

tion is always to be directed to the secretion of the urine. If this is properly reëstablished, almost all the children, with good care and nursing, will recover, but, if it remains suppressed, diuretics should be employed to stimulate it. The best diuretic, the only one that is unattended by any unpleasant consecutive effects, and which can be given for a long time without disturbing the digestion, is roob juniperi, as fresh as possible. Children take it most readily when it is sweetened and diluted with a little water. Its dose is two or three teaspoonfuls in the twenty-four hours. I have often already convinced myself of the palpable good effects of this remedy, and in children prefer it to digitalis, bitartrate or acetate of potassa.

Threatening uræmia must be relieved by vegetable acids and alkaline baths. For profuse diarrhœa, plumbi acetat, daily two or three grains, combined with opium, has proved to be most effectual. In case the œdema and albuminuria should not have disappeared in three or four weeks, as it generally does, a tonic treatment with tannin, cinchona, and the preparations of iron, is then indicated. For the remaining anæmia, the administration of wholesome, easily-digestible food, and the enjoyment of fresh country air, will answer the purpose satisfactorily.

(4.) RENAL CALCULI, RENAL TUBERCLES, RENAL CYSTS.—Although concretions in the uropoëtic system of children are of frequent occurrence, and have their foundation in the physiological lithic-acid infarction already described, still stones of larger dimensions very rarely form, at least such as would give rise to more decided symptoms. In these cases there are very generally present severe renal pains, a purulent sediment in the urine, and the passing of small concretions, attended by violent pains in the course of the ureters and urethra. The pus in the urine is due to secondary inflammation of the pelvis of the kidney, and of the irritated mucous membrane of the ureters and of the bladder.

The treatment consists essentially in allowing the children to drink as much water as possible, for thereby the existing concretions, on the one hand, are more readily washed along, and, on the other, diluted urine must tend to diminish the gravel rather than to promote its deposits. When large ulcerations have formed in the pelvis of the kidney, fever will supervene, which quickly assumes a hectic character, and is soon followed by death; or the affected kidney may totally disappear, leaving the opposite one to perform a double duty.

Renal tubercle occurs in two forms. In one case the kidney is simultaneously attacked with the rest of the parenchymatous organs, by miliary tuberculosis, which scarcely produces any renal symptoms

at all, and is only discovered in the cadaver. In the other, the tuberculosis in boys is more of a local nature, and extends upward from a tuberculous testicle, first to the mucous membrane of the bladder, and then to that of the ureters, and finally also to the kidneys. In this case a considerable portion of the kidney may be encroached upon by a large yellow, cheesy tubercle, and become excessively hypertrophied, the upper surface thereby assuming an uneven, nodular appearance. Suppuration, and degeneration even, occurs in the yellow tubercle, by which finally the tuberculous renal cavities, and ultimately phthisis of the kidney, are produced. The treatment of renal tuberculosis is very hopeless, and must be confined entirely to the improving of the constitution by tonics and cod-liver oil.

Cystic formations are very common in the kidneys, and are even met with as congenital conditions. Obstetric cases are recorded in which the abdomen had become so distended by foetal cystic formations in both kidneys, that it presented an impediment in the delivery. Simple cysts, of the size of a hemp-seed up to that of a cherry, are very frequently found in the most varying autopsies. They are always situated very superficially in the cortical substance, and most of them are filled with a clear, pellucid, thin serum. The chemical investigation of this serum reveals the presence of a slight amount of albumen, and only exceptionally of those chemical substances which characterize the urine, such as urates and lithic acid. It is generally assumed that they are caused by an occlusion of some urinary tubules by uric-acid infarction, subsequently also by calcareous concretions, extravasations, and exudative casts. The acephalo-cystic sac and the composite cystoides are extraordinarily rare in the kidneys of children, and their consideration may therefore very properly be omitted.

B.—BLADDER.

(1.) MALFORMATION.—(a.) *Total absence of the bladder* is an extremely rare occurrence, and is always combined with malformations of other organs. The ureters terminate in the navel, the rectum, or vagina. The following condition is more frequently observed:

(b.) *Fissure of the Bladder, Prolapsus, s. Extroversio, s. Defectus, s. Ectopia, Inversio Vesicæ Urinariæ.* We understand by all these denominations a defect of the anterior wall of the bladder, and of the corresponding portion of the abdominal parietes, so that the posterior wall of the bladder lies freely exposed (Pl. III., Fig. 10).

