ral or peritoneal cavity, producing pleurisy, or peritonitis. In a few instances suppurative inflammation occurs in the cyst.

In the **treatment** of hydatids some physicians have been disposed to confide in the supposed power of iodide of potassium, and of chlorate of potassium, taken internally, to cause the absorption of the fluid of the cyst, and thus destroy the parasite. But the evidence does not appear to me to be sufficient to justify such confidence.

Very large and superficial hydatids may, when the diagnosis is clear, be *tapped*, with at least temporary relief to the patient. Should this be safely done without cure, it may be repeated, and then a gum-elastic tube may be introduced and retained in the opening, so as by drainage to induce the shrinking of the cyst and thus the destruction of the *echinococcus*. Dr. Pavy reports success in one case with injection of male fern into a hydatid cyst of the liver; its anthelmintic or parasiticide power seeming to be thus shown. Skoda has reported the cure of a case of large hydatid in the *left* hypochondrium, by injections of solution of iodine, left in each time for thirteen minutes.

TUBERCLE OF THE LIVER.

Primary tuberculization of the liver is never met with. In patients dying with phthisis, not unfrequently miliary tubercular deposits are found scattered over the gland; they rarely soften, but sometimes small *vomicæ* are met with. It is of course necessary to be aware of the possible existence of such formations, in the consideration of the morbid anatomy of the liver.

DILATATION OF THE GALL-BLADDER.

This may be produced by obstruction of the gall-duct or the common bile-duct, or, more rarely, by a morbid formation of serous fluid within it, allied to a local dropsy. The diagnosis of this may be important, as it may be readily confounded with hepatic enlargement. It is to be distinguished from cancer by the great amount of jaundice (in most cases), the previous occurrence of gall-stone colic (also not invariable), and the more uniform and softer character of the swelling. From hydatids the same signs, except the softness of the tumor, are distinctive; and the latter grow much more slowly.

For the **treatment** of dilatation of the gall-bladder, the remedies suitable for obstruction of the biliary ducts will be appropriate. Surgical interference would, in any case, be very bold practice; unless, perhaps, by pneumatic aspiration.

Perforation of the gall-bladder or gall-duct now and then occurs, from prolonged obstruction and dilatation. This must prove fatal (as in a case referred to upon a previous page) by the production of peritonitis, from the escape of bile into the peritoneal cavity.

Gall-stones are alluded to under "Bilious Colic."

AFFECTIONS OF THE SPLEEN.

These are necessarily treated of at length in systematic treatises. It will be enough for our purpose to say a very few words of them. The spleen is commonly **enlarged** in *intermittent*, *remittent*, and *typhoid* fevers, and in *leucocythæmia;* sometimes, in pregnancy (Simpson.) **Rupture** of the spleen, causing death, has been several times reported. Such an affection (*i. e.*, rupture of the spleen) could scarcely be diagnosticated during life.

Enlargement of the spleen is readily ascertained by inspection and palpation. It often increases and diminishes, during and between the paroxysms of intermittent (ague-cake). Piorry asserts its *rapid* diminution under cinchonization. Other affections of the spleen (**inflammation, tubercle, hydatids,** etc.) are so generally difficult of diagnosis as to have chiefly a post-mortem interest; and they present no clearly recognized indications for treatment. A case has been reported[1] in which the spleen was removed entirely; yet the woman recovered and seemed to have good health.

AFFECTIONS OF THE KIDNEYS AND BLADDER.

CONGESTION.

Causation.—Under exposure to cold, overdoses of cantharides or turpentine, or the disturbance belonging to different inflammatory and febrile complaints, *active* renal congestion may occur. *Passive* congestion is more common in heart-disease, or pulmonary obstruction, as by pleuritic effusion or emphysema, or when pressure impedes the circulation in the renal veins or ascending vena cava, as in pregnancy or abdominal tumors.

Symptoms.—Pain in the lumbar region, sometimes with tenderness on pressure on each side of the spine. Scanty urination, the fluid being high-colored, sometimes bloody, or containing albumen. Certain cases exhibit under the microscope fibrinous casts; epithelial cells are commonly met with.

Diagnosis.—It is only occasionally difficult to distinguish this condition from Bright's disease. Active congestion begins abruptly under a recognizable cause. Passive congestion shows a dependence upon some other organic affection, and, although variable, is not progressive. They are thus distinguishable from advancing and more or less permanent disease of the kidneys.

