

train of terrible symptoms of otitis interna is set going. Of all the extraneous non-corrosive substances, those of an organic character are the worst; the moisture and warmth of the meatus cause them to swell up; this is especially applicable to peas, beans, and lentils; in a lesser degree also to all fruit-kernels. Small pebbles and glass beads are tolerated for a long time without any serious effects, if they have not been too firmly wedged in by forcible attempts at extraction. The condition is most favorable in confectionary articles; they soon soften and liquefy, a result much accelerated by a few drops of water.

Treatment.—The only and chief indication, the removal of the foreign body, cannot always be quickly enough carried out, for the tumefaction of the meatus and pain often render this impossible. These symptoms should first be palliated by leeches, cataplasms, dropping in of oil, and injections with warm water. There are various methods of removing the foreign substance, some of which, however, are laborious and adventurous. The forcible injection of a stream of tepid water is undoubtedly the safest and simplest means of setting it afloat. It is hardly ever of precisely the same form as the meatus; the water, therefore, gets behind it, and gradually sets it afloat, and it soon after makes its appearance at the verge of the meatus, and can thence easily be picked out. If this measure has failed to remove it, we may resort to elevators. These may be made at any time, by bending the blunt end of a fine hair-pin toward the flat surface. The end, thus curved, is carefully insinuated behind the foreign body, which is easily brought out. In desperate cases, small blunt hooks may also be resorted to; these should be introduced flat-wise, and then turned so as to come against the object from behind. The utmost caution, however, should be exercised in their use, for the points of the hook may break off, and, if the patient is at all restless, the tympanum is liable to be ruptured. Forceps, if the bodies are round, such as peas, beans, pebbles, beads, etc., are totally useless and even injurious, for two branches require more space than the foreign body, in order to embrace it at its largest diameter, and therefore rarely grasp it. They almost always slip off, and thereby push the article still farther inward.

A third method, which, to be sure, is very mild, as well as often ineffectual, consists in extraction by the aid of some tenacious substance which has previously been brought in connection with the extraneous substance. For this purpose, a quill, cut off smooth at both ends, is introduced into the ear, and through this a piece of tape soaked in glue pushed down upon the foreign body. After a few hours the tape will be found to adhere pretty firmly to the article, and then it is sometimes very successfully and agreeably pulled out. But, when

the pebbles, etc., are firmly wedged, the piece of tape will come out alone, and the entire procedure will have been a failure.

All these methods of extraction require the utmost tranquillity and steadiness on the part of the patient, which cannot be expected, especially from a child. Hence, chloroform will have to be employed in most cases, and will be found to immensely facilitate the manipulations. Otitis and otorrhoea, which result from this accident, must be treated according to the principles already prescribed, but they also subside, even without any treatment, much more rapidly than the cachectic otorrhoea.

CHAPTER VI.

DISEASES OF THE GENITO-URINARY ORGANS.

A.—KIDNEY.

(1.) **MALFORMATION OF THE KIDNEYS.**—The kidneys are never totally absent; even in the most incomplete abortions they may be detected in some form. One kidney only is to be found in some cases, in which condition *Rokitansky* makes a distinction between the *single* and the *simple*. In the former, a single kidney is found at the normal place, to the right or left side of the vertebral column, differing in shape but little from the ordinary kidney, while on the opposite side there is no trace of a gland. The simple kidney, on the other hand, is an abnormal fusion of two kidneys, the most common form of which is the horse-shoe kidney (*ren unguiformis*). In this case two separated glands of normal shape are united at the lower end by means of a flat bridge of renal substance. The more limited this connection becomes, the more distinct the form of the *simple* kidney appears. Finally, also, the two hila fuse together, forming a single hilum on the anterior surface. The simple kidney is always situated lower in the abdomen than the normal gland, and, as a rule, lies in the vicinity of the promontory of the sacrum; seldom, like the single kidney, external to the median line.

Besides this condition, various other minor deviations in form also occur, and in this connection it may be observed that the kidney of the new-born child, in the normal state, has a slightly uneven surface, and is nearer spherical in form than in the adult, and tapers somewhat toward the upper end.