Two forms, a *total* and a *partial*, are distinguished. In the first the abdominal fissure extends from the navel to the pubis and genitals. In the second, a well-formed navel, normal genitals, and only a small

opening in the anterior abdominal parietes, exist. A highly-red chasm, of the size of a silver dollar or more, is found in the new-born child in the region of the bladder, which is bounded by a sharp cutaneous ring. This red gap is only filled up after birth by the posterior wall of the bladder becoming invaginated in it through the action of the abdominal pressure during crying and defecation, appearing as a fleshy, soft, fluctuating tumor. This tumor is constantly moist and tenacious, and presents at each side, in its lower part, two small elevations, which correspond to the place where the two ureters terminate, and are most distinctly recognized when the tumor is displaced a little upward. On closer examination the urine will be seen to ooze out in drops from these points, emitting its characteristic ammoniacal odor.

After several years, the cutaneous ring, by increasing granulations, grows somewhat over the prolapsus, and thus diminishes the exposed surface of the mucous membrane of the bladder; but a large portion of its posterior wall nevertheless remains uncovered. After a while the exposed portion loses the character of mucous membrane, and that portion above the ureters becomes dry, callous, and insensible; below them the prolapsus frequently becomes excoriated, in consequence of the incessant flow of the ammoniacal urine over it, and acquires a fungous appearance.

Complete fissure of the bladder always extends into the genitals. The penis is very short, close to the prolapsed bladder, and either totally or partially split. In the latter case, it has the appearance as if split from the urethra upward, so that the urethra is not a closed canal, but represents a trough, fissured on its upper surface. In extensive fissures, an oblong appendix, which is the split penis, hangs on both sides, and the line of division extends into the scrotum, on account of which it may be difficult to discriminate the sex. This discrimination becomes still more difficult, when, as is usually the case, the testes still remain in the abdominal cavity.

Analogous splittings occur in the female sex. The clitoris is divided, the labia majora and minora cloven, and the vagina is often totally absent. The perinæum is extremely short, and the anus is situated directly behind the genitals. It may even be advanced so far anteriorly that it terminates in the posterior wall of the bladder, and the feculent matter may likewise be evacuated by the prolapsed bladder.

When the fissures are thus extensive, the rami of the pubis will be found developed in a rudimentary form only. They either simply terminate in the vicinity of the prolapsus, or are united to each other behind it by a narrow band. The pelvis is very wide in its transverse diameter, but narrow antero-posteriorly. The sacrum and coccyx are

very much curved forward, to which are due the shortness of the perinæum and the termination of the rectum far anteriorly.

The effects of this deformity vary according to its extent. In all instances the patients afflicted with it generate a disgusting urinary odor, and suffer from constant excoriations around the openings of the ureters. In fissures of the penis, the highest degree of epispadia, or in imperfect development of the vagina, the individuals are naturally incapable of propagating the species. There is nothing in these deformities incompatible with life, and cases are known where the persons attained to an age of even forty years. Indeed, *Hucham* describes the very remarkable case of a woman who, afflicted with this prolapsus vesicæ congenitus and cloacæ, married in her twenty-third year, conceived, and gave birth to children. The husband of such a creature deserves almost as much admiration as herself.

Numerous hypotheses have been advanced in regard to the origin of ectopia of the bladder. The explanation given by *J. Müller* seems to be the most plausible.

According to this author, the bladder is not formed through the reflection of a lamina, but merely by the gradual dilatation of the pouch, which, with the urachus, is pinched off from the sinus urogenitalis. But the urachus does not originate through the reflection of a lamina, but is only the neck of the allantois, which primarily grew forward from the intestinal canal like a small vesicle. From these two facts *J. Müller* infers that we have not here to deal with an arrest of development, nor with a stopping of the bladder at a former stage of development, but he is rather of the opinion that the absence of the anterior wall of the bladder is due to a rupture of the sac which occurred at a time when the abdominal parietes were not yet completely formed. This rupture must have its foundation in a transient or permanent impermeability of the urethra, by which the urine that is accumulating in the bladder distends it to such an extent that it finally bursts. In this manner there originates an opening between the navel and the external genitals. The simplest form of this malformation is epispadia, escape of urine on the upper surface of the penis or above the pubes, but the ordinary effect is a large opening between the umbilicus and pubic bones.