Treatment.—For active congestion, cupping the lumbar region is proper, abstracting blood in amount proportioned to the state of the patient. Purgation may follow, by castor oil or citrate or sulphate of magnesium. Then, the warm bath or hip-bath, continued for some time.

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[1] London Med. Times and Gazette, Dec. 7, 1867. This is less extraordinary than Prof. G. Simon's case (Deutsche Klinik, April, 1870), in which he extracted successively the left ovary, the uterus, and the left kidney; and the patient recovered.

URÆMIA.

Definition.—The retention in the blood of the material which it is the function of the kidneys to excrete; from the suppression of their action.

Symptoms.—When well-marked, headache, dimness of vision, vomiting, diarrhœa, convulsions, and stupor; ending in fatal coma.

The temperature of the body is generally above the normal degree. This aids in the diagnosis between uræmic coma and opium poisoning; in which the temperature is lower than natural.

Pathology.—The question as to what is the *immediate* toxic agent in uræmia is not yet fully determined; *i. e.*, whether it is urea, or an ammoniacal educt from its decomposition in the blood. In the absence of demonstration of the latter, the former appears probable. A further view has been urged; that it is unchanged creatin, creatinin, and other extractives, that contaminate the blood. (See *Bright's Disease.*)

The term *urinæmia* is a safe one, not involving either of these opinions. Traube has proposed the hypothesis that the uræmic symptoms, so considered, in Bright's disease, may depend upon œdema of the brain.

Treatment.—This must vary with the circumstances of the production of the suppression; but the great indication is to *depurate the blood*—by the kidneys, if they can be restored to action, and by the aid or substitution of the bowels and skin.[1] For this end, the warm bath, or the hot air, or warm vapor bath may be of great service. In acute sthenic cases, moderate venesection will do good. So may cupping or counter-irritation by mustard or tincture of iodine over the small of the back. Dr. B. W. Richardson has especially urged venesection as the most hopeful remedy for uræmia. Saline cathartics, even hydragogues, may be given to such patients as have strength to bear them; as cream of tartar, Epsom salts, elaterium, or croton oil; the last two most rarely. Lemonade drunk freely is often one of the best of diuretics. Others will be mentioned hereafter, in connection with Dropsy. Dr. A. L. Loomis has reported successful results in the treatment of uræmic convulsions with hypodermic injections of morphia.[2]

NEPHRITIS.

In the present state of urinary pathology, it is common to merge the topic of inflammation of the kidney (except suppurative pyelitis) as distinct from active renal congestion—in Bright's disease. If this be questionable as a matter of pathological system, it has at least practically no disadvantage; as the symptoms of nephritis are included in one or other of the affections named; and so is its treatment. We may submit therefore to the usage of authority upon this point, without hesitation. The symptoms of *acute pyelitis* (inflammation of the pelvis of the kidney) are essentially those of renal congestion, intensified; with tenderness

[1] There is reason to believe (Cyon) that the liver also aids in the separation of urea from the blood.

[2] N. Y. Medical Record, August 1, 1873.

Fig. 77.

Deposit from urine in renal hyperæmia.

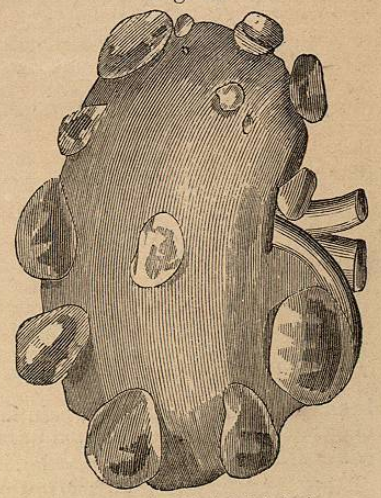
on pressure over the kidney, and fever, until suppuration is established; then, purulent discharge for a variable time from the kidneys. (See *Pyonephrosis.*) Before pus appears, blood, in small quantity, mucus, and renal epithelial cells may be found in the urine. A tumor in one of the lumbar regions may precede for a while the escape of pus.

BRIGHT'S DISEASE.

Definition.—Albuminuria, dependent upon structural change in the kidneys; or, to speak more correctly, disease of the kidney, characterized by albuminuria and dropsy.

