in children is frequently due to simple irritability of the bladder, or to the presence of worms in the rectum; or it may be associated with albuminuria, or with diabetes, or with the uric acid diathesis; or it will be simply the natural consequence of the child being put to bed for twelve hours without being roused at proper intervals to pass water. When there is an involuntary flow of urine in the adult, it is almost always indicative of an overloaded bladder from paralysis of the muscular coat.

Treatment.—In simple irritability of the bladder, not of long duration, attention to regimen generally, the avoidance of all stimulating drinks, the substitution of cocoa or chocolate made with milk for tea and coffee, the free employment of mucilaginous diluents, and the use of warm or tepid salt water baths will often effect a cure. The dilute nitro-hydrochloric acid in decoction of pareira, with or without the tincture of belladonna. (F. 378), is very efficacious when the urine is alkaline or only slightly acid: where the secretion is abnormally acid, small doses of liquor potassae, or what is more effectual with less disturbance of the stomach, citrate of potash in doses of twenty or thirty grains in infusion of buchu (F. 62), do great good. Sir Henry Thompson has also recommended a decoction of the tritecum repens or couch-grass made with one ounce of the underground stem to a pint of water, the whole of which is to be taken in the twenty-four hours. Opiate suppositories at bedtime, or five or eight grains of the extract of henbane in a pill, or ten or fifteen minims of tincture of belladonna in infusion of linseed, will lessen the irritability, and allow of a good night’s rest. In severe and obstinate cases a grain of morphia dissolved in an ounce of water injected into the bladder previously emptied may effect a cure.

Ferruginous tonics should be ordered where there is general debility, or when the irritability comes on in young females at the
catamenial periods. In a few obstinate cases the tincture of cantharides, with or without the tincture of the perchloride of iron, has relieved all the symptoms after other means have failed. Moreover, in women, the employment of vaginal pessaries of belladonna and oxide of zinc (F. 423) will frequently prove most serviceable.

The troublesome involuntary flow of urine during sleep, which is so common in young children, may result from any of the causes of incontinence: hence in all cases of the kind the renal secretion should be examined. But usually this affection is the consequence of bad habits; being favoured by the free use of fluids during the after part of the day, by exposure to cold in the night, and by lying on the back—a posture which seems to be very unfavourable to the retention of the urine, especially when the natural sensibility of the mucous membrane of the neck of the bladder is at all increased. The disorder can usually be cured by making the little patient almost abstain from fluids for three or four hours before going to bed: by waking him to empty his bladder twice or thrice during the night: by tying a cotton reel over his spinal column, so that when he turns round upon his back he may at once be awaked: and by giving strength and tone to his system by the administration of the tincture of the perchloride of iron with small doses of belladonna. In some inveterate cases, the application of a succession of small blisters over the sacrum has effected a cure: but such agents should be avoided, if possible. Where the bladder is very irritable, a belladonna plaster over the loins and sacrum will often be very useful; or three or four grains of the extract of this drug mixed with some glycerine of starch should be spread over the same region every night, or the belladonna liniment properly diluted can be employed. Where there is a weakly condition of the general health, a tepid salt water bath every morning, with the administration of cod liver oil, may also help to effect a speedy cure. If there be any intestinal irritation, it must be removed; while any errors of diet or mal-assimilation of food ought to be rectified.

A common cause of irritability of the bladder in young boys is the presence of a long prepuce with a very small orifice. Sometimes the symptoms produced by this condition are so severe as to give rise to the suspicion of calculus. In such cases, the most marked and effectual relief will be afforded by resorting to circumcision. Drugs are certainly quite useless.

XII. SPASM OF THE BLADDER.

Like other muscular organs, the bladder is subject to spasmodic attacks of pain.

Symptoms.—The patient complains of severe pain at the lower
part of the abdomen, and along the urethra to the extremity of the penis. The urine may be passed involuntarily, but generally it is retained; there being a constant desire to micturate without the power to do so. Frequently, also, there is tenesmus.

When the spasm has been of long continuance, death has resulted, with all the symptoms of suppression of the urine. In these cases the vesical extremities of the ureters have been found spasmodically closed; while the tubes themselves have been dilated by the accumulated urine, the increased dilatation sometimes extending to the pelvis of each kidney. Care must be taken not to confound spasm with inflammation of the bladder: in the latter the pain is constant, lancinating, and throbbing; while there is also general fever, and great disturbance.

Causes.—Stone in the bladder is one of the most frequent causes of violent paroxysms of spasm; malignant vesical tumours also produce them; and they are not uncommon in diseases of the rectum and uterus. So far as the bladder is concerned, a fibroid tumour in the anterior wall of the uterus will cause almost as much spasmodic pain as if the morbid growth had its seat actually in the coats of the bladder. In cancer of the womb the bladder gets contracted and morbidly sensitive long before an examination can detect any structural disease in it. Dr. Prout says that spasm of the bladder may arise from the presence of abnormally acid urine, as in gout; or from an abscess of the kidney; or from ulceration or other organic diseases of the bladder, prostate gland, &c.; or from the use of irritating diuretics, as cantharides; from excessive venery; from hysteria; and from disorders of the intestinal canal, especially, perhaps, from the irritation of oxyurides.

Treatment.—Two indications present themselves—viz., the immediate relief of the spasm, and the removal of the cause. The first will be best accomplished by the hot bath, or by fomentations until a bath can be obtained; as well as by the administration of a full dose of some narcotic either by the mouth or by the rectum. The removal of the cause is more difficult. Where the patient is gouty and the urine loaded with urates, colchicum and soda or potash or lithia water will do much good; while at the same time attempts can be made to induce an attack of gout in the foot, by the application of sinapisms, or by the use of stimulating pediluvia. In abscess of the kidney, the symptoms must be palliated as they arise; the spasm in these cases being due to irritation by pus descending from the kidneys may be relieved by washing out the bladder with a weak solution of carbolic acid to which morphia may be added; the strength being kept up by mild nourishing food, cod liver oil, change of air, &c. When a vesical calculus is present, the physician can only give temporary relief until a surgeon takes the necessary steps to crush or extract the stone. Supposing the spasm to be due to sympathy with a con-
tigious organ the disease of which cannot be removed, frequently repeated doses of the tincture of perchloride of iron often prove of great service. Camphor mixed with a linseed poultice and applied to the perineum, is also said to be frequently serviceable; or a hemlock poultice may be tried. But the quickest relief will be obtained from a mixture containing ether and morphia and belladonna (F. 315); or from a subcutaneous injection of morphia and atropia, or especially from an opiate and belladonna suppository (F. 340).

In every case the diet is to be regulated. Simple nourishing food, an avoidance of all stimulants, a free supply of milk, and plenty of mild mucilaginous drinks should be recommended. The patient also ought to wear flannel next to the skin, to protect himself from sudden changes of temperature; while he must avoid sexual intercourse, riding on horseback, and every kind of violent exercise.

XIII. PARALYSIS OF THE BLADDER.

The muscular coat of the bladder may become paralysed from some influence confined to this viscus; or from disease of the nervous centres, inducing loss of muscular power in other parts of the body; or from constitutional debility arising from any cause.

Causes.—The paralysis may be due to over-dilatation of the muscular coat of the bladder. Thus, a sensitive individual from some cause (as being in the company of the opposite sex, or from being shut up in a railway carriage) is unable to micturate when the desire is felt; and then, on afterwards attempting to do so, it is found that the power is completely lost.

The paralysis may also be a consequence of apoplexy, or of injuries to the head, or of injuries or diseases of the spine.

It is, generally speaking, a disorder of old age, and seems particularly to attack gouty and rheumatic persons. Not uncommonly it is connected with disease of the neck of the bladder; or with enlargement of the middle lobe of the prostate gland.

Women who have had large families, and especially such as have experienced severe labours, oft-times suffer from paralysis of the neck of the bladder; so that they are either unable to retain the urine at all, or it comes away involuntarily on laughing and coughing, or on making any sudden exertion. The same thing is apt to happen with very obese women. Time, astringent vaginal injections (F. 425), pessaries containing a little tannic acid (F. 423), cold hip baths, and ferruginous tonics often effect a cure.

Symptoms.—Unlike the rectum, the bladder retains its contents when paralysed; this phenomenon being due to some pecu-
liarity in the neck of the bladder not possessed by the bowel. The sphincter vesicæ consists only of pale muscular fibres mixed with elastic tissue placed round the neck of the bladder; the elastic tissue modifying materially the action of the muscle. "The same loss of power," says Mr. Coulson, "which allows the escape of fecal matter through the paralysed sphincter ani, does not affect to a similar degree the sphincter vesicæ, whose elasticity, inherent in the tissue itself, and not dependent upon nervous influence, retains closed the vesical orifice when the rest of the organ is paralysed."*

When the bladder gets over-distended, the urine dribbles away by the urethra; the resistance to its escape at the neck of the bladder being overcome when the walls are incapable of further dilatation. Hence incontinence of urine is often the prominent symptom of retention, of which fact the following is a good illustration:—Mr. Lawrence was one day sent for to see a case of supposed irritability of the bladder. The medical practitioner in attendance stated that he had been doing all in his power to allay the irritability, but that his efforts were unavailing; for the urine passed off as quickly as it entered the bladder. On examination Mr. Lawrence felt the fundus of the bladder forced up some way above the umbilicus; he introduced a catheter, and five pints of urine were withdrawn. The truth was that the bladder had been allowed to become distended for about five days; and in consequence of this, unfortunately, the patient never afterwards recovered the natural power of emptying this viscus.—I have several times seen cases where alarming symptoms have set in about the third day after parturition, owing to the excessive accumulation of urine; the practitioner in attendance having failed to perceive the true nature of the case, because the patient was complaining of constantly passing water. The introduction of a catheter, however, has speedily removed all doubt, as tumblerful after tumblerful of urine has been drawn off. The paralysis seldom lasts for more than two or three days subsequent to the proper treatment being resorted to; but the catheter should be used every eight or twelve hours until it is certain that the patient completely empties the bladder upon each attempt at micturition.

