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OF

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AIDS TO THE DIAGNOSIS

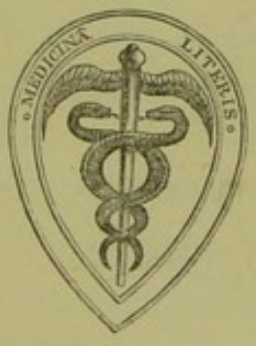
OF

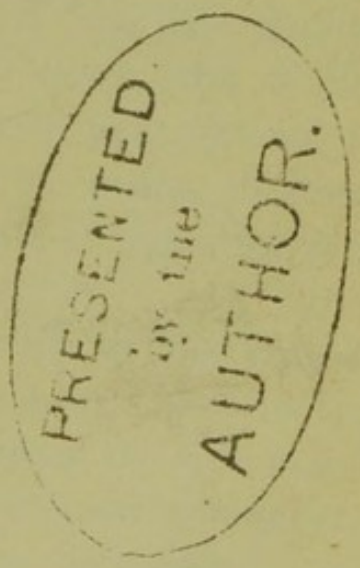
DISEASES OF THE KIDNEYS

BY

W. R. BASHAM, M.D.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS; FORMERLY CENSOR AND CROONIAN LECTURER, AND EXAMINER IN MEDICINE FOR THE LICENCE OF THE COLLEGE; SENIOR PHYSICIAN TO THE WESTMINSTER HOSPITAL.





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1872.

AIDS TO THE DIAGNOSIS

OF

DISEASES OF THE KIDNEYS.

It has appeared to the author that what has been of use to himself may be of advantage to others.

For many years it has been his custom to make drawings of the objects seen in the urinary sediment of every case of renal disease in which he has been consulted. These drawings in process of time have become very numerous, and embrace almost every form of disease of these organs. They have been, and continue to be, faithful indicators of the probable course of those diseases in which an albuminous state of the urine is a prominent characteristic.

Both in his clinical teaching and in his clinical examinations the author has often been surprised at the perplexity of students in comprehending the nature and character of these several objects seen in albuminous urine. Even in consultations he has been equally surprised at the mistakes into which those not constantly at work with the microscope unconsciously fall.

With the purpose of rendering the value of a microscopic examination of urinary sediments the greater to those whose time may not permit or whose opportunities

may be rare for study and frequent microscopic research, the accompanying plates are offered, containing examples of all the most typical objects found in albuminous urine, with a short, succinct account of the patient from whom the urine came, the general character of the symptoms, their duration, and, in all cases where it could be ascertained, the termination in death or recovery. These figures, it is hoped, will serve as standards of comparison, by which the student or young practitioner will be enabled, in conjunction with the short detail of the symptoms, to apply a practical and crucial test to the case he may have under observation. The author has carefully avoided introducing into this present work any matter or subject that should in any way interfere with the simple record of a series of clinical facts, which he hopes may, in the form here presented, be of some service to those engaged in the absorbing duties of general medical practice.

17, Chester Street, Belgrave Square;
July, 1872.

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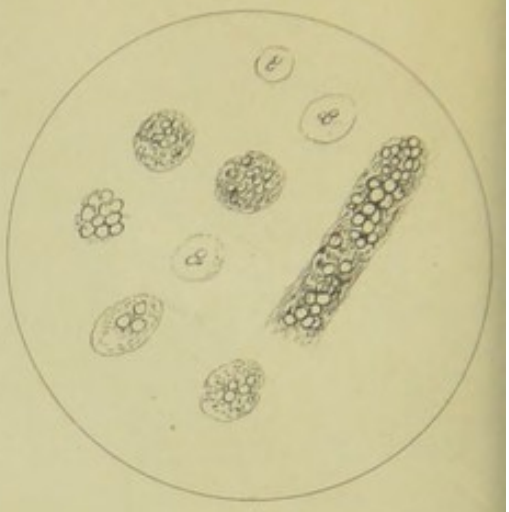

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ALBUMINURIA.