Varieties or Stages.—Authorities differ as to the discrimination of these. Bright believed there were three varieties. Dr. G. Johnson asserts two—the desquamative and non-desquamative nephritis. Frerichs considers them to be grades of the same affection, and admits three stages, essentially, of hyperæmia, exudation, and degeneration. Anatomically, we have the *large, smooth, white kidney*, the *small, smooth kidney*, the *granular uncontracted kidney*,

Fig. 78.



Renal cysts (dilated tubules).

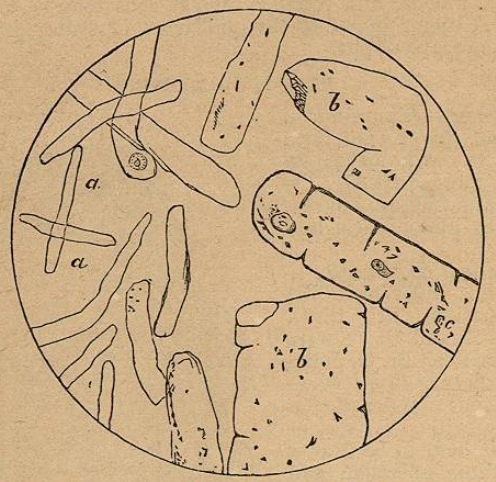
and the *granular contracted kidney*. We may safely follow Roberts, dividing Bright's disease, first into *acute* and *chronic*. The latter is then divided into, 1. Cases which have lapsed from the acute state (smooth, white, generally large kidney); 2. Cases chronic from the beginning (granular, red, contracted kidney); 3. Cases associated with waxy or amyloid degeneration of the kidneys.

Causation.—Bright's disease is one-third more common in males than in females. The greatest number of cases occurs between the ages of 45 and 65. *Acute* Bright's disease is most often produced by cold and dampness; next by scarlet fever, pregnancy, or violent intemperance. *Malaria* is also to be included among its causes.[1] The acute form is most common in early life.

Chronic Bright's disease also is greatly promoted by exposure to cold and wet; it is caused, moreover, by abuse of spirituous liquors, very often. Other predisposing causes are gout, valvular disease of the heart, constitutional syphilis, and affections of the bladder and urethra. Climate must have something to do with it; as the ratio of deaths from renal disease to all deaths is, in London 1 to 49, Paris 1 to 226, Bombay 1 to 2800, and Genoa 1 to 4303.[2]

Symptoms. Acute Bright's Disease.—After exposure to cold, or a drunken fit, or scarlet fever, the patient is sized with chilliness,

Fig. 79.



Casts, in Bright's disease. *a a.* Epithelial casts. *b b.* Opaque granular casts.

headache, nausea, vomiting, pain in the back and limbs, checking of perspiration, and oppression in breathing. Fever follows; and

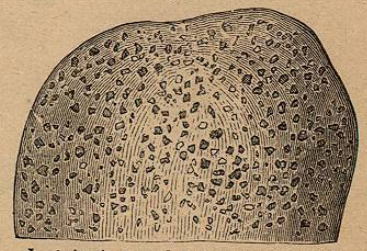
[1] Busey, Am. Journ. of Med. Sciences, Jan. 1873.
[2] See a paper by Dr. A. Flint, New York Medical Record, July 15, 1869.

the face, trunk, and limbs become puffy with anasarca. Effusion may also occur into the pleura or peritoneum.

The *urine* is scanty, heavy, acid in reaction, and dark in color, from the presence of blood; and very albuminous. The disposition to void it occurs more frequently than during health. The deposit from it, under the microscope, shows blood-corpuscles, loose renal epithelium, free nuclei, tube-casts, and shapeless masses of fibrin and *debris*.

After one, two, or three weeks, or even a longer period, the attack proceeds to one of three terminations: recovery, death, or lapse into the chronic state. Death results through uræmia, or from secondary pneumonia, pleurisy, peritonitis, pericarditis—or hydrothorax, œdema of the glottis, hydrocephalus, or ascites. Probably two-thirds or more of the cases of *acute* Bright's disease recover.

Fig. 80.



Incipient granular degeneration of kidney.

Treatment.—Cupping the loins, hot water or hot air or "blanket" bath, active purging, as with cream of tartar and jalap, or citrate of magnesium, and diaphoretics, as citrate of potassium or liquor ammon. acetat. Mercury is not recommended. The diet should be *liquid* and simply nutritious.