In most cases of paralysis of the bladder, the urine is found loaded with mucus; while it is of a highly offensive ammoniacal odour, of an alkaline reaction, and the phosphates—the neutral triple phosphate of magnesia and ammonia and phosphate of lime—are precipitated. It is highly probable that the urine when secreted is of acid reaction; but on flowing into the bladder it becomes mixed with a greater or smaller quantity of fluid which has been retained a sufficient time to undergo decomposition, and

hence the fresh secretion gets contaminated. In injuries of the spinal cord the vital power of the walls of the bladder is so lowered that the urine readily becomes decomposed. The urea is converted into carbonate of ammonia; while the ammoniacal urine inflames the vesical mucous membrane, so that the latter secretes a remarkable quantity of viscid ropy mucus. If the patient survive, the inflammation may extend to all the coats of the bladder, and it sometimes gives rise to ulceration which may perforate the walls of the bladder and allow the urine to be extravasated.

One of the earliest symptoms of paralysis of the bladder is pain at the neck of this viscus and in the glans penis; but after a time, little or no uneasiness is complained of, and as the bladder loses its sensibility even the desire to void urine is not experienced. The constitutional disturbance is usually severe; the pulse is rendered quick and feeble, the tongue gets furred, the appetite fails, the nights are restless, there is great mental depression, and the vital powers become greatly lowered. Frequently the patient sinks into a state of stupor, and dies from uremia or from exhaustion.

Treatment.—Where the paralysis depends upon over-distension of the bladder the catheter must be introduced; although it is sometimes advisable to be careful not to withdraw the fluid too rapidly, since fatal collapse is said to have occurred from the sudden abstraction of a large quantity of urine. It is necessary also to be scrupulously careful that the catheter employed is perfectly clean, since cases have occurred in which after the passage of a catheter the urine, previously healthy, has at once become ammoniacal, probably from the introduction of matters which have acted as a ferment and induced decomposition. When the paralysis continues, the patient should be taught to introduce the catheter for himself, using as large an one as the passages will freely allow. Especially should he be cautioned always to withdraw every drop of urine; inasmuch as that which is retained will after a time become decomposed, and not only contaminate the fresh secretion as it flows from the ureters, but also give rise to most serious changes in the mucous and other coats of the bladder. The instrument should be passed about every six or seven hours. Now and then the bladder had better be washed out with warm water, to which a very small quantity of carbolic acid may often be added with advantage.

To restore the contractile power of the bladder various remedies have been recommended. In recent cases, the use of the catheter occasionally suffices to give tone to the vesical walls; sometimes cold water injections, as recommended by M. Civiale, prove beneficial; and good results are, in many instances, to be obtained from small doses (the one-twelfth of a grain twice daily) of strychnia, or from the use of the ergot of rye. Galvanism,
ACUTE CYSTITIS.

cold douche and hip baths, blisters over the lower part of the spine, quinine and iron, and aloetic purgatives are also remedies that can be often resorted to with advantage.

When there is disease of the brain or spinal cord, we can seldom hope to do much good beyond taking care that the bladder does not become distended; at the same time attempting, as far as possible, to combat the symptoms as they arise.

XIV. INFLAMMATION OF THE BLADDER.

Inflammation of the bladder, technically known as cystitis or cystorrhœa, is not a very frequent disease. Probably one reason for this is, that directly any morbid action is set up in this viscous advice is eagerly sought, since the symptoms at once become urgent. Of the two forms of inflammation the acute is much the most uncommon. The chronic variety falls under the observation of every practitioner, and often gives him much trouble in his attempts to effect a cure.

Acute or chronic cystitis may now and then complicate uterine affections in women; or either will result from a tedious labour, owing to the long-continued pressure of the fetal head.

1. ACUTE CYSTITIS.

Acute inflammation of the bladder, or cystitis \( \text{Κυστης} = \text{a bladder; terminal -itís}, \) is a severe disease which occurs under a variety of circumstances. The morbid action is generally confined to a portion of the mucous surface, the neck and base-fund being the parts most frequently affected; but in severe cases the whole bladder and all its coats are attacked.

Causes.—This disease now and then arises as an idiopathic affection: in the great majority of cases, however, it supervenés on long existing chronic inflammation. It may have its origin in the extension of inflammation from the urethra, or from some of the pelvic viscera, or from the connective tissue (pelvic cellulitis). Gonorrhœa, in men, is a frequent cause; and so are caustic injections to the urethra. Cystitis can also be produced by external violence, as by wounds; by the pressure of tumours of the uterus or ovary, or of effusions of blood (pelvic õematoccele); or it will be found due to the irritation of some foreign body—as a calculus, or to the abuse of diuretics, cantharides, &c. Protracted retention of urine has undoubtedly set up fatal cystitis; the inflammation being partly a consequence of the distension, and partly a result of the irritating effect of the urine.

Symptoms.—The symptoms of acute cystitis are the following:—
Shivering, considerable pain over the bladder, and heat of the
urethra; together with a constant desire to pass urine, which is voided in very small quantities at a time. There is likewise high fever, nausea, mental depression, and general constitutional disturbance. The bladder can often be felt on making pressure over the lower part of the abdomen, as a small and rounded tender tumour. The pain is usually very severe, extending along the perineum and urethra, as well as down the thighs; while it is much increased by pressure upon the lower part of the abdomen, or by examining the posterior wall of the bladder through the rectum. Moreover, this pain diminishes in severity directly the bladder is emptied; but as soon as a small quantity of urine collects the sufferer commences, becoming more and more severe until the desire to micturate is rendered so irresistible that the patient feels compelled to respond to it. Frequently, the irritation extends to the rectum; and then the sufferer is annoyed with tenesmus and evacuations of mucus tinged with blood.

Unless the progress of the inflammation be controlled in the course of two or three days, the pain becomes unbearable, the calls to micturate are constant, the urine is expelled in drops, and the walls of the bladder lose their power, so that an accumulation of urine takes place. This secretion is found high-coloured, perhaps fetid and alkaline, and sometimes loaded with shreds of fibrin entangling pus and blood corpuscles. As the morbid action continues, the neighbouring tissues get involved in the inflammation: the urethra, prostate, vagina, or pelvic connective tissue may become affected. The constitutional disturbance rapidly increases, considerable prostration ensues, cold clammy sweats cover the body, the pulse becomes very feeble, low muttering delirium sets in, and death relieves the sufferings between the seventh and twelfth days. In less violent cases resolution sometimes takes place, and the patient recovers; or the inflammation (if limited in extent) ends in softening of the mucus membrane with ulceration, and then gives rise to much pain and disturbance subsequently.

A few curious cases have been recorded where the whole mucous lining of the bladder has been thrown off in one piece. In the museum of the Royal College of Surgeons there is a preparation (Pathological Specimens, No. 1993) which illustrates the correctness of this remark. The history of the patient, communicated to me by my kind old friend, the late Dr. Knox, was as follows:—A man seventy years of age, living in Edinburgh, fell from a scaffold, and, in consequence of the injuries received, suffered from retention of urine. The catheter was introduced frequently, and a thick, puriform fluid drawn off by it. At the end of the third week, however, nothing would pass through the instrument, while the point of it could be felt to impinge upon a membrane. To relieve the man's sufferings, the late Mr. Liston, assisted by Dr. Knox, cut into the bladder from above the pubes, and thus allowed a large quantity of purulent fluid and a membrane to escape,
The patient lived for three months afterwards, discharging his urine partly through the wound and partly through the urethra: at the end of this time he died from exhaustion. On examining the layer of membrane, as it is found in the Museum, it is seen to be of a saccular form; measuring about six inches in its longer and four inches in its shorter diameter. The shape indicates that it lined the whole interior of the bladder, and was thrown off from it in one piece. The outer surface is flocculent, and in parts distinctly fibrous: the inner surface is granular and reticulated, like superficially ulcerated mucous membrane. In fact, as the College Catalogue states, it exactly resembles the mucous membrane of a bladder, separated as a slough in one piece.

Treatment.—The remedies mainly to be relied upon are those which have been recommended in the inflammatory affections of other organs; especially large poultices, very hot poppy fomentations, and often repeated hot hip baths. The mildest aperients (such as castor oil) ought to be employed to keep the bowels gently open, if there be any evidence of the retention of unhealthy secretions. Then a catheter must be used frequently if there are symptoms of retention of urine, but not without. The diet should be very light, with a moderate quantity of mucilaginous fluids—such as barley water, linseed tea, milk, arrowroot, mucilage of tragacanth, &c. Tea, coffee, and all alcoholic drinks are to be avoided. As regards drugs none will be found so useful as opium and belladonna. These agents should be used as suppositories (F. 340) if possible in men; although in women they prove much more efficacious when introduced into the vagina as pessaries (F. 423). Should a calculus prove to be the cause of the inflammation, the surgeon will probably wait until the morbid action is subdued before he ventures upon lithotrity or lithotomy.

2. CHRONIC CYSTITIS.

This form of inflammation, now and then spoken of as vesical catarrh, is far from uncommon, inasmuch as it is readily excited by numerous causes. It is sometimes the sequel of an acute attack. More often it results from some poison in the system, as that of gout or rheumatism; or it is not unfrequently due to the retention of decomposing urine (perhaps the consequence of spinal paralysis), or to the irritation of urine charged with saline diuretics; or it may have its origin in disease of some neighbouring viscus—as the rectum, or uterus, or vagina; or it may be caused by any foreign substance in the bladder, whether this be a simple or malignant tumour or a calculus. Old men, more frequently than old women, suffer from chronic cystitis, especially during cold weather, or if they are much exposed to damp. The irritation may extend from an enlarged prostate.

In simple cases, there will be merely a general sense of indis-
position, an increased sensibility of the walls of the bladder, a dull kind of aching about the pelvis, and a frequent desire to pass urine; the latter being generally scanty, and containing a small quantity of mucus or pus. But sometimes, the secretion of the lining membrane becomes very greatly increased (catarrh of the bladder); and then the urine deposits a large amount of semi-transparent, viscid, and ropy matter. This adheres to the sides of the vessel containing it, and on being poured out falls away like a gelatinous mass; while it consists either of mucus, or of pus which has been modified by the admixture of an alkali.