Treatment.—An operation, having for its object the closing of the defect by freshening the edges, and uniting them by the aid of needles or sutures, is to be entertained only when a permeable urethra exists; but, even where this condition obtains, a very rare one, the hopes of the operation, so far as I know, are invariably disappointed by the irritating effects of the urine, which constantly bathes the raw surfaces

of the wound. Our efforts consequently are limited to the preventing and healing of excoriations, by securing the utmost possible cleanliness, and by pencilling the exposed surface with pure oil. When the child grows up, an attempt may be made by *Earl's* apparatus to lessen the disgusting odor. It consists of a hollow silver shield provided with a caoutchouc tube with a stop-cock, and is secured to the prolapsed bladder by a double truss.

C. *Cloacæ*.—Communications between the rectum and bladder have already been spoken of, in connection with malformations of the rectum.

(2.) CATARRH OF THE BLADDER, INFLAMMATION OF THE BLADDER (CYSTITIS).—This is a rare disease in childhood. It occurs as a result only of external injuries, or rough calculi, or from the misuse of cantharidis, and at the close of grave diseases, such as typhus fever, cholera, and small-pox.

Pathological Anatomy.—These causes hardly ever produce more than cystitis mucosa, or catarrh of the mucous membrane. External injuries may, in very rare instances, occasion cystitis serosa, or inflammation of the serous coat of the bladder; or pericystitis, an inflammation of the connective tissue which loosely surrounds the bladder.

The inflamed mucous membrane is deeply injected, and, when the disease has existed for some time, will have a grayish-brown tint, will be thickened, and large quantities of mucus found at the bottom of the bladder; even excoriations of the mucous membrane and diverticulæ are occasionally observed. The most extensive morbid lesions are always seen when calculi having rough surfaces exist.

Symptoms.—In some cases the vesical symptoms may develop themselves very rapidly; for example, in children who are susceptible to cantharidis they may come on within twelve hours after the application of a blister. In calculi, on the contrary, they come on very insidiously, often improve, and then relapse.

Pain and tenderness in the region of the bladder, rectum, and urethra, constant dysuria, voiding of a dark, turbid, and even bloody urine by drops, are the constant symptoms. In the severest grades of the disease—which, however, are never met with in children—there are also observed distention of the bladder, complete ischuria, fever, typhous and peritonitic symptoms, sopor, green vomiting, collapse, cold sweats, etc.

The urine always contains a large quantity of vesical epithelium, mucus, and pus, and, when first passed, it has a wheyish turbidity, but does not clear up completely, even when allowed to stand for a very long time, and precipitates a thick, tenacious sediment. It rapidly decomposes, generates ammonia, and produces a brownish stain even

on silver instruments. In diphtheritic cystitis, only observed in badly-ventilated hospitals, and which is complicated with diphtheritis of other mucous membranes, large pieces of false membrane are also voided with the urine, attended by the most excruciating strangury.

The course of cystitis varies very much according to the cause. That form produced by cantharidis passes off most quickly and surely. The urine becomes perfectly clear again in a few hours, is voided without any pains, and the symptoms disappear without leaving a vestige behind. Cystitis at the end of grave diseases lasts longer; still even in this case, when the general recuperative process is active, it terminates after a few weeks in recovery. The prognosis of traumatic cystitis depends upon the severity of the injury, but, in making it, it is well to bear in mind that, by virtue of the greater reproductive powers in childhood, more extensive injuries may be recovered from, and greater deformities remedied in a given time, than in adults.

The case is much worse in cystitis, caused and kept up by a calculus. Even here, it exceptionally happens that the catarrh, notwithstanding the existence of the stone, disappears, a result only probable when the stone is very smooth. Usually, however, the inflammatory symptoms last as long as it remains in the bladder, disappearing totally after it has been removed. Children affected with calculi and catarrh of the bladder do badly, both mentally and bodily; and lithotomy, if the diagnosis is sufficiently clearly established, cannot be too quickly practised, especially since this operation in children is incomparably easier to perform, and less dangerous, than in adults.

Treatment.—The removal of the cause is the most essential part of the treatment. Should a cantharidal vesicant be upon any part of the body, it should be removed instantly. It not very infrequently happens that mild vesicants remain for several days upon the skin without producing any topical inconvenience, and then suddenly vesical pains come on, and the ignorant relatives have not the least idea of the intimate connection between the worthless old plaster and the violent harassing symptoms.

The patients should be ordered to drink as much as possible of almond-milk and emulsions of flax-seed, so as to dilute the urine; and to partake of bland food, such as milk and broths, containing as little salt as possible.

The quantity of urine in the bladder should be carefully controlled, and the hypogastric region often percussed. The catheter should be introduced as soon as any dulness is perceptible, and the urine drawn off. The instrument, however, should never be left in the urethra, for the access of air decidedly aggravates the inflammation.