Chronic Bright's Disease.—This approaches so slowly as seldom to be detected until after the lapse of months or years. Gradual loss of strength, pallor or puffiness of the face, shortness of breath, and frequent disposition to urinate, are early signs of it. But they are not always present; the *dénouement* of the disease may be by a convulsion, œdema of the lungs, amaurosis, or some violent local inflammation.

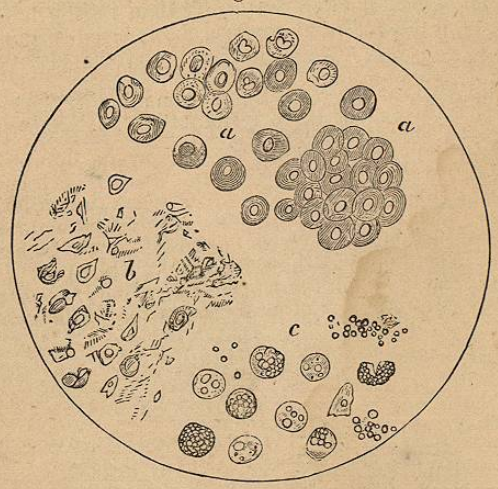
Symptoms and signs of a well-marked case (not all present in every instance) are: albuminous urine, deposits of tube-casts and renal epithelium, dryness of skin, frequent micturition, especially at night, general dropsy, or local effusions into the cavities, indigestion, anæmia, uræmic effects (headache, dizziness, impairment of sight,[1] convulsions, coma, vomiting, diarrhœa), enlargement of the heart, and secondary inflammations. Bronchitis is especially common.

The progress of the case is usually interrupted by exacerbations and intervals; each fresh attack leaving the patient manifestly worse than before. Such attacks much resemble acute Bright's

[1] Prof. J. Green, of St. Louis, has well described the ophthalmoscopic signs of albuminous retinitis in Bright's disease. There are usually white stellate spots on the retina, with enlargement of the retinal bloodvessels. Türck and others regard the affection of the retina as a fatty degeneration. Dr. Gouverneur Smith, of New York, remarks that dulness of hearing also occurs, under similar causation, in some cases of Bright's disease. See Trans. of N. Y. Academy of Medicine, 1869.

disease; they are sometimes referred to known causes; the intervals may last weeks, months, or even years.

Fig. 81.



Renal epithelium. *a*, Normal. *b*, Atrophied. *c*, Fatty degeneration.

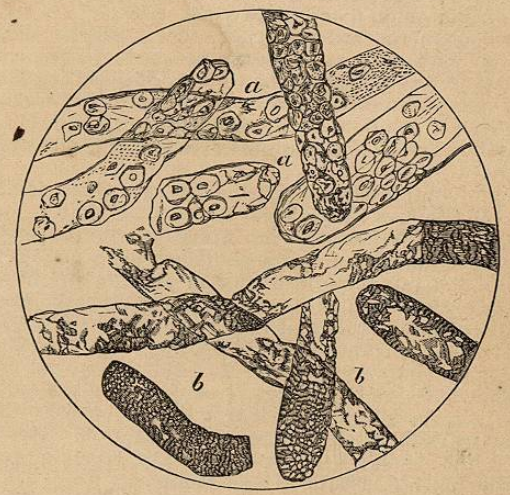
In **prognosis**, the tendency is always toward a fatal result. About one-third die of uræmic poisoning. A considerable number die of local dropsical effusions. One-fifth from secondary pneumonia, pericarditis, or pleurisy. The rest, by exhaustion, from anæmia, indigestion, and anasarca, or the complications of apoplexy, cirrhosis, phthisis, intestinal ulcerations, etc.

Diagnosis.—The presence of albumen in the urine, with dropsy, not of sudden origin or brief duration, is pathognomonic of this affection. The tests for albumen, by heat and nitric acid, are readily applied. The microscope will show also free renal epithelium and tubular casts in the urine; in advanced cases the casts are sprinkled with oil-dots. The solids of the urine, especially the urea, are reduced below the normal amount.