On attempting to cure these cases, it is of the first importance to remove the cause if possible. Then, care must be taken to prevent further irritation of the mucous membrane by not allowing the urine to be retained, as it very soon becomes alkaline; and with this object the bladder should be frequently emptied by the catheter. Great relief is often derived from washing out this viscus with three or four ounces of warm water; or with six or eight ounces of water containing twenty grains of extract of henbane with three or four of extract of opium, allowing at least one-half of the fluid so medicated to come away, or after washing out the bladder, one or two grains of acetate of morphia, dissolved in two ounces of water, may be injected and retained. Where an astringent seems needed, a mixture of acetate of lead or tannic acid in warm water may be used. The strength of the injection should be such as to impart a styptic taste to the tongue.

Amongst the general remedies which may be administered, are the infusions of bearberry (infusum uva ursi) and buchu; or the decoctions of pareira and couch-grass. Demulcent drinks are also serviceable; especially the decoction of Iceland moss, or plain barley water, or the infusion of linseed. A suppository of opium and belladonna (F. 340) at night, will often procure refreshing sleep; but in women, a medicated pessary containing the iodide of lead or the oxide of zinc, with belladonna (F. 423), has seemed to me to act more favourably. Moreover, the application of a belladonna plaster over the sacrum is sometimes the source of considerable relief; or if we wish to produce counter-irritation (which will very rarely be the case) we can employ the croton oil, or the iodine liniment. In all cases nourishment must be given freely; animal food, raw eggs, and as much milk as can be digested being needed. Tea and coffee generally do harm; while alcoholic stimulants should only be prescribed where there is much depression, or where the patient is aged and has habituated himself to their use. If the digestive organs are weak, the administration of pepsine with the chief meals will be necessary; and as exercise must generally be forbidden, one of the preparations of this substance will very commonly be required.
XV. TUMOURS OF THE BLADDER.

The tumours which may be developed in the bladder are of the following kinds:—Warty or polypoid fibrous bodies; villous or vascular growths; and malignant tumours, or infiltrations.

Whatever the nature of the tumour may be, it gives rise to symptoms very much resembling those caused by a stone in the bladder. There is frequent micturition; a painful feeling of inability to empty the bladder is complained of; while occasionally the urine is bloody, or purulent, or ammoniacal and loaded with mucus. Malignant tumours (either scirrhous, or more commonly medullary, or epithelial) are of much greater frequency than the innocent varieties; and though the cancerous deposit is generally primary, yet it may occasionally be the result of the extension and infiltration of disease from the vagina, uterus, prostate, or rectum. The suffering is always very great; the pain at the lower part of the abdomen, in the loins, and about the thighs being constant. The urine is bloody, and often contains threads of tissue; while perhaps the diagnosis may be facilitated by the presence of cancer cells. Until the constitutional cachexia becomes marked, the symptoms are apt to be mistaken for those produced by a calculus; and though perhaps it may be unavoidable, yet considerable mischief is now and then caused by the use of the sound. I well remember finding an eminent medical friend, now dead, suffering the greatest agony after a mass of medullary cancer at the base of his bladder had been roughly treated in the futile attempt to detect a stone.

As respects the treatment of these cases we can do little more than relieve the prominent symptoms. Our chief reliance must therefore be placed on narcotics in sufficient doses to give repose, or on astringents where there is hemorrhage; as well as upon a nutritious diet. The polypoid fibrous, and the pendulous villous, growths, may occasionally be removed by ligature from the female bladder, owing to the ease with which the urethra can be dilated. But success has seldom attended these operations, partly, perhaps, for the reason that patients are often unwilling to submit to the necessary proceedings until great constitutional disturbance has set in. And then, by the time that this has got developed, the ureters and pelves of the kidneys have generally undergone considerable dilatation; or they have even become the seats of suppurative inflammation, which can have but one termination.
XVI. SPERMATORRHEA.

The consideration of the subject-matter of this section can hardly be approached without a feeling of misgiving, if not of actual repugnance. The disagreeable term "spermatorrhoea" \( \Sigma \pi i \rho \mu a = \text{seed} + \rho i \omega = \text{to flow} \) has been so grossly abused, and is so constantly employed by the vilest charlatans to intimidate their unfortunate dupes, that many practitioners would perhaps wish to ignore the topic altogether. Yet it seems to me, that to do this is merely to rush from one extreme to the other. For it cannot be denied that a morbid condition may be induced, the chief feature of which is the involuntary escape of seminal fluid; while it is as certain that the consequences of such losses, if oft repeated, are decidedly injurious to the mental and bodily health. Quite as frequently, however, the symptoms attributed to spermatorrhoea are due to overwork, or dyspepsia, or unfavourable hygienic conditions, and the lumbar pains, headache, depression of spirits, indisposition for work, and inability to fix the attention arising from these causes are set down to self-abuse, and exaggerated by an over-sensitive conscience as a well-merited punishment. The victims of this disorder, however it may have been brought about, are as much entitled to our care and consideration as those afflicted by other diseases. The physician who is familiar with the many varieties of human suffering and human weakness should be the last to acknowledge any bounds to his ministrations. It is happily no part of his duty to inquire whether the calamity be a just retribution. Suffice it that it is the obligation, perhaps rather the privilege, of his noble art to give all the relief in his power to a fellow-creature struck down by pain and sickness; whether the suppliant be the inmate of a hospital or a prison, of a palace or a hovel.

The most frequent cause of spermatorrhoea is self-abuse. Youths who have never received a kindly warning, and who have been allowed to grow up without being taught even the rudiments of physiology, or the necessity for moral control, contract pernicious habits before they are aware of the mischief they are inflicting upon themselves. Exciting conversations, with the perusal of "sensation" novels and newspaper reports of the proceedings in the Divorce Court, early arouse the passions and are productive of the most pernicious effects. To deny this is simply to shut one's eyes to a grave evil; an evil which is so patent to those who have the control of young men, that no very long time since (I believe it was in the year 1864) an earnest and very distinguished preacher delivered a sermon on this subject at one of our universities. But to students at college the warning often
comes too late; for this bad habit is not unfrequently early and easily acquired, though it can be broken only with the greatest difficulty.

It is a common mistake to suppose that the functions of the testicles must necessarily be performed after the time of puberty. These glands may be perfectly healthy and yet quiescent; just as is the case with the mammary glands until their powers are brought into play. But when the secretion of seminal fluid has been repeatedly encouraged, a hard struggle will alone stop the continued formation of this fluid. It may be doubted whether the serious symptoms which occur in spermatorrhœa are directly due to the loss of seminal fluid, or only to the effect of the cause of this loss upon the nervous system. Seeing what occurs in women, where no discharge follows upon masturbation, I am rather inclined to adopt the second view.

The seminal fluid is composed of a semi-transparent and glutinous and alkaline fluid, called liquor seminis; of granular corpuscles, each about the \( \frac{1}{4000} \)th of an inch in diameter, and sometimes termed "spermatophori;" and of spermatic filaments or spermatozoa, easily recognised by a magnifying power of some 400 diameters, owing to their tadpole-like form and rapid vibratile movements. To detect these bodies in urine, this secretion should be allowed to repose in a conical glass, the lower part of the sediment being afterwards removed to a glass slide with a pipette. When the seminal fluid is abundant it will possibly render the urine slightly albuminous. In spermatorrhœa there may be simply a repeated escape of seminal fluid; or this is found associated with morbid changes in the vesiculae seminales, ejaculatory ducts, bulbous portion of the urethra, and prostate gland. The coexistence of the latter occurs more frequently where the disease is due to gonorrhœa, than where it has its origin in self-abuse. The mere occasional presence of spermatozoa in the urine, is of course of no consequence. But in the cases under consideration there are repeated escapes of semen, often by day as well as by night; while the passage of the urine, or the straining to empty the rectum may produce a flow. Where this occurs, the secretion often consists of an imperfectly elaborated fluid,—one loaded with epithelial débris, and defective in true spermatic elements.

The shameless miscreants who are allowed to distribute indecent tracts, and in other ways to spread their nets for victims, always pretend to make a microscopic examination of the urine. They then direct the sufferer's attention to the great number of spermatozoa to be seen. Of course, considerable alarm is experienced as a multitude of lively animalcule are seen twisting about in all directions. This alarm would be of short duration, however, were it but known that the interesting specimen merely consists of a little sour paste containing the common vinegar eel (An-
guillula acet); whose filiform body; rather more than half a line in length, is the innocent cause of much gross lying and thieving.

The consequences of spermatorrhoea are general weakness, with nervous irritability. There is mental depression; as well as a desire for a dreamy kind of existence, rather than a wish to follow any active occupation. The digestive organs frequently get disordered, as is indicated by flatulence and constipation; the sense of hearing, and not uncommonly of sight, becomes dulled; there is loss of memory, and an inability to fix the attention; while attacks of palpitation, giddiness, shortness of breath, headache, and neuralgia are far from uncommon. In extreme instances I believe the final result may be epilepsy, phthisis, insanity, or impotence. That these views are not imaginary I could prove by the recital of cases which have fallen under my observation.

As typical of a class of cases, which are of comparatively frequent occurrence, I would give such a sketch as this:—A young man, about 25 years of age, has never had sexual intercourse, but he confesses to have occasionally practised masturbation since he was thirteen or fourteen years of age. His penis is normal; both testicles are of a proper size, they feel healthy, and they are situated in the scrotum. He enters into a matrimonial engagement; but unfortunately a period of eighteen months or two years must elapse before he can fulfil his contract. During this interval he sees his future wife daily, and in spite of his resolve not to encourage any feeling of excitement yet repeatedly he suffers from seminal emissions. At the time of marriage he is nervous, weak, and has fits of mental depression; while his wedding trip is rendered perfectly miserable on finding that immediately he attempts to have connexion an emission takes place and the erection ceases. Night after night his efforts prove unavailing; until at the end of two or three weeks he becomes thoroughly ashamed of himself, afraid of his wife's female relations, and terribly depressed. It is cruel and absurd to tell an individual suffering from such symptoms that he has nothing the matter with him; that he is hypochondriacal; and that such a disease as spermatorrhoea has no existence. To do so is merely to send him to some rogue who will draw a terrible picture of the result of his weakness, and rob him to the utmost possible extent. The truth is that the patient has not the power he needs; and this power can only be given to him by well-directed medical treatment.