Thorough evacuation of the bowels should be obtained, but saline

aperients must be avoided. Several calomel powders, of a few grains each, render the best service. For the strangury, moist warm cloths, laid upon the hypogastric region, have proved to be very effectual; in sleeplessness, some preparation of opium and bitter-almond water may be prescribed. In chronic cystitis, several grains of tannin may be given daily, or injected into the bladder. Patients with calculus should be operated on under all circumstances.

(3.) ENURESIS, INCONTINENTIA URINÆ, MICTIO INVOLUNTARIA. (The nocturnal micturition in bed.)—Constant dribbling, or an entirely involuntary passage of urine, often occurs in children, and continues till they are several years old; but it is seen only in cases where marked cerebral affections are present, such as idiotism and chronic hydrocephalus. This condition is due to an actual paralysis of the bladder, of which the muscular coat, as well as neck, is involved, thus permitting the continual escape of the urine, though the bladder may contain but a moderate amount. This condition continues incessantly by day and by night, and should be distinguished from the nightly micturition in children otherwise well-developed.

The latter occurs much more frequently in boys than in girls, and in most instances lasts up to the twelfth year of life—in exceptional cases, even till the appearance of puberty. It by no means depends upon great local or cerebral lesions, otherwise it would not regularly terminate in recovery, and would also persist during the day. In this instance an inferior degree of sensibility of the bladder to the irritation of the urine must exist, as a result of which it does not indicate its condition during sleep, or the sleep must be so profound that the ordinary irritation of the urine upon the filled bladder does not rouse the child. The latter view seems to be sustained by the circumstance that many children affirm that they had distinct dreams of sitting upon the chamber and passing their water in the customary manner. They generally pass their urine in bed but once during the night, during the first few hours of sleep. I cannot see that slothfulness, bad habits, or negligence, satisfactorily explain the causes of enuresis nocturna. In most of the cases which I have observed, the children, through their own sense of honor, or on account of repeated punishments, had a lively interest in avoiding the accident, and yet were unable to do this without appropriate treatment pursued for months and even years.

I am likewise unable to confirm the opinion of some authors, that chemical alterations of the urine may be the cause, for chemical investigations of the urine, instituted in three cases of enuresis, taught me that the urine does not in any manner vary from its normal quantitative nor qualitative composition. On the other hand, however, the

statement, that most of the children suffering from this misfortune are not particularly blessed with perfect health, is correct, for they usually labor under scrofulous affections of the most varying kind, or under rachitis or helminthia.

The effects of this malady are rather unpleasant, for the psychical development in particular suffers. The repeated punishments which these children undergo blunt their sense of honor considerably; they become cowardly and deceitful, and have no personal spirit. If great and expensive cleanliness is not practised, the bed, and even the whole room, acquires a urinous odor, which contaminates the atmosphere and begets conditions which are by no means favorable to the metamorphosis of the tissues. Such children may be ultimately attacked by indolent ulcers on the nates and lower extremities, the results of the urinous excoriations.

Treatment.—A treatment directed to the removal of the cause may become necessary, when marked symptoms of intestinal worms, of scrofula or nervous hyperæsthesia, become manifest, which must be met with anthelmintics, cod-liver oil, iron, cinchona, and aromatic baths. *Lallemand* praises the latter, in particular, very highly. He allows four or five handfuls of some aromatic species of herbs to stew in a covered vessel, and this decoction, together with a glassful of brandy, to be poured into the bath, which is covered by a cloth, so that the head of the child only is exposed. In this bath the child is to remain from one-quarter to half an hour, and after several baths the quantity of the herbs and of the brandy may be doubled. These baths must be repeated daily or every other day for several weeks, whereupon a recovery ensues.

The dietetic treatment consists in first taking the precaution that the child eats or drinks nothing for several hours before retiring for the night, by which the secretion of urine is reduced to a minimum; and, although it may pass off involuntarily during the night, still the quantity will be very small. It is also advisable to make the patients sleep in the lateral posture, because it has been repeatedly observed that they invariably pass their water while lying upon the back, but remain clean when they sleep on the side. In order to prevent them from rolling over on the back in sleep, it is suggested that a cloth or sheet be tied around the body with a large knot fixed exactly over the spinal column. The pain which it causes, when they attempt to roll over on the back, instantly rouses them.

This advice sounds very simple and plausible, but always fails in its purpose, because children will not tolerate a band around the body, so tight that it would not become displaced through the night.