Pathology.—Degeneration of the structure of the kidney induces albuminuria, by allowing the serum of the blood to pass almost unchanged through the cortical substance into the *tubuli uriniferi*. The deficiency of urea is due to the same impairment of secreting power. The smooth white, generally large kidney is the result of fatty degeneration; this either following an inflammatory attack, or being primarily a chronic atrophic affection. Dr. T. Grainger Stewart describes three forms of change: 1. The inflammatory form, with three stages: *a*, that of inflammation; *b*, fatty transformation; *c*, atrophy. 2. The waxy or amyloid form, also with three stages: *a*, degeneration of vessels; *b*, secondary changes in the tubes; *c*, atrophy. 3. The cirrhotic, contracting or gouty form. Dickinson especially has shown the importance of the distinction into *tubal*, *intertubal*, and *vascular* disease. Dr. George Johnson has proved that in Bright's disease the coats of the small arteries in various parts of the kidney become thickened with hypertrophy. An early change in the arteries seems to be a part of most organic degenerations.

Sir Wm. Gull and Dr. H. G. Sutton[1] advance the view that the affection of the kidneys is only a part of a morbid process going on in the general vascular system; to which they give the name "arterio-capillary fibrosis." In the vessels of the affected kidney, two kinds of change may occur; one, degeneration of the arteries; the other, thickening of their muscular walls. It appears improbable that these alterations should occur together. It is to be inferred from all the facts, that when the disease is *tubal* (intratubal) in its origin and seat, muscular hypertrophy of the renal arteries results as an effect of the abnormal resistance to the flow of blood (as does also cardiac hypertrophy in the same case); while many instances also are observed in which the morbid alteration is *intertubal*, consisting of arterial fibrosis or other degeneration of the vessels.

Fig. 82.



Waxy casts.

As for the mode of death in Bright's disease, it appears reasonable to refer it to uræmia (urinæmia). Jaksch and Treitz have used the term ammonæmia, to indicate a supposed poisoning by ammonia or its salts. But the amount of ammonia ever present at once in the blood is not likely to be sufficient to produce toxic effects. Urea, moreover, according to the experiments of Feltz, Ritter, and others, appears to be innocuous. The precise nature of urinæmic poisoning continues, therefore, to be as yet unexplained.

[1] Medico-Chirurgical Transactions, vol. lv. 1872.

It is probable that the transitory condition producing albuminuria after scarlet fever, or during diphtheria or other acute disorders, has no necessary relation to chronic Bright's disease. The latter, there is reason to suppose, may be non-inflammatory and degenerative from the first. Yet, where a predisposition exists, an inflammatory attack may promote it, as with other degenerations.

Treatment.—The indications in every case of Bright's disease are: 1. To hinder the progress of structural change in the kidney; 2. To prevent uræmia and secondary inflammation; 3. To palliate concomitant symptoms or states, as anæmia, dropsy, dyspepsia, etc.

Regimen or hygienic management is of the utmost importance for the first of these ends. Avoidance of exposure to cold, wet, or great fatigue, reform from intemperance, if it has existed, or from other excesses, will be indispensable. Clothing should be sufficiently warm, with flannel next to the skin. Bathing frequently, at such temperature as is borne without chill or relaxation, is to be recommended. The bowels should be kept regularly open. Nourishing diet, of which milk may generally be part, is of consequence. Dr. Donkin (*London Lancet*, April, 1870) extols an exclusive diet of skim-milk, 6 or 7 pints daily.

Iron will do more good than any other medicine, unless it be cod-liver oil with persons of strong stomach. These medicines may be very well combined. The tincture of the chloride of iron is as good as any other chalybeate, as a general rule. With some the citrate of iron in solution, or the carbonate or the iodide will agree more readily. Iodide of potassium is lauded by Cryni, of Brussels, and others.

It is very doubtful whether astringents ever check to advantage the waste of albumen through the kidneys. If any be worth the trial, it is ammonio-ferric alum. Counter-irritants over the kidneys, unless of the mildest character (tinct. iodin., emplastr. picis, etc.), will not do any important good in **chronic** Bright's disease.

For the dropsy, warm baths and hydragogue cathartics are advised. Of the latter, cream of tartar and jalap together are the favorites; 2 or 3 drachms of the bitartrate with 10 to 20 grains of jalap two or three times a week. If serious dropsical accumulation threaten life, elaterium (gr. $\frac{1}{6}$ or $\frac{1}{4}$ every four hours, in pill, till it acts) may be given. But it is a decided mistake to harass the patient constantly with exhausting purgation. It is to be remembered that it can act only as a *palliative*, removing part of the *effects* of the malady, not the disease itself.