The treatment of spermatorrhoea is not to be regarded as a subject beneath our consideration. At the commencement, it is necessary to obtain the confidence of the patient; so that while we calm his excessive anxiety, we may also impress him with a belief
in our power to effect a cure if he will but carry out the directions which are given. He ought to be urged to read no books on the subject of his disorder, to work earnestly but not immoderately at his occupation, to seek cheerful society in the evening, to take a proper amount of exercise, to sleep upon a mattress and not to remain in bed for more than eight hours, not to indulge in heavy meals, and (as a rule) to avoid smoking and the use of alcoholic drinks. Supposing the emissions take place when he lies upon his back, as they often do, he should tie a cotton reel over the middle of the spine, so that he may awake directly he assumes this unfavourable position. The bowels must be regulated by the exhibition of simple aperients (F. 165, 169, 194); provided attention to the diet and the use of ripe fruits fail to procure an easy evacuation every day. If there are prominent symptoms of nervous depression, a mixture of phosphoric acid, tincture of nux vomica, and bark (F. 376) will prove very serviceable; or a pill of sulphate of zinc and extract of nux vomica (F. 409) may be ordered. When the patient is unmarried I generally avoid giving steel in any form; inasmuch as this medicine often produces congestion of the sexual organs, and so keeps up the irritation which it is our object to subdue; though sometimes, in cases where there is real and continuous loss of semen, very large doses, half a drachm or a drachm of the tincture three times a day may bring about a speedy cure. Where the man is married, and is unable to have intercourse, a mixture of quinine and iron (F. 380) will be unobjectionable. A tepid salt water sponge bath had better be taken every morning; while the glans penis is to be washed so as to remove the secretions of the sebaceous glands. The use of a suspensory bandage is often beneficial. Where the emissions are not very frequent, this plan of treatment will suffice; but in the more severe forms of spermatorrhoea we may have to prescribe, in addition, cod liver oil, a moderate allowance of wine or bitter ale, the use of milk instead of tea or coffee, and to recommend a holiday with residence at the seaside. If any sedative be needed, a pill containing camphor with small doses of conium and belladonna (F. 326) will often exert a favourable influence. And then, if there be any disease about the rectum, or if there be indications of the presence of oxyurides, or if there be irritability of the bladder, or if the urine be excessively acid, the necessary steps for effecting a cure of these affections must be taken.

With regard to local treatment I can only say that I believe the instances in which it is called for are very exceptional. At the same time, I have seen cases where a good effect seems to have been produced by the introduction of a metallic sound into the bladder once or twice a week. The application of nitrate of silver to the prostatic portion of the urethra, by means of Lallemand’s porte caustique, has been highly spoken of by gentlemen of great
experience; but if it be used the patient ought to remain quiet for a day or two after the application, he should be kept on a milk diet, and he must be told that it will give rise to considerable irritation with the passage of bloody urine. Where there is extreme relaxation, galvanism deserves a fair trial. And lastly, it must be remembered, that when a cure has been effected, moderate sexual intercourse tends to maintain the general health; although, if the practitioner feels it his duty to recommend marriage, he should give a warning as to the mischief which will inevitably result from "a long engagement."
PART XIII.

DISEASES OF THE FEMALE ORGANS OF GENERATION.

I. DISEASES OF THE VULVA.

The parts included under the term "vulva" [probably as if Valva, pl. valvae = folding doors] consist of the external organs of generation,—the mons Veneris, the labia majora, the labia minora or nymphæ, the clitoris, the vestibule, the meatus urinarius, the orifice of the vagina, and the hymen stretching across the lower portion of this orifice in the virgin. The diseases of these structures are of considerable importance. They can seldom be correctly diagnosed without an ocular inspection; for making which it generally suffices to place the patient upon her left side, in the ordinary position for labour. Some practitioners prefer to have the woman upon her back, with the knees drawn up; but as an examination so conducted is revolting to a woman's feelings, it should only be resorted to in exceptional cases.

I. VULVAL PRURITIS.

Pruritus [Prurio = to itch] of the vulva may be only a symptom of some disease, or it will now and then occur as the sole local affection. This very troublesome disorder consists of a perverted sensibility of the nerves of the district. Like some other neurotic affections it is much more frequently met with in old age than in the earlier periods of life. I am inclined to think that it is more common in married women, than in those who have never had intercourse; although the soundness of this opinion cannot be demonstrated by a reference to numbers.

Causes.—When pruritis occurs as an idiopathic disorder it will frequently be found that the general health is far from good. The patient is pallid, complains of debility and lowness of spirits, and perhaps has been losing flesh. The appetite is bad; while the digestive organs act imperfectly, there is acidity with flatulence, the liver is torpid, and the bowels are apt to be confined.

Not uncommonly, the irritation is merely the symptom of some
uterine disease; especially of displacement, or of excoriation around
the os uteri, or of the early stage of carcinoma. A vascular tumour
at the orifice of the urethra will give rise to almost intolerable
attacks of itching about the vulva; and so sometimes will lencor-
rhoea in whatever way it is set up, or chronic inflammatory
affections of the vagina, and a dilated condition of the veins of
the labia. Hæmorrhoids not unfrequently produce it. In the
carry stages of pregnancy it may prove very annoying; oft-times
the irritation continuing until after labour, and even until the
complete cessation of the lochia. The commencement of each
menstrual period, in many sensitive women, is attended with
itching about the pudenda, especially if the flow be scanty.
Finally, irritation is not a very uncommon symptom at the
climacteric period, when the catamemia appear irregularly before
their final cessation.

An examination of the stools and of the urine had better be
made in all obstinate cases of pruritus: of the former, so as to be
sure that there are no thread worms keeping up the irritation; of
the latter—lest there be any sugar present. I can scarcely believe
that there is any connexion between diabetes and pruritus, but
every now and then the two are found to be coexistent.

Symptoms.—The sensation experienced is not always that of in-
tense itching. Sometimes it is described as a tingling or smarting,
with a feeling of heat about the parts; these symptoms being
aggravated by spiced or heating food, and especially by alcoholic
drinks. In other instances it is spoken of as a sense of creeping
or formication, so that the patient will hardly believe that the
parts are not infested with a number of disgusting insects. The
irritation is so insupportable at times that the patient cannot
refrain from scratching herself. Hence the vaginal labia, as
well as the tissues about the perineum and vestibule and mons
Veneris, got red and excoriated; small scabs forming and increasing
the evil. With other cases the parts are dry and angry-looking,
while there are marks of the scratching produced by the nails.
The long persistence of the pruritus likewise leads to actual
alterations in the cutaneous tissues. On making an examination
of the vulva, as well as on opening the vaginal labia, these parts
are seen to be of a peculiar silvery-colour; often looking as if they
were coated with a white metallic paint, which had not dried. The
leucorrhœal discharge which is usually present aggravates the
irritation, especially if this discharge be at all acrid; while it may
also produce more or less swelling. Occasionally, pruritus appears
to be a cause of erotic sensations—perhaps amounting to nympho-
mania.

Under all circumstances the irritation is much increased by
warmth. Hence, the patient is unable to sit near a fire; but
especially is she tormented at night, so that even in winter she may
be obliged to have no covering beyond a sheet, or else to keep cold
applications constantly over the parts. The want of rest, the loss of appetite, and the almost constant annoyance greatly depress the general powers; while the desire to resort to friction, though it affords only temporary relief at the cost of aggravated suffering afterwards, is so great that the sufferer cannot bear to be long in the company of even her own family.

Diagnosis.—The itching of prurigo may be mistaken for that of pruritus. But the former disorder is more rarely met with than the latter; while the papular eruption of prurigo, seldom confined to the genital organs, is very characteristic. The irritation produced by lice, as well as that caused by the itch animalcule, closely resembles that of pruritus; and therefore we ought to make certain that these insects are not the source of the annoyance. In follicular inflammation of the vagina a sense of smarting, rather than of itching, is complained of; though the latter, as will presently be shown, may also prove troublesome. Chronic eczema of the vulva is attended with distressing irritation, which the patient vainly attempts to relieve by scratching off the dry scales of epidermis, or by the free use of some unctuous substance. Herpetic eruptions also produce itching, but it is seldom of long duration, and is confined to the neighbourhood of the rash. And lastly, crops of small boils are apt to appear upon the outer surface of the large vaginal labia, especially about the time of the change of life; at first producing considerable itching and smarting and heat, with subsequently swelling and pain as the little tumours slowly suppurate.

Treatment.—The remedies which have been proposed for this neurosis of the skin of the vulva are numerous and unsatisfactory. For what is called idiopathic pruritus, the treatment must be general and local; that is to say, attention will require to be paid to the general health, while the local suffering is to be relieved. Now as regards general remedies it will often be found that mild aperients are needed; such as the sulphate of soda with sulphur (F. 148), or sulphur and magnesia (F. 153), or rhabarb-and blue pill (F. 171), or if steel be unobjectionable it may be given with Glauber’s salts (F. 180, 181). The assimilation of food is to be assisted by the use of pepine (F. 420), by small doses of steel with citrate of potash (F. 403), or by the nitro-hydrochloric acid in some bitter infusion (F. 378). The diet is to consist of milk, eggs, and animal food plainly cooked; while as a rule, alcoholic drinks, tea and coffee, with all highly seasoned dishes should be avoided. With regard to any special drugs little can be said that is favourable. Yet occasionally it has seemed to me that quinine (F. 379) has been useful, or a pill of quinine and belladonna (F. 44), or tar capsules (F. 36), or the solution of perchloride of mercury in sarsaparilla (F. 27); while sometimes small doses of arsenic (F. 52) have acted beneficially. — The best local applications are those of a cooling or of an anodyne nature. An excellent cold lotion and injection can
be made with half an ounce of the solution of subacetate of lead to a pint of water, to which an ounce of laudanum or Batley's solution may be added in some cases, or with one fluid drachm of the solution of sulphate of atropia to one pint of elder-flower water. Painting the parts, twice or thrice daily, with a mixture of equal parts of the aconite and belladonna liniments, often affords considerable relief; as does the frequent application of a lotion containing the acetate of lead and hydrocyanic acid (F. 263), or of morphia and liquor potassae (F. 266), or of borax and morphia and glycerine (F. 268), or especially of a weak infusion of tobacco (F. 265). Some practitioners use almond oil, or the lime liniment, or a mixture of one part of glycercine to eight of rose water, or the official calomel ointment, or a combination of equal parts of the red oxide of mercury ointment and cod liver oil. But whatever remedy be employed, free ablation will also be necessary; which can be best practised by daily using the ordinary hip-bath, or by employing the sitz bath two or three times a day. Whichever be adopted, the patient will derive ease from injecting plenty of the water into the vagina with a syphon syringe.