(2.) **URIC-ACID INFARCTION OF THE NEW-BORN** (*Infarctus Renalis*).—Uric-acid infarction is a recent discovery, the merit of which

is due mainly to *Vernois*, *Engel*, *Schlossberger*, *Virchow*, *Hessling*, and *Martin*, of Berlin. The infarction manifests itself in sharply-defined, golden-yellow streaks in the pyramids. These streaks run together concentrically in the papillæ, and for that reason are also found thicker there. Under the microscope they are recognized as small cylindrical columns, which, on being strongly compressed, crumble down, and a reddish powder appears, consisting of amorphous lithates, epithelium from the straight urinary tubules, and small rhomboid crystals of uric acid. When these golden-yellow streaks are found in the papillæ, some of them will also be seen precipitated as a carmine-red powder in the pelvis of the kidney, and in the most dependent part of the bladder.

Urinary infarction is met with in two-thirds of all the children who die before the tenth and after the second day of life. It is very rarely seen in still-born, and but seldom in children who have respired one day. On the other hand, however, it frequently exists longer than after the tenth day, and, exceptionally, is even found in children who have lived for more than four or even six weeks.

That this is not a pathological, but a physiological condition, is manifest from its frequency, from the absence of all morbid signs during life, and from the fact that the condition is almost invariably found in children dying before a certain age from other diseases. This phenomenon, according to *Virchow*, is very easily explained in the following manner: Immediately after birth, a more rapid oxidation of the tissues, in consequence of the processes of respiration, takes place, as a result of which, among other products, uric acid is formed. This substance, combined with the alkaline bases, is excreted by the kidneys, but as yet does not find the requisite quantity of water in the new-born child to produce its solution. The large quantities of the excreted urates then accumulate in the straight tubules, and appear yellow, for they are combined with the coloring matter of the urine. The urine, which subsequently is excreted in larger quantities, and is consequently more diluted, partly dissolves it, partly washes it onward into the bladder, and thence outwardly. A red powder, in fact, is now and then found in the diapers of most of the new-born children, which, on close examination, is seen to be uric-acid infarction. This explanation, it is true, is not adaptable to the extremely rare occurrence of lithic-acid infarction in the still-born, and therefore it is evident that it is not completely exhaustive. Although uric-acid infarction is to be looked upon as an undoubted physiological phenomenon, nevertheless it also furnishes causes for pathological conditions; for example, it may give rise to the frequent passage of gravel, and nuclei for the formation of

calculi. In truth, the germ of calculi in children always consists of lithic acid.

Lithic-acid infarction, regarded from a medico-legal point, is not devoid of importance, for it is as positive a proof of life as the dilatation of the lungs by air, and has the additional advantage over this sign that it does not become changed so quickly with commencing putrescence. Aside from this, it has only an anatomico-pathological interest.

(3.) MORBUS BRIGHTII (Bright's Disease of the Kidney).—In children, Bright's disease occurs in the acute form almost exclusively, and only as a sequela of scarlatina. The chronic form is very rare, as I infer from the fact that I have met with it only once—that single instance presented in a tuberculous boy ten years of age. It differs in no respect from the disease as it occurs in adults, and we may therefore refer the student to the latest text-books, and particularly to *Frerichs's* monograph, a model of exhaustive scientific essaying.

We confine ourselves to a more detailed consideration of the acute form.

Pathological Anatomy.—The kidneys usually exhibit those morbid alterations which *Frerichs* ascribed to the end of the first or commencement of the second stage. They are perceptibly enlarged, generally in consequence of an increase in bulk of the cortical substance, which is of dark-red color, brittle, and friable. The cut surfaces are very moist, and, on scraping them with a knife, a tenacious, bloody serum is obtained. Small extravasations of blood, of the size of a pin's head, are also frequently found. The pyramids are much less altered, and reveal nothing more than a greater vascular turgescence, which produces a general dark color.

The enlargement of the kidney is due to an exudation of fibrin, which fills up the tubuli contorti, and may be microscopically demonstrated in the fluid scraped from the cut surfaces. Numerous Bright's casts can be seen under the microscope, which are sometimes clear hyaline, sometimes again still surrounded by epithelium-cells, and perceptibly contain blood-corpuscles. These casts, though in much less quantity, are also met with in the tubuli recti, and are never totally absent from the precipitate of albuminous urine. When these children succumb at the very commencement of the disease, the urine will be found to contain so many blood-corpuscles as to color it dark red. After some time, it is clear, yellow, or turbid; the blood-corpuscles and coloring matter of the blood have disappeared, but albumen and casts may still be detected. At this stage of the case the cortical substance exhibits more the character of the second stadium, according to *Frerichs's* division.