If the warm bath do not agree, or fail to produce diaphoresis, those who have access to it should try the *hot air bath*, at 130° to 150° Fahr. This rarely fails to produce free perspiration. For weaker invalids the vapor bath is available; or the *hot sand bath*.

Of diuretics, acetate of potassium, spirit of nitrous ether, and infusion or compound spirit of juniper will be the least likely to disappoint. But all will not unfrequently fail.

Then we have a resource (where tapping for ascites is not demanded) for the relief of great œdema, in the use of incisions with a lancet, or needle, in the swollen legs and feet. I prefer a number of small incisions with an abscess lancet, plunged through the skin of the calf and dorsum of the foot. It is just possible that erysipelas may follow; but this danger will be lessened by repeated warm sponging of the limbs, washing them with diluted glycerin, or inunction with lard or cold cream.

The **complications** of Bright's disease must be treated according to their own indications, on general principles, bearing in mind always the *degenerative* and *asthenic* tendencies belonging to the malady itself.

LITHIASIS.

Definition.—The formation of calculous deposits (gravel or stone) in the kidneys or bladder.

Causation.—Stone is, by statistics, nearly ten times as frequent, or at least as fatal, in the male as in the female. It destroys life most often after fifty years of age; but is far from uncommon in early life, even under five years. *Locality* has something to do with the causation of stone and gravel. They are common in England, Scotland, Iceland, France, Northern Italy, and Egypt, and uncommon in Ireland, Sweden, Norway, and Austria. In this country they are not rare; the greatest number of cases probably occurs in the State of Kentucky.

Varieties.—Of these a sufficient account (for our purpose) has been given in the first part of this book. (See *Semeiology*.)

Diagnosis.—Examination with the *sound* is indispensable to determine the presence of a calculus in the bladder. The characters of the urine will aid in determining its nature. If the urine be decidedly acid, the stone is probably uric acid or oxalate of calcium, or a combination of both. If alkaline from fixed alkali, it is either phosphate or carbonate of calcium (both rare). If alkaline from volatile alkali, whatever its nucleus or central part, the surface must be formed of the ammonio-magnesian phosphate and phosphate and carbonate of calcium.

Pain in the bladder and in the back, and pain or itching in the glans penis, retraction of the testicle, and interruption in the flow of the urine, occurring at times suddenly, are the most prominent symptoms of stone in the bladder.

Gravel consists of small calculous concretions, which may be voided through the urethra. Pain in the back, with chilliness followed by fever, commonly precedes an attack, or "fit of the gravel;" to which some persons are subject whenever they take cold or suffer from indigestion. *Extreme* pain may attend the transit of a small calculus through the ureter from the kidney to the bladder.

This troublesome affection (gravel) in the large majority of instances is owing to undissolved uric acid and the urates.

Treatment of Gravel.—Under the indication suggested by the last-mentioned fact, the dilution and alkalization of the urine are called for. The small calculi often irritate the bladder painfully, inducing sometimes spasmodic retention of urine. Free draughts of a demulcent liquid, as flaxseed tea, will do good; and the secretion may be made more copious, and thus dilute, and the solution of uric acid and its compounds promoted, by the administration of spirit of nitrous ether and bicarbonate of sodium, in tolerably full doses, three or four times a day during the attack [F.

122]. The agonizing pain from the passage of a calculus through the ureter will require anodyne treatment, by opium, or inhalation of ether or nitrous oxide, and relaxation by the prolonged warm bath.

Prevention.—Any one inclined to gravel (one sign of which tendency is a pink stain in the urinal left after the urine has been thrown out) should avoid highly animalized or otherwise stimulating food. The urine may be kept dilute by taking a tumblerful of water two hours before dinner, and another at bedtime. The skin must be kept open by baths, frictions, and sufficiently warm clothing. Exercise will generally be beneficial in prevention. If acidity in the urine be positive, *small* doses of the bicarbonate of sodium, or of the acetate, citrate, or carbonate of potassium may be taken daily. Natural mineral waters appear sometimes to do good; especially those of the Crab Orchard Springs in Kentucky and Bedford Springs of Pennsylvania; and, in Europe, the Vichy, Friedrichshalle, Püllna,[1] Carlsbad, and other waters.