For the relief of secondary pruritus it is necessary that the cause be removed, when this is possible. The cure of an exoriated patch upon the lips of the uterus will take away the irri-
tation; and the latter may even be thoroughly relieved by proper remedies applied to the former before the surface heals. In such incurable affections as carcinoma of the cervix we may still succeed in checking the itching by the use of medicated pessaries, particularly of such as contain belladonna (F. 423). Supposing the patient to be gouty or rheumatic, the remedies necessary for these states are indicated; especially mild antacid aperients with colchicum, and a diet in which meat is chiefly replaced by white fish. And then again, if there be eczema, lice, oxyurides in the rectum, haemorrhoids, boils, &c., the treatment proper for these affections will have to be adopted. With regard to the treatment of the crops of boils which have already been spoken of, there are one or two useful hints to be given. One suggestion is to avoid the use of poultices unless the little tumours be actually suppurating. The formation of pus may, however, often be prevented, by just touching the apex of each elevation with a small drop of the acid solution of nitrate of mercury. I generally find that this caustic is best applied by means of a fine-pointed pipette, such as is made for taking up urinary deposits for microscopic examination; removing any surplus acid from the boil with blotting paper. Another important point is, that if we would prevent the formation of further crops the general health must be attended to.
2. LABIAL TUMOURS

Several varieties of tumours may be met with on or about the vaginal labia. The principal are the following:

Encysted tumours of the labia either have their origin in the connective tissue; or they may arise in one of the lobules of the vulvo-vaginal gland, the communication of which with the excretory ducts has become obstructed; or the entire gland of one or the other side may be involved, owing to obliteration of its duct. The cyst is generally developed slowly, and at first hardly attracts the patient's attention; but as the growth attains the size of a walnut there is discomfort on walking, uncasiness after sexual intercourse, sometimes irritability of the bladder, and occasionally pain. The latter is especially complained of about the time of the catamenial periods. If inflammation set in, the cyst walls will generally secrete pus and the tumour become an encysted abscess. The cause of these tumours can seldom be made out; but I believe they may result from violence, or from the irritation set up by a want of cleanliness. The contents of the cyst will be of the nature of a glairy white, or egg-like fluid, or of an offensive dark-coloured matter, or of pus. The evacuation of the contents by a simple incision through the inner wall of the labium gives immediate relief; but generally such an operation is insufficient to effect a permanent cure. To insure this, either a portion of the cyst-wall must be excised, a proceeding, however, which is not always successful; or the interior of the cyst should be rubbed over with a stick of nitrate of silver, or with a brush dipped in the iodine liniment; or a seton can be passed through the centre of the swelling, so as to excite suppuration and obliteration of the secreting membrane; or the entire cyst may be dissected out, without puncturing it. As this latter proceeding is the most certain, so it is often by far the best plan to adopt.

Fibrous tumours are occasionally developed in one of the labia majora, or more rarely about the perineum. They may vary in size from that of a hazel nut to that of an orange. Sometimes they are found to contain cysts in their centres; which are filled either with sanguineous serum, or with a limpid watery fluid. Fatty tumours are also now and then met with in the same situations. The growth of both these kinds of tumour is usually slow, and is not accompanied by any marked symptoms. Not uncommonly they gradually become pedunculated; so that a tumour almost as large as a fowl's egg may be connected with one of the labia by a stalk no bigger than an ordinary quill. Frictions with ointments of mercury or iodine are quite powerless to produce the
absorption of these bodies. The only remedy is excision, a very simple proceeding when the attachment is formed by a pedicle. But even where the tumour is imbedded in the tissue of the lip, there is seldom any difficulty in enucleating it with the handle of the scalpel, after making a free incision through the internal surface.

Warty growths are apt to form about the vulva, sometimes appearing in such large clusters as apparently to involve the whole of the external genitals. Usually, however, they are scattered about the labia, nymphæ, vestibule, and perineum; varying much in size and appearance, according as there are only a few littlewarts distributed over the tissues, or one or more large patches almost concealing the vaginal orifice. These excrescences are sometimes very vascular, so that they bleed readily; while each is found growing from a broad base, or by a pedicle which sometimes gets greatly elongated. Warty growths always give rise to a fetid discharge, with vaginal leucorrhœa; and they may be due to some venereal taint, or simply to want of cleanliness. The only effectual treatment consists of removal with the scissors or bistoury, applying some styptic to control the haemorrhage. The application of oscharotics without excision is seldom successful; while the pain set up by these substances continues for a very much longer time than does that produced by the use of the knife.

Hypertrophy of the labia may occur, and sometimes to an enormous extent. The skin and connective tissue of the labia majora are now and then alone affected; though more frequent the nymphæ become also involved. The enlargement usually commences on one side, but probably before advice is sought it has crept round so that both lips are attacked. In very rare instances (in this country) the hypertrophy has advanced to such a degree as to constitute a form of elephantiasis. An instance has been recorded by Kiwisch, in which a girl, seventeen years of age, had such hypertrophy of both labia, that they hung down as two large masses below the middle of the thighs. Elephantiasis of the labia is not an uncommon disease in Barbadoes. In the cases of hypertrophy which have come under my notice, the enlargement has been due to a syphilitic taint. The treatment of such cases is generally unsatisfactory. Sometimes their progress can be checked by the administration of the iodide of mercury (F. 54), together with the use of the mercury vapour bath (F. 131). But generally it is necessary to remove the growths with the knife; although a permanent cure is seldom produced by this operation, inasmuch as it is difficult to make the incisions quite free from the diseased structure. Excision is always attended with considerable hemorrhage; so that not only will several vessels require the ligature, but the actual cautery may have to be applied to spots from which blood will otherwise freely ooz.
when reaction occurs after the operation. Where it is clear that all the disease cannot be removed by the knife, it will be better to restrict the treatment to the use of astringent lotions, and the occasional employment of scarifications to relieve the oedema.

_Abcess of the labia_ may result from the inflammation set up by a blow, or by forcible or perhaps excessive sexual intercourse, or by a gonorrhoeal or acrid leucorrhoeal discharge. The part affected becomes the seat of a throbbing pain, which prevents the patient from walking or sitting without much suffering; while there is also considerable heat and swelling, sensitiveness on the least pressure, together with a variable amount of constitutional disturbance; Sometimes the inflammation commences in the vulvo-vaginal gland, the tissues of the labium becoming involved as the morbid action progresses to suppuration. With moderate caution there can be no difficulty in making the diagnosis sure. The descent of omentum or intestine into the labium, a displacement of one ovary or an extravasation of blood, are all conditions which give rise to swelling and pain; though both these consequences are different from the tumefaction and suffering of inflammation. Patients seldom apply for relief; moreover, until there is no difficulty in diagnosing the presence of pus. The treatment consists in evacuating the pus by an incision sufficiently free to prevent its too early closure. The application of poultices, a nourishing diet, and two or three days' rest, will complete the cure. Where the practitioner is consulted before suppuration has occurred, the disease can at times be checked by rest in bed, the application of a small bladder or gutta-perchæ bag of ice, and attention to the general health. Aperients are only to be given, if required; while if there be any debility, ammonia and bark (F. 371), cod liver oil, and animal food will prove very useful.

The extravasation of blood into the connective tissue of one of the labia majora, or of the nymphæ, or of the vaginal walls, is an accident of very uncommon occurrence. It happens for the most part, just before, or during, or immediately after the process of parturition. The swelling which results is known as a _pudendal haematocele, or a labial thrombus, or a sanguineous tumour of the vulva_. The haemorrhage is the consequence of a rupture of part of that plexus of veins beneath the labia, termed by Kobelt the bulb vesicles. The bleeding may be very copious, even without a large rupture; fatal results are not unknown.

As far as can be remembered, I have never met with an example of pudendal haematocele as the consequence of disease in an unimpregnated woman; but two or three cases have fallen under my observation where this condition has happened as the result of a blow. In one of these, a young single girl fell upon the projecting corner of the upper rail of a kitchen chair, upon which she
had climbed to reach the top of a wardrobe. The other patient was a married woman, but not pregnant: the haematocoele resulted from a kick. In both instances, the pain was so great that I punctured the tumours, let out a quantity of blood, and then by rest with the pressure of pads and a T-bandage prevented any further haemorrhage. Where these tumours are left untouched they not uncommonly burst; although where the clot is not very large it may become absorbed. With regard to the treatment of this accident during labour it need only be said that delivery should be hastened; but the tumour ought not to be opened unless from its size the passage of the child be impeded. Supposing, however, the bistoury be used, the officinal strong solution of perchloride of iron will probably have to be applied to control the bleeding which is sure to ensue from the injury to the bulbs of the vestibule. If there be any varicose condition of the veins, the loss of blood may prove quite alarming unless firm pressure be made for some time.

3. VULVITIS.

The different forms of inflammation which may attack the vulva are as follows:—

*Simple vulvitis* is not a very uncommon affection of women who neglect to wash themselves, or who indulge in excessive sexual intercourse. It may also arise from a venereal taint, or from irritation about some adjacent organ—as the rectum or uterus. The symptoms consist of great pain and tenderness, a mucous discharge, a sense of scalding during micturition, and of a constant aching about the loins and thighs. The parts look swollen and inflamed, and they are covered with mucus; while in neglected cases they may be found more or less excoriated. A few doses of a saline aperient, rest in bed, prolonged warm hip baths, and the use of a wash containing a little alum or subacetate of lead, will soon remove the disorder.