It loses its dark color, and at first becomes pale yellow at various points, and finally all over. The blood-corpuscles in the plugged-up capillaries disintegrate, and are then, together with the coloring matter, absorbed, or washed onward; the exudation within the urinary tubuli likewise undergoes a retrograde formation, and the casts degenerate into fat molecules, and, although they still loosely retain their normal form, lose it when pressed by the glass cover under the microscope, consequently it is not always practicable to use it in the microscopical examinations at this stage.

The kidney remains increased in bulk, and very brittle, the capsule may be pulled off with ease, and the upper surface is then seen to be slightly granular. This slight unevenness arises from the metamorphosis of the fat, and the succeeding atrophy, which does not progress uniformly on all parts of the cortical substance. While one part is already flabby, and begins to waste, the other is firm with exudation, and occupies its former large space.

In acute cases there is only found a very small quantity of urine in the bladder; in children who survived for many weeks after the attack, it may have returned to its former normal amount.

Dropsical effusions into the peritoneal sac, pleura, and pericardium, are also found in almost all cadavers, often combined with inflammatory exudation, especially upon the pleura. Those morbid alterations of the rest of the organs, which we constantly observe in the chronic form in the adult, do *not* occur in children.

Symptoms.—The first signs of disease of the kidney usually appear at a time when the desquamation is at its acme, at the end of the third week of the scarlatina. The child who, to all appearances, is already perfectly well, and has a good appetite, suddenly loses it. It is seized with nausea and vomiting, and fever and debility again come on. The face, at the same time, assumes a puffed appearance; the integument of the lower eyelids becomes elevated into glistening sacs, and, in a few hours, the entire surface of the body is affected by anasarca. Simultaneously with these phenomena, a palpable diminution of the secretion of the urine is observed. In the most acute form, the child will pass no urine at all for more than twenty-four hours, and finally void a few drops of blood-colored, concentrated urine, the act being attended by severe pains. In many cases, however, the urine is not very much diminished, nor bloody, but of a pale-yellow tint, or pellucid, so that, on merely inspecting it, no alteration whatever can be detected. There is often also very sharp pain in the lumbar region.

The chemical and microscopical changes of the urine are the same as in Bright's disease in the adult. In the first few days the quantity

of albumen, when no great amount of blood is admixed, is less than it is subsequently, and varies between ten and thirty pro mille. An approximative estimation of the daily loss of albumen may be formed by boiling a certain quantity of urine in a graduated test-tube, and allowing the coagulated albumen to settle for twenty-four hours. If the total amount of the daily discharge of urine is known, then it is easy to calculate how many cubic centimetres of albumen are voided in the urine. In children, however, the collection of the urine passed in the entire twenty-four hours is attended by considerable difficulty, and often entirely impossible, for they always discharge the urine along with the stools.

The casts are found with the greatest certainty, and in largest quantities, when urine that has been voided some hours previously is slowly decanted, and the residue poured into a tall champagne-glass. In this glass the urine is again allowed to stand quietly for several hours, when all but a few drops are poured off, and these last remaining drops are examined by the microscope. If no casts are found in urine thus prepared, it may be safely concluded that none exist. In all cases of acute Bright's disease, however, they are seen closely pressed together, and lying over each other, and, by examining and comparing a large number of these structures, we obtain a true insight into the nature of the entire disease. The casts possess different qualities, according to the duration of the disease, as already described in the pathological anatomy.

The quantity of urine is generally lessened, the salts are likewise diminished, but the coloring matter in most cases is augmented. In the course of the disease, however, the urine again resumes its former straw-yellow color. The turbidness and sediments which are frequently present are partly due to the large quantities of casts, partly to the numerous epithelium-cells, and urinary salts.

Should albuminous urine continue to be discharged for several days, the anasarca will increase, and the signs of dropsical effusions into the cavities of the body will become superadded. The abdomen becomes more and more protuberant; complete dulness, when percussed in the sitting posture, is obtained over its lower part, and, in the recumbent position, fluctuation is distinctly felt. This, however, may arise from cedema of the abdominal parietes. The symptoms of hydrothorax are still more striking. The greater the serous effusion into the pleural cavities, the more rapidly and laboriously do the children breathe; the flat percussion-sound gradually rises, and only the rhonchi which are propagated through the ribs, and feeble or no respiratory murmurs, can be heard. The hydropericardium, which almost simultaneously appears, makes the pulse irregular, flickering, and small;

the dulness in the præcordial region increases in circumference, but cannot be accurately defined on account of the close contiguity of the hydrothorax. These children sit upright, like croup patients, in their little beds, and sleep, if they are able to sleep, with the head thrown forward. They grasp firmly at the sides of the bed, in order to fix the pectoral muscles, and secure as great a dilatation of the thorax as possible, and, with pitiful, beseeching looks, gaze about them in every direction for help.