They urinate in bed as much as ever, notwithstanding the knot, and, when they are raised up, it is found shoved over to one side.

There is no necessity for the physician to advise any psychical or corporeal chastisement. Usually these remedies have already been fruitlessly employed, on the most extensive scale, before he was consulted. Still less are terrifying measures, such as the menace of applying a red-hot iron, suggested by *Boerhaave* and *Caspar*, to be permitted, or recommended, for a very injurious effect may thereby be produced upon the nervous system.

Of the internal remedies, two are especially efficacious, namely, belladonna and nux vomica.

Of the former, one-twelfth to one-sixth of the extract may be given every evening, the dose being increased till the pupils become dilated. By this treatment, the enuresis is arrested for several days, but it usually relapses; yet it is not advisable to continue it for a long time with large doses. In many cases I have derived a much more durable effect from *strychnine nitric*. This preparation is preferable to the ext. nucis vomicæ spirit., for the quantity of strychnine in the latter is by no means always uniform, and the gradual increasing of the dose is, therefore, more apt to be attended by symptoms of poisoning. It is best to give it in powder, simply triturated with a little sugar. Children over three years of age are at first allowed one-thirty-second, then one-twenty-fourth, etc., up to one-eighth of a grain; strong coffee should be prepared and always kept ready at hand in case symptoms of poisoning come on, such as twitching of the muscles, etc., which are most certainly controlled by it. With this treatment, the object aimed at is usually attained in from eight to fourteen days, and generally the cure is also permanent.

The experiment which readily suggests itself, to tie the penis with a piece of tape, and thus prevent the escape of the urine in a purely mechanical manner, is impracticable, for it causes œdema of the penis and erections. A case has occurred where a boy, from fear of the brutal chastisement which he was promised if he wet the bed, tied his penis so tight that he was unable to loosen the knot on the next morning, and the result was partial gangrene and a urethral fistula.*

(4.) ISCHURIA. RETENTION OF URINE.—Retention of urine in adults and children is a symptom of the most varying kinds of morbid conditions. Hence we have ischuria paralytica, spastica, inflammatoria, organica, and mechanica. Of all these kinds, but a single one, ischuria spastica, occurs in children. Nervous children, who suffer much from flatulence and colic, will sometimes pass no water for more than twelve hours, on account of which their attendants are thrown into the greatest

* See Appendix, Treatment of Incontinentia Urinæ.

anxiety. The patients become very restless, cry fearfully, draw up their lower extremities against the abdomen, take the breast but little, and consume a small amount of fluid, but this enables them to pass a long time without urinating. It is not a very serious accident or disease, and I have never yet met with a case where actual mechanical impediments had to be overcome. The only point which may be interesting is, that, in infants a few weeks old, the passage of lithic acid infarction, in the shape of small, red, sharply-angular grains, may occur.

The *treatment* is extremely simple, for the introduction of a slightly-curved, well-oiled probe will always produce a discharge of urine immediately. To prevent recurrence of the vesical spasms, the application of a bag of chamomile-flowers upon the hypogastric region is very useful. It is, in fact, much more so in children than in adults.

(5.) VESICAL CALCULI, CALCULUS VESICÆ. LITHIASIS (*λιθιασμός*).—Calculary affections are comparatively frequent in boys. Nearly forty per cent. of all the individuals operated on for lithotomy are children under ten years of age, as is seen from the statistical statements of *Prout*, who reported 1,256 cases of lithotomy operated on in the large hospitals of Bristol, Leeds, and Norwich. The reason for this singular circumstance is found (1), in the physiological uric-acid infarction, a few granules of which may readily remain lying in the bladder, and thus form the nucleus of the stone; and (2), in the quantity of the phosphates which occurs in the urine of rachitic children. In rachitis the urine becomes so rich in phosphoric acid and carbonate of lime, that a decided stratum of white powder remains after the evaporation of the urine which these children leave on the floor, a fact to which my attention was once called by an observing nurse.

All kinds of vesical calculi occur in children—the urate, oxalate, and phosphate. The lithic-acid calculi, consisting of this acid and its salts, are moderately hard, smooth, and most of them are yellowish brown in color, because the coloring matter of the urine is almost always precipitated simultaneously with the lithic-acid sediment, and, as a rule, forms the nucleus of the stone, although the external layers have a different chemical composition. Most of the calculi composed of phosphate of lime and triple phosphates are soft, light-colored, of light gravity, and rough on the outer surface. Oxalic-acid calculi, which in children form but very rarely, are the hardest of all, brown in color, and of a rough, nodular surface, on account of which they have also been called mulberry calculi. Calculi composed of cystin and those of carbonate of lime are extremely rare. The first-named calculi may also combine with each other, when the

nucleus will usually be found to consist of lithic acid and the outer strata of phosphates.