Treatment of Calculus.—Although the result of much experimentation had been, until of late, to turn over the management of stone to the operative surgeon, new reason has been given for hoping for something in its relief without the knife. Dr. W. Roberts has, in this, made some promising observations and experiments.

Urinary calculi may be, practically, divided into those soluble in alkalies and those soluble in acids. Of the first, there are uric acid and its salts, and cystine; of the second, phosphatic and mulberry calculi. Solvent treatment affords hope only by alkalizing the urine, in cases of the former, by medicines taken by the mouth; and injecting acid solutions into the bladder for direct action upon mulberry calculi and the phosphates.

Very weak solutions of acetate or citrate of potassium, taken often, alkalize the urine most efficiently, according to Dr. Roberts's experiments. He does not encourage the hope that *large* or old calculi can ever be so dissolved. Dr. J. C. Murray[2] considers it important for the success of the solvent practice that the *drinking water* of the patient shall be comparatively free from calcareous salts. Dilute nitric acid is proposed for injection into the bladder for the solution of phosphatic calculi, especially after their being broken down by the lithotrite; and Sir B. Brodie and Mr. Southam have carried this procedure, in two cases at least, with success into practice.

DIABETES INSIPIDUS.

Definition.—Excessive discharge of almost colorless urine, of light weight, containing neither sugar nor albumen; with *polydipsia* or excessive thirst. **Synonym,** *polyuria.*

Causation.—This is various, and generally obscure. More males have the affection than females. It is most common between five and thirty years of age. Blows on the head, intemperance, cerebral disease, and exposure to cold, or drinking cold fluids while heated, are among the supposed causes.

[1] Püllna water, however, is rather strongly purgative. Sir H. Thompson prefers the Friedrichshalle.
[2] London Lancet, Feb. 1, 1873.

Pathology.—This, too, is various or undetermined. In some instances degeneracy or atrophy of the kidneys has been found after death; in others, renal congestion. Very probably the degeneration may be secondary. Probably the *immediate* cause of the excessive urination is dilatation of the capillary vessels of the kidneys; this having its origin in some remote agency which disturbs the ganglio-nervous influence that controls the circulation.

Symptoms and Course.—Often beginning suddenly, the amount of water passed may reach ten or twenty quarts *per diem.* Thirst is intense, and withholding liquids does not arrest the polyuria. The skin becomes dry and harsh. Debility and emaciation attend, when the attack is prolonged.

The **duration** of the complaint varies from a few weeks to many years—or a lifetime. It is sometimes congenital. An intercurrent attack of febrile or inflammatory disease sometimes suspends, or even cures it.

Treatment.—This has been, so far, tentative only; no specific is known for it. Nitrate of potassium, valerian, ergot, iron, alum, lime-water, tannic and gallic acid, creasote, and bromide of potassium are the medicines most worthy of trial. Blistering the nape of the neck has also been suggested.

DIABETES MELLITUS.

Synonym.—*Glycosuria.*

Definition.—Excessive urination, with the presence of sugar in the urine.

Causation.—Twice as many men as women have this disease. It is most frequent among young and middle-aged adults; the mortality from it being greatest from fifteen to fifty-five. It is more common in cities and manufacturing districts than in the open country. Occasionally it is hereditary.

Exciting causes appear to be, exposure to cold and wet; drinking cold water largely when heated; excessive use of saccharine food; intemperance; violent emotion; febrile diseases; and organic affections and injuries of the brain and spinal cord.

Symptoms and Course.—Beginning insidiously, with malaise and slight loss of flesh, urination becomes excessive, with corresponding thirst, and very often *bulimia* or excessive appetite; emaciation is progressive; the skin is harsh and dry; the tongue glazed and furrowed, the mouth clammy;[1] the sexual and mental powers fail by degrees. Lastly, hectic fever, œdema of the limbs, diarrhœa, and often all the symptoms of pulmonary consumption terminate the case.

Complications.—Tuberculization of the lungs occurs in nearly half the cases of diabetes mellitus which last over a year or two. Inflammations of an asthenic type are common in all the organs. Boils and carbuncles are very frequent. Gangrene of the lower extremities has been several times observed. Amblyopia (obscure vision) is present in about one-fifth of the cases. *Cataract* gener-

[1] Guénau de Mussy asserts sourness of the breath to be a characteristic of diabetes.