In progressive increase of the hydrothorax, the patients may perish from suffocation; and, indeed, also œdema of the glottis, or uræmic symptoms, as a result of the grave renal disease, may supervene. These manifest themselves by headache, loss of vision and hearing, and by stupor and delirium, and death may also be brought about by exhaustion, through persistent vomiting or diarrhoea.

Hardly ever does a transition into the chronic form of Bright's disease occur in scarlatina. The children either die soon under the above-described symptoms, or, after two or three weeks, the albumen in the urine begins to decrease, the urine is passed in larger quantities, the œdema and effusions into the serous sacs disappear, and this is followed by complete recovery. Of this I was once able to convince myself by the autopsy of the body of a child whom half a year previously I had treated for acute Bright's disease, but subsequently lost by a violent typhus fever. The cortical substance of the kidney in this case was neither too large nor too small, and microscopically could in no respect be distinguished from that of the healthy kidney.

All cases of nephritis, which appear with and after scarlatina, do not terminate with dropsy, because death ensues too early. Such are the cases of scarlet fever which rapidly terminate fatally in vomiting, coma, and convulsions, and their unhappy issue is often erroneously ascribed to the severity of the fever, to the premature retrogression of the exanthema, to hydrocephalus acutus, and, still more conveniently, to the intense toxic effects of the contagion. A more accurate investigation of the cortical substance of the kidney, in most of these rapidly-terminating cases, reveals a marked alteration, like that found in the first stage of Bright's disease.

Conversely, however, cases of œdema of the integument, after scarlatina *without* nephritis, or albuminuria, are also met with. This simple anasarca, according to *Frerichs*, is occasioned by exposure to cold during the period of desquamation, and is due to paralysis of the vascular systems of the integument and subcutaneous cellular tissue.

The most contradictory statements exist concerning the occurrence

and frequency of nephritis after scarlatina. While some authors maintain that two-thirds and even three-fourths of all scarlet-fever children are affected with it, others, on the contrary, claim that it occurs only once in twenty or thirty cases. The former hold that it is only necessary, in all cases, to thoroughly and accurately examine the urine, while the latter repel this reproach with indignation, and accuse their opponents of the grossest exaggeration. But it is possible for both to be right, for this depends entirely upon the character of the epidemic, and not upon the intensity of the disease. In some epidemics almost all scarlet-fever patients become dropsical, in others barely a few.

Of one hundred scarlet-fever patients, dropsy was observed by *Haidenhain* in eighty per ct.; by *James Miller*, in twenty-seven per ct.; by *Wood*, of Edinburgh, in twelve and a half per ct.; by *Rösch*, in ten per ct.; and by *Frerichs*, in four per ct. of the cases.

For a number of years back, scarlet fever has been prevailing endemically in Munich, but is only feebly contagious, and I have treated at least between fifty and sixty cases, and but twice only, and that temporarily, observed albuminuria.

Treatment.—In this disease the physician renders the most effective service by vigilant prophylaxis. The locality in which the patient is confined should be carefully tested for the state of the temperature, draught, and dampness, and that room should be preferred which can be properly warmed and ventilated, in which no unpleasant draught occurs from the opening of doors, and the walls of which are dry. Inunctions of fat, on account of the well-known properties they possess of rendering the skin less susceptible to changes of temperature, are to be employed, even if they do not afford the degree of protection which *Schneemann* ascribes to them.

This *régime* is to be continued till the desquamation is entirely over, and the child, by a few baths, has again been habituated to greater changes of temperature.

When dropsy and albuminuria have once appeared, the best means should be adopted to relieve the stasis in the kidney, by stimulating other secretions, such as the skin and bowels. Calomel, castor-oil, and subsequently also senna, are, by preference, selected from the class of aperients. Jalap and colocynth, and the salines, are with justice avoided, because the salts are in greater part absorbed, and then eliminated by the kidneys. In children who are at all predisposed to diarrhoea, the utmost possible care must be exercised, otherwise a fatal enteritis may be produced. An effort should be made to stimulate the secretion of the skin—which, in anasarca, is much diminished—by small doses of tartar. stibiat., or, when the children are very restless, by small doses of opium or camphor. The main atten-

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