There is generally but one stone in the bladder; when several occur they grind themselves smooth against each other. Smooth calculi are very movable, while the rough and thorny calculi remain lying at some place at the base of the bladder, and become united with the mucous membrane. The effects of a stone vary according to the circumstances. There are patients with calculi who have not the least traces of catarrh of the bladder, and experience scarcely any difficulties; in others, again, the voiding of the turbid, flocculent urine is attended by the most excruciating pains, radiating from the neck of the catarrhal bladder over the rectum, penis, and thighs.

Symptoms.—The utmost care and skill are sometimes requisite to diagnosticate a stone with certainty. A correct diagnosis is of the utmost importance, because it determines the question for or against a dangerous operation. The most reliable signs, according to *Pitha*, are:

(1.) The objective—the sensation of a heavy movable body in the bladder, which alters its position according to the attitude of the body—a symptom rarely observed in children.

(2.) Pains in the neck of the bladder on standing, walking, sitting, and defecating, but which disappear by lying quietly for some time. Active exercise, such as running, riding in a wagon or on horseback, renders this pain intense beyond endurance, and the existing catarrh of the bladder then undergoes a marked aggravation, and finally bloody urine may be voided.

(3.) These pains are often referred to the apex of the glans penis, and along the course of the urethra, causing the child to hold the penis constantly in the hand, and thus lead to masturbation. This habit produces a remarkable enlargement of the penis and elongated prepuce.

(4.) Pain and difficulty in micturition. The pains become most intense toward the termination of the act, and last for a long time afterward. Occasionally the stream of urine is suddenly arrested and does not start again until the child has lain down or assumed a different position. The child accurately describes the sensation of a foreign body having suddenly interposed itself, and is able to displace it by changing its attitude.

(5.) The most important sign is always derived from the examination with the sound. An audible clang produced by the steel sound in the bladder cannot be due to any thing else than a vesical calculus. Moreover, by lightly touching the stone, and by the more or less clear tone thus produced, even an approximative idea of its hardness, smooth-

ness, and mobility, may be obtained. The smaller the calculus the more difficult, of course, it is to find it. It is sometimes necessary to examine the patients in different positions, standing, lying on one side or on the other, or on the back, taking care that the bladder be filled or partly filled with urine. In some instances it may be felt by introducing the finger into the rectum. The exploration with the sound in children is seldom successful, and incomplete or impracticable without the aid of chloroform.

The *course* of the disease is almost always the same. It happens only rarely that stones larger than peas pass off by the urethra, and still more seldom that they are evacuated through the vagina, rectum, or perinæum, as a result of ulceration.

If no artificial aid is rendered them, the patients will retain their calculi to the end of life, which, although attended by constant torture, may be protracted for many years. Ultimately they become atrophic, have hectic fever, loss of appetite, exhaustion, and sleeplessness, and perish miserably, or uræmic symptoms and nephritis become super-added, and these are speedily followed by death.

Treatment.—There is only one indication, and that is, the removal of the cause of the disease, the foreign body from the bladder. This has already been tried by the most varying internal remedies, the so-called lithotriptica, and by direct injections into the bladder. The effect, however, of these calculary solvents is still extremely problematical. The waters of various springs are recommended, especially Vichy, Kreuznach, Eger, and Franzenbad. Of the internal remedies may be mentioned the alkaline carbonates, phosphate of ammonia, herba uvæ ursi, electro-magnetism, and weak injections of fluids, which concentrated are certainly capable of dissolving the stone, but in this state cannot, of course, be introduced into the bladder.

The mechanical removal of the stone through the urethra succeeds only in very few instances in the female. The male urethra, on account of its narrowness and length, is unadapted to this method of practice.

We have, therefore, no other resource but its removal by a surgical operation, by lithotomy or lithotripsy. The description of these two methods of operation belongs to the study of surgery, and is found magnificently delineated in *Pitha's Diseases of the Male Sexual Organs*, *Virchow's Pathology and Therapeutics*.

In regard to the choice of the operation, whether lithotomy or lithotripsy should be preferred, it is only necessary to state here that lithotomy is even better adapted to children than to adults. According to the declarations of all experienced surgeons, children furnish an extraordinarily favorable ratio of recovery. The calculi are seldom