Under certain exceptional circumstances, inflammation of a much more intense and serious nature occurs. *Gangrene of the vulva* is connectet with a depraved state of the blood; being met with amongst lying-in women who have possibly been exposed to the contagious matter of puerperal peritonitis, or of one of the continued or eruptive fevers. Now and then this disease happens amongst young women who are not pregnant; while it has especially been observed in children. The only hope for all such patients lies in the administration of wine and food, quinine and iron, and in surrounding them with pure air. Locally, the strong nitric or hydrochloric acid should be applied to the diseased patches; the patient being first placed under the influence of some anaesthetic. M. Chavanne has given an account* of an

* Gazette Médicale de Paris for 1852. Quoted from the Association Medical Journal, p. 216. 11th March, 1853.
epidemic of gangrenous vulvitis which attacked several puerperal women during January, 1850, in La Charité of Lyons. The disease commenced three or four days after delivery with vomiting and diarrhoea, or with fever and abdominal pains, or with slight haemorrhage. These symptoms were followed by prostration, anxiety, and an oedematous redness of the vulva. An active febrile stage then set in; which, in a few of the twenty-six cases, subsided without further mischief. *In the greater number, however, pultaceous plates formed about the vulva and on the walls of the vagina, adhering closely to the mucous membrane. Although this extension became arrested in a day or two, these plates were not separated by the inflammatory process until the end of the first week, or during the second; small suppurating wounds being left, which usually soon healed, though occasionally they again became covered with a similar pultaceous mass. In four of the twenty-six cases, the disease extended to the uterus; a gangrenous condition of this organ, complicated with peritonitis, setting in. Three of the other patients also died from metron-peritonitis, without extension of the gangrene. The remaining nineteen recovered; the gangrene yielding to tonic regimen, and the local use of the strong hydrochloric acid. No cause could be assigned for the outbreak of this epidemic; which seemed to resemble one that had occurred a short time previously in Paris, as well as one which was observed at Lyons in 1815.

Inflammation of the vulvo-vaginal glands is not of very rare occurrence. These conglomerate glands, the analogues of Cowper's glands in the male, are placed one on each side of the vaginal orifice. They are apt to become inflamed from their secretions being retained in consequence of the excretory ducts getting blocked up. The symptoms consist of heat and pain; while on examination a painful swelling is found, perhaps of the size of a large almond, by the side of the mouth of the vagina. Unless resolution occurs, the morbid action will end in suppuration: and then the case must be treated as if it were a common abscess. In simple enlargement and induration of this gland, from long-continued irritation, extirpation may possibly be needed.

Follicular inflammation of the vulva is an obstinate and painful disease, which has been well described by Dr. Oldham. * The morbid action has its seat in the numerous sebaceous follicles and other minute solitary glands scattered over the mucous membrane of the vulva; and it generally affects both sides of the vaginal entrance, with the tissues within the nymphæ and at the base of the clitoris. According to M. Ilhuquier, the sebaceous matter sometimes accumulates in these follicles, without inducing inflam-

mation; a condition resulting analogous to that observed in acne of the face. On making an examination in a case of follicular vulvitis, the parts are found more or less generally inflamed; while they are seen to be studded with a number of raised vascular points, sometimes having specks of ulceration on their summits. After a time the points coalesce, so that a strip of highly injected mucous membrane is formed; while at a later period this vascularity disappears, and the tissues look as if they were covered with white paint. There is constriction of the sphincter vaginae; leucorrhoea is troublesome, with irritation of the genitals and smarting; sexual intercourse becomes so painful that it has to be avoided; and there are pains in the back and thighs. The heat and irritation about the vulva, the sense of burning during micturition, and the somewhat offensive nature of the secretions may all prove very troublesome. The disease causes considerable disturbance of the general health, with loss of appetite and mental depression. It is sometimes complicated with prurigo. This disorder may occur at any time after puberty; though perhaps it is most common during pregnancy, as well as about the time of the cessation of the catamenia.

Follicular vulvitis is of a very intractable nature, and is not easy to treat. The application of astringents always proves injurious; inasmuch as these agents produce very great pain at the time they are used, while they set up an increased tenderness of the parts which may last for many weeks. The best local remedies are those which exert a soothing influence; and no lotions are therefore more valuable than such as contain morphia and hydrocyanic acid (F. 266), or tobacco (F. 265), or glycerine and lime water (F. 286). If ointments be preferred, one of iodide of lead and belladonna (F. 293), or of aconitine and calomel (F. 296), or of hydrocyanic acid and atropia (F. 306) may be prescribed. A warm hip-bath, containing some extract of poppies and soda, will afford considerable relief: it should be employed night and morning, for fifteen or twenty minutes each time. The general health must be looked to. The diet ought to be plain, nourishing, and free from seasoned dishes. Tea, coffee, wine, and beer are to be forbidden; a little brandy in soda water being allowed where a stimulant is required, though this may often be dispensed with if the patient can take plenty of milk. Small doses of arsenic with bark (F. 52) have sometimes seemed efficacious; so has some bitter tincture with the mineral acids (F. 378); and so has quinine with aconite (F. 379). In very chronic cases, a cure will now and then be effected by corrosive sublimate and sarsaparilla (F. 27), cod liver oil, and change of air.

The external surfaces of the labia majora sometimes become the seat of erythema, generally in consequence of a neglect of cleanliness. The eruption is of a bright red colour, and gives rise
to a sensation of heat and discomfort; while it soon spreads along the integuments to the upper and inner surfaces of the thighs. This disease is most common in stout middle-aged women; and, unless they abandon their dirty habits, the moisture which is exhaled from the almost raw surface becomes very offensive. Indeed, if the discharge be allowed to irritate the parts for any length of time, erysipelas will possibly set in; a disease which may also attack the vulva from other causes, and which requires the same treatment as when it affects other tissues. In erythema, a cure can generally be brought about by removing any disordered state of the health, by ordering an unstimulating diet, and by having the affected parts well bathed every few hours with the dilute solution of subacetate of lead. Women are fond of applying Fuller’s earth (consisting of silica, alumina, oxide of iron, magnesia, and water, with traces of lime and chloride of sodium and potash) to the irritable surface; and as this substance is astringent it can do no harm, provided the parts are also often washed. The remedies for prurigo, lichen, eczema, and acne of the vulva are the same as for these diseases affecting other structures.

Children of all ages are liable to become affected with a discharge from the mucous glands of the vulva, constituting infantile leucorrhoea. Occasionally the disease spreads up the vaginal canal; giving rise to a profuse purulent or muco-purulent fetid secretion with heat and pain during micturition, and slight excoration of the surrounding parts. The practitioner must be on his guard lest he compromise some innocent individual by attributing the discharge to gonorrhoeal infection, or to violence in attempting a rape. A few years ago, I saw in consultation with Dr. S. C. Reed and Mr. Brooks of Fleet Street, a stramous little girl, seven or eight years of age, with an abundant leucorrhoeal discharge. There were no marks of contusion or violence about the pudenda, and the symptoms seemed clearly due to natural causes. The parents, however, had made up their minds that a young man who lodged in the same house, had been trying to have intercourse with the girl; and I believe they had given him into custody on this supposition, and were to proceed to the police court from my house. It required considerable persuasion to make the parents understand that there were no grounds whatever for their suspicions. Dr. Taylor* has collected the histories of several cases where men have narrowly escaped conviction for crimes which were never committed. This gentleman shows that a purulent discharge with aphthous ulceration may take place as a result of vaginitis; the inflammation occurring in scrofulous children,

or in others as the result of dentition, intestinal worms, a want of cleanliness, &c. Children thus affected have been taught to extort money, by making imputations against innocent persons; or the parents have now and then unwittingly led a mischievous girl to make such a charge, by first threatening and then suggesting their own convictions to her. With regard to those fatal sloughing or gangrenous ulcerations of the vulva described by Mr. Kinder Wood* I can say nothing from my own experience. They must be very rare in this metropolis; for with all the opportunities formerly afforded by a large hospital and dispensary practice I have never met with one example. No medical man, however, should venture to give evidence at a trial for rape upon a child, without making himself acquainted with Mr. Wood’s paper; for the prisoner’s counsel will very properly have “got up” all its details, and he may soon make the practitioner look rather foolish.

The symptoms of infantile leucorrhoea consist of itching and of tenderness, as well as of frequent micturition with oft-times pain on passing water. There is a mucous discharge, which becomes more copious and acrid the longer it is allowed to continue. Not uncommonly, the parts about the vulva have an erythematous blush. The irritation produced by this eruption, as well as by the discharge, causes the child to frequently rub or scratch herself; and thus troublesome excoriations are produced and kept up. In rare cases an ulcer may be found just within the vagina. The general health is depressed; the nights are restless; and often some of the cervical glands are swollen, or there are other marks of the stramous constitution. The child is either badly fed, or does not properly assimilate its food. In that form of inflammation which is described as diphtheritic vulvitis, tough false membranes are formed upon the inner surface of the labia; such membranes being reproduced after forcible removal. These exudations resemble those thrown out about the fauces in true diphtheria. The effects of the diphtheritic poison are very rarely, if ever, confined to the vulva in these cases. Somewhat analogous to them are those instances of scarlatinial vaginitis which have been already referred to.

The treatment of infantile leucorrhoea must be perseveringly carried out, or the disease will last for many weeks. Attention to cleanliness, frequent sponging or syringing with an astringent lotion, the use of tepid hip baths containing a little alum, and the occasional exhibition of mild alteratives or laxatives will be needed. Where there is much tenderness, the parts ought to be fomented with a decoction of poppies for two or three days before using the astringent applications. The diet should be plain but nourishing, with plenty of milk; and tonics (especially quinine and steel)

will always be useful. Cod liver oil is often very serviceable. If
the discharge proves obstinate, a short residence at the seaside,
with sea bathing, will generally cure it.

4. RODENT ULCER.

This remarkable disease (often described under the name of
Corrodling ulcer) consists of an intractable ulceration, which com-
cences on some part of the external genitals, and gradually creeps
over the vulvo-anal region; the surrounding structures having a
tendency to become hypertrophied. As the ulcer heals in one
direction, it extends in another; while the process of repair seems
to be accompanied by the formation of a firm burn-like cicatrix,
which has a great tendency to cause contraction of the vaginal or
anal orifice. At the onset, as well as for some weeks afterwards,
the suffering may be remarkably slight; so that until the orifice
of the vagina becomes fissured by the disease, or the mouth of the
urethra gets involved, there is no pain during sexual intercourse
or micturition. For a long time the general health does not
appear to be affected, menstruation occurs regularly, and there is
no loss either of strength or of flesh; but unless a cure be effected
the profuse discharge at length proves very weakening, the appe-
tite ultimately fails, there is dyspepsia, attacks of colliquative
diarrhoea set in, and sometimes there is hemorrhage. The patient
may die either from peritonitis, or from erysipelas, or from stricture
of the rectum, or from fatal exhaustion. Death, however, seldom
takes place until after the lapse of some eight or ten years from
the commencement of the disease.

This affection has been particularly described by M. Hugui
in his Mémoire sur l’Esthionèse, ou Darte Rongyeante de la Région
vulvo-anale,* in which he draws a parallel between the eruptions
of the face and those of the vulvo-anal region. The ulceration
occurs for the most part in women between the ages of 20 and 50,
who are either married or have led irregular lives. Nothing
positive is known as to its cause, though it has seemed to depend
upon some strumous condition of the system, or upon a degene-
rated syphilitic virus affecting the fluids. M. Hugui
Paris, 1849.

ulcerated surface or on the surrounding indurated integument. The other form of hypertrophic esthiomenos is the edematous or elephantiasic kind; in which inflammation of the lymphatics, with venous obstruction, leads to excessive infiltration and induration of the tissues, large masses being produced that obstruct the vaginal and anal outlets at the same time that they give rise to the most repulsive disfigurement.

The general treatment of vulvar corroding ulcer or esthiomenos is the same as that required in rodent ulcer of the face; though there is more difficulty in effecting a cure, because of the irritation which is kept up by the acrid discharges. Good diet, cod liver oil, rest, daily hip baths, and anodyne lotions are to be employed perseveringly; while sometimes benefit may be expected from the administration of iodide of potassium (F. 31), the green or the red iodide of mercury (F. 53, 54), or from Donovan's triple solution (F. 51). The efficacy of potential caustics is very doubtful. But where the disease is limited, so that the whole of it can be removed, excision should be practised; the operator taking care to extirpate every tubercular excrescence, however insignificant looking, which may be present. As the parts heal, tents or bougies must repeatedly be employed to prevent undue contraction of the vaginal and anal openings.

5. VULVAL CANCER.

Any portion of the external genitals or of the vaginal walls is apt to become the seat of malignant disease. This may occur primarily; or it is often secondary—i.e., the cancerous infiltration extends to the vulva from the uterus, rectum, &c. Epithelial cancer of the external genital organs is more common than any other variety, but occasionally the affection is of the seirhous or of the medullary form. The latter, however, is very rare, only one example having fallen under my observation. In this case, a married lady, 59 years of age, the mother of six children, suffered from medullary cancer confined to the vagina and external labia; and when I saw her in July, 1861, in consultation with Dr. Ellison, of Windsor, she was dying from exhaustion, the disease having only existed for fourteen months.

The diagnosis of cancer of the vagina is easily made. I have, however, seen a case of large vesico-vaginal fistula, the result of a lingering labour, mistaken for malignant disease. The symptoms of both conditions have some points in common,—great suffering, swelling of vaginal labia, constant escape of urine, and extensive excoriations producing great tenderness. On the other hand, vaginal cancer proves fatal within two years from its commencement; whereas a fistula embitters life without shortening it. In the case just alluded to, thirty-seven years have elapsed since the whole floor of the bladder sloughed away, after (as I am told) a
labour lasting for nearly a week. The patient is still able to work for her living, though she suffers much from excoriations, &c.

Epithelial cancer is more amenable to treatment than the other kinds. Where the disease is confined to the external labia considerable relief may be given by excision, provided care be taken to remove every trace of unhealthy tissue. By such an operation, a patient may have one or two or even more years of comparative health and happiness granted to her; though in the end the affection will return, and ultimately destroy life. In those cases where surgical interference is out of the question, attention must be made to give relief according to the principles already inculcated. The disease often quickly extends in all directions, in spite of remedies; the integuments over the pubes, or in one or both groins, becoming the seat of ragged excavated ulcerations. Frequently, too, the patient's sufferings are considerably increased by the destruction of the recto-vaginal septum, or by the perforation of the walls of the bladder; or we may have to draw off the contents of the bladder every few hours, owing to the almost complete obliteration of the orifice of the urethra. The difficulty of passing the catheter is often so great in those cases, and the pain is so intense, that it is necessary to put the poor woman under the influence of ether or chloroform before using the instrument.

6. ENLARGEMENT OF THE CLITORIS.

Excessive development of the clitoris will occasionally exist as a congenital malformation; although it seldom does so, save in connexion with some arrest of development about the uterus, vagina, or labia. This organ may also acquire an abnormal size in after life; either owing to simple hypertrophy of its tissues, or to its becoming the seat of an innocent or malignant deposit, or to its giving origin to some cystic formation.

A very remarkable case in which the clitoris was converted into a cyst, has been recorded by Dr. Meigs.* The tumour commenced after a blow, and in fourteen years acquired the size of an infant's head, to judge from the sketch which is given. It was punctured; about twenty-two ounces of black blood, of the consistence of tar, being evacuated. Four months afterwards, the fluid was again collecting.—The history of a case of enormous enlargement of the clitoris and nymphæ, has been published by Dr. Mc'Clintock.† When the patient was admitted into the Dublin Lying-in Hospital; in the seventh month of her second pregnancy, the nymphæ hung down in the form of tuberculated

tumours, with the clitoris between them as large as a turkey's egg. Nine years previously she had suffered from syphilis; but the enlargement had only commenced two years prior to her admission into the hospital. The clitoris was amputated by the ligature, as it was feared that it might interfere with parturition. Some weeks after her labour, the nymphæ were likewise removed by ligatures and the scalpel.—In another instance, related by the same physician, a single lady, 20 years of age, suffered from enlargement of the nymphæ; while the prepuce of the clitoris had become the size of a Spanish chestnut. Local and general treatment proving useless, the diseased parts were successfully amputated with the écraseur.—The clitoris may be injured by violence. The particulars of an instance in which this organ was ruptured by a kick, have been given by Mr. Gutteridge.* On inspecting the vulva a wound was seen just within the vagina on the left side; the injury extending from the pubes along the ramus of this bone, to the extent of an inch, and having a depth of about three-quarters of an inch. The left crus clitoridis was crushed throughout its length, so as to show its cavernous structure. From this part hæmorrhage had ensued, which proved fatal in about an hour from the receipt of the injury.

Hypertrophy of the clitoris has been thought by some surgeons to be due to the practice of improper excitement of this organ. The probability is, however, that this explanation is incorrect. At all events, out of 6000 prostitutes examined by Parent Duchatelet, the clitoris was found to be natural in size and appearance in all but three; and none of these three women were remarkable for the strength of their passions. The clitoris is sometimes found indurated with only slight, if any, enlargement. The late Mr. Baker Brown considered this condition to be due to self-abuse; and he recommended that the clitoris should be excised. Mr. Brown believed that he cured many serious diseases of the nervous system, originating in improper excitation of the sexual organs, by this operation. But the operation was condemned by the general voice of the profession, and in deference to this, Mr. Brown ceased to recommend it.

When, in consequence of hypertrophy or cystic disease, amputation of the clitoris becomes called for, it will be found better, as a rule, to use the knife or scissors in preference to the ligature. The patient ought to be placed in the same position as for lithotomy, after anaesthesia has been induced; and the organ being drawn well forward with a pair of hooked-forceps, it should be excised by cutting through the crura on each side. The free hæmorrhage which results is easily checked by the use of pads of lint and a T-bandage, so applied as to exert sufficient pressure upon the symphysis pubis. An opiate will be needed to dull the

pain. The catheter will afterwards be required for two or three days; and the patient must remain in bed until cicatrization is complete.

7. COCCYODYNIA.

The coccyx is formed of four small segments of bone, which may be regarded as rudimentary vertebrae. None of the segments have any spinal canal or intervertebral foramina. The first and largest division of the coccyx articulates with the lowest sacral vertebra: the last three coccygeal segments are usually ankylosed into a single bone.

The coccyx, or the tendinous expansions of the muscles and the fibrous tissue of the ligaments, will now and then be found the seat of severe pain of a neuralgic character; this affection being technically known as coccyalgia, or coccygydynia, or coccyodynia [from Κόκκυς = the cuckoo—because the coccyx is said to resemble the beak of this bird—and ὀθύμη = pain].

The causes of coccyodynia are usually blows, falls (especially tumbles down three or four stairs, when the bottom of the back strikes the edge of each stair), bruises produced by violent or prolonged horse-exercise, injuries inflicted during parturition, and so on. Moreover, whatever is capable of exciting inflammation in the muscular attachments to, and the fibrous tissues around, the coccyx, may lead to this disease. Hence, we find it attributed to sitting on damp grass or cold stones, to the application of ice which has been used for checking uterine haemorrhage, as well as to mischief set up by unnecessarily severe operations about the rectum.

The symptoms are characteristic. They consist chiefly of great pain on sitting down or on rising from a chair; as well as on walking, and on defecation, &c. Indeed, whatever stretches the exceedingly tender structures attached to the coccyx, proves to be the source of considerable suffering. Many of the patients can only sit on one hip. They get from the sitting to the erect posture in a slow and deliberate manner; so as to avoid any strain on the coccygeal ligaments, and to prevent any play of the sacro-coccygeal articulation.

The tenderness on pressure is usually well-marked; while sometimes the slightest touch of the tip of the bone causes agony. The tenderness is also aggravated by sexual intercourse, and frequently by the menstrual flow. Occasionally, coccyodynia is accompanied by some chronic uterine or ovarian disease. Frequently the general health is depressed; while there is also no little anxiety, especially where advice has been had without any relief following.

The treatment ought to be prompt. It is merely a waste of time to try the effect of warm baths, sedative applications, opiate plasters, iodine liniments, or small blisters over the seat of pain. India-
rubber cushions, to keep off pressure, are useless. Leeches do harm. Even the subcutaneous injection of morphia, or of atropine, will only give temporary relief. The only hope of effecting a radical cure is by operation.

Now the most simple proceeding, but unfortunately the least certain, consists in the subcutaneous division of the muscular fibres and ligaments and fasciae connected with the coccyx, so as to set the bone at rest. The operation, as suggested by Sir James Simpson, is performed with a tenotomy knife, which must be strong enough to bear manipulation without breaking. The blade of this introduced through the skin over the middle of the bone, is to be deliberately passed all round, and close to its surface and edges, as well as over its tip. The disengagement of the coccyx from the surrounding soft textures thus effected, is usually at once attended with complete relief to the pain. But this apparent cure does not always prove real. Either because the tissues again become adherent to the bone, or in consequence of there being some mischief in the osseous structure itself, the pain returns. Under such circumstances the only plan is to amputate the whole, or simply the last two segments of the bone itself.

The coccyx was first extirpated for the relief of neuralgia by Dr. I. C. Nott, of Mobile, Alabama.* Subsequently, in June, 1859, this operation was had recourse to by Sir James Y. Simpson, after he had failed to effect a cure by the subcutaneous division of the muscles and tendons and ligaments attached to the coccyx.† Following in the steps of these gentlemen, I have removed the coccyx in a few instances with complete success. The operation is in no way difficult; it being merely necessary to make an incision about two inches long over the bone, and then having fairly exposed this structure, to sever the soft attachments all round it, dividing it between its segments with the bone pliers. One or two vessels may need a ligature; and then the edges of the wound are to be brought together by a couple of sutures. With rest and water dressing, union will be found complete in a few days. The relief which is thus afforded is sometimes surprising. The general health improves, and all mental anxiety ceases as the feeling is experienced that a most troublesome source of suffering has been removed.

In close proximity to the tip of the coccyx, and attached to it by a fine pedicle, is a minute body which has been the subject of some discussion. It is found as a roundish body about the size of a small shot, or as four or five or more isolated corpuscles connected by fine vessels. This body, discovered by Professor Luschka,

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of Tübingen, has been regarded by different observers as a gland; as a kind of heart, to strengthen the circulation in the superjacent skin; as the vestige of an organ, only of use during fetal life; and as the homologue of some structure in the lower animals. This last theory is held by Dr. W. M. Banks, after a thorough investigation of the subject, to be the only rational explanation; while this gentleman believes with Julius Arnold that the body is a vascular appendage of the middle sacral artery, and not a gland as supposed by Luschka. Dr. Banks says* that this coccygeal body hangs from the very end of the middle sacral artery, and is formed by the union into a glomerulus of from two to six clumps of arterial twigs, with sacular dilatations upon them; the whole being bound into one mass by a sort of capsule of connective tissue, which sends in processes between them. The body has no physiological functions; and nothing is known with regard to its pathology. Perhaps, however, it may act as a starting-point for those cystosarcomatous tumours now and then found in the perineum. There is probably no connexion between this arterial appendage and coccydynia; notwithstanding Luschka's opinion, that this affection consisted essentially of an inflammation of the little coccygeal body.

There are other congenital coccygeal tumours occasionally met with, which on dissection have been found to contain rudimentary bones and muscles and teeth. Such growths have sometimes been formed by the inclusion of one fetus within another; that is to say,—two ovules having been impregnated, after a time the development of one has become arrested. Either before or just as this has happened, however, the blighted fetus has become attached to the healthy body; and thus has got included in its structure.†

II. DISEASES OF THE URETHRA.

Diseases of the female urethra are neither very common nor severe. The simple nature of this canal as compared with that of the male, accounts for the great difference which exists between the morbid states of this part in the two sexes; while inasmuch as it is only an inch and a half in length, remedial measures are of easy application. The meatus urinarius, placed just above the orifice of the vagina, is at times found very much dilated, or contracted, or displaced, or simply or specifically inflamed. In a few remarkable instances of vaginal malformation the orifice of the

urethra has become so dilated, that sexual intercourse has been
effected through it. Strange to say, such a proceeding has not
led to incontinence of urine.

1. URETHRAL TUMOURS.

The meatus urinarius is not uncommonly the seat of a vascular
tumour. There may be only a single growth, or two or three:
generally they are attached by broad bases, but sometimes they
are found pedunculated. Although the external orifice of the urethra
is their most frequent seat, yet they may grow from any portion
of this canal. In some rare instances, similar growths have been
found at the orifice of the male urethra.

Each excrescence consists of several hypertrophied papillae,
invested by a thick layer of tesselated epithelium; and while the
growth is certainly very vascular, it is also probable that it is freely
supplied with nerves. In the cases which have come under my
notice, the tumour has varied in size from a florid elevation the
size of a pin’s head, to a growth as large as a date stone; but
instances have been recorded where the tumour has equalled a
pigeon’s egg in its measurements. Moreover, as far as my expe-
rience goes I should say that the larger the tumour, the less
severe is the suffering occasioned by it. In examining women
rather far advanced in life, the subjects of uterine disease, I have
on several occasions found these tumours as large as peas, while
no sense even of discomfort has been experienced.

Generally speaking the symptoms resemble those produced by
a stone in the bladder. Thus, there is irritability of the bladder,
a sanious or slight mucous-purulent discharge, great pain on passing
urine, and tenderness on pressing the urethra. Sexual intercourse
aggravates the suffering, and oftentimes cannot be borne at all. In
one woman under my care, the bladder was so irritable that there
was not merely frequent micturition, but complete incontinence of
urine. Now and then there is pain down the inside of the thigh;
while I have known severe pain in the heel result from one of these
urethral growths. As these tumours are liable to bleed at times,
a little blood often comes away with the urine; so that until an
examination of the parts be made, the practitioner may be led to
imagine that there is either a cancerous substance or a small
calculus in the bladder.

These tumours are readily removed, but it is not as easy to
prevent their return. The treatment which I have found answer
the best consists in excising them with a pair of sharp-pointed
scissors, and in then applying the actual cautery so as to destroy
the submucous base. An excellent instrument for this purpose
may be made by fixing a piece of thick bell-wire into part of the
stem of a common clay pipe; the flame of a spirit lamp being
sufficient to heat it. The cautery, moreover, not only destroys
the base of the growth, but stops the haemorrhage which follows
simple excision. The use of the acid solution of nitrate of mercury, or of potassa fusa, is not as effectual in the latter respect, nor can the action of these caustics be readily limited to the desired spot. Chronic acid, however, is said to be very effectual. Following the advice of some authorities, I at one time employed the ligature; but it has seemed to me to be a clumsy and slow method of doing that which can be accomplished with less pain by the scissors in a few seconds. Whatever plan be adopted, however, the practitioner should take care to get a good view of the growth and its exact attachment before touching it; which view may be best obtained by an assistant separating the lips of the urethra rather widely with a couple of bent probes, while the patient is in the ordinary position for lithotomy.

In some very rare instances, a tumour has been found at the orifice of the urethra consisting of the inverted bladder. Dr. John Green Crosse, of Norwich, met with an example of this in 1820:—A healthy girl, between two and three years of age, had a tumour about the size of a walnut, projecting between the external labia. It was of a florid red colour, resembling a large strawberry; and the surgeon who consulted Dr. Crosse about its nature, believed it was a vascular tumour, which might be removed by ligature. Indeed, a few days afterwards a ligature was just about to be applied, when Dr. Crosse accidentally went to the patient's bedside; but fortunately this gentleman begged for a few minutes' grace while he gently pressed the swelling, as if to reduce a hernia, and found that the whole disappeared through the urethra. This canal was so dilated that Dr. Crosse was then able to fairly introduce his finger into the cavity of the replaced viscus. Had a ligature been applied, "the bladder would have been removed, including all its coverings, the ureters cut through just above their terminal orifices, and the peritoneal cavity largely opened." For sixteen years after the replacement there had been no relapse, but the patient was troubled with incontinence of urine.*—A similar case was under the observation of Dr. Murphy:—Jane R., ætat. 4, was admitted into the Meath Infirmary, 9 July, 1829. A pyriform tumour, about the size of a small hen's egg, and the colour of dark mahogany, was seen between the labia. It had been mistaken for prolapsus ani by the gentleman who first made an examination. On drawing the tumour downwards, the orifices of the ureters were seen, and a small silver probe was passed up each. The bladder was easily replaced, and after a few inflammatory symptoms had subsided, she was discharged cured.†—A third instance, in which the inversion was congenital, has been reported by Dr. Lowe, of the West Norfolk and Lynn Hospital. The patient was two years and a half old, and the bladder was

† London Medical Gazette, p. 525. 19th January, 1833.
seen between the labia like a vascular tumour, the size of a large Italian walnut. After replacement, a natural condition of the urethra was induced by the application of the actual cautery on five separate occasions.*—And lastly, a fourth case has been published by Dr. Beatty, in which the child was nearly two years old, and had suffered from the inversion for eleven months. There was also prolapsus of the rectum. The bladder was easily pushed back through the urethra; but while under treatment the girl died of croup.† Examples of inversion of this viscus through vesico-vaginal fistulae are more frequently met with; but such cases have nothing in common with those which have now been considered.

2. URETHRITIS.

Acute or chronic inflammation of the urethra may occur independently of gonorrhoea, or of inflammation, set up by irritating uterine discharges.

The symptoms consist chiefly of a feeling of heat along the urethra, great pain on passing water, a muco-purulent discharge, and irritability of the bladder. The urine may be found loaded with urates or with uric acid, or it may be albuminous or bloody, or it may contain pus or ropy mucus. On examination, the lips of the meatus can be seen to be morbidly vascular and swollen; while sometimes the mucous lining is everted, and highly scutitious. The canal of the urethra will be felt indurated, like a cord, beneath the symphysis pubis; while it is tender on pressure. The inflammation will possibly cause retention of urine from spasmodic stricture; which, however, should be relieved by a hot hip-bath rather than by the use of the catheter, as the passage of this instrument causes most acute pain. There is usually considerable constitutional disturbance, with nervous irritability.

Simple treatment commonly suffices to remove this disease. Hot hip-baths, fomentations, rest in bed, an unstimulating diet, and a free supply of demulcent drinks are the principal remedies. Opium in combination with belladonna (F. 344) may also be given; or a pessary of belladonna and bismuth (f. 423), introduced nightly into the vagina, will give great relief. In chronic cases, a cure can often be effected by passing the solid nitrate of silver into the canal for a few seconds; or this failing, a capsule of balsam of copaiba will possibly be advantageously administered by the mouth three or four times a day.

3. URETHRAL STRICTURE.

Stricture of the urethra is not a frequent affection in women. Two well-marked instances have come under my care; and as