Acute and Chronic Forms.

Plate I.

Fig. 1 represents faint translucent casts, severally containing large, compound, granular cells, and one or two renal epithelial cells.

Fig. 2 are the objects in the sediment of the urine in the same case one month later, and about three weeks before death. The objects are a densely fibro-granular cast, loaded with highly refractive granules; large compound granule-cells, containing similar refractive granules; one or two cells, bi- and tri-nuclear, the characteristic of ordinary mucus- or pus-cells.

The large compound granule-cell sometimes exhibits a distinct cell-wall, with dark granular contents and fat-granules. In other instances the fat-granules coalesce together without any visible cell-wall, and are grouped like the berries of the grape, or the fleshy drupes of the raspberry or mulberry. They are invariably indicative of a low vital force, and when very numerous (in this case I have rarely seen greater numbers in a single drop of the sediment) are expressive of a rapidly approaching fatal termination. They are constantly present in large numbers in the sputa of chronic bronchitis with dropsy.[1]

Case I.—The case from which these objects were obtained was that of a thriving tradesman, whose habits had been very intemperate. He had enjoyed what was

[1] See Plate XVI, figs. 3 and 4, sputa in bronchitis and in emphysema, in the Author's work on 'Dropsy,' 3rd edit.

considered good health till he was seized with symptoms of a feverish character, rigors, inappetency, irritable stomach, dyspnœa, rapidly developed anasarca; œdema of the face, hands, trunk, and lower extremities; scanty urine, dark coloured, and containing, apparently, blood.

The sample of urine first examined was two months after the commencement of his illness. Its sp. gr. was 1014; it was pale and highly albuminous, and an unfavorable opinion was given. One month later the sediment is portrayed in fig. 2. He died three weeks later, of diffuse general dropsy, apparently, as stated, from pulmonary œdema.

ALBUMINURIA.

Diffuse general dropsy; pulmonary congestion and œdema; fatal.

PLATE I, *Fig.* 3.—The objects are slightly granular casts, containing renal epithelial cells, oval epithelial cells from the pelvis of the kidney, some ordinary mono-nuclear mucus-cells, and some pavement epithelium from the bladder or urethral passage.

CASE II.—The patient had been many years in India. Had entered Parliament, and, in addition to heavy senatorial duties in the session of 1866, had suffered much mental strain and anxiety in the commercial crisis of that year. Early in life, at the age of twenty, had renal calculus, but his general health was good throughout his residence in the East. At the time of the examination of the urine he was the subject of general dropsy; anasarca prevailed everywhere. There was urgent dyspnœa and orthopnœa from congestion, as well as œdema of the pulmonary structures. The urine was scanty, high coloured, and micturition was frequent. The present symptoms were of a few weeks' duration. He died ten days subsequent to the examination of the urine.

ALBUMINURIA.

Fatal.

PLATE I, *Fig.* 4.—Fibro-granular casts, one containing epithelial cells, casts slightly granular; and one almost hyaline, fissured in its outline; granule-cells.

Fig. 5.—Similar objects a few weeks later. One perfectly hyaline cast, fissured, one slightly granular, and another containing epithelial cells, detached granular cells.

CASE III.—A gentleman, æt. 64, of commercial pursuits, who had been in Parliament some years, but had retired on account of failing health, suffered from frequent attacks of palpitation of the heart and dyspnœa. Four years previously he had an attack of rheumatic fever with cardiac complication, a systolic mitral murmur, with an unsteady intermittent pulse, testifying to the damage the heart had received. There was a remarkable pallor, or even earthy aspect, and there had been a rapid loss of flesh. The urine was abundant, very pale, sp. gr. 1008, and moderately albuminous. The sediment furnished the objects in figs. 4 and 5.

In each figure there are hyaline casts, with a remarkable fissured outline, which, in addition to their transparency, constitutes their special character.

They are of frequent occurrence in the albuminuria of cardiac and pulmonary disease.

They appear to be pure, unmixed mucin, but the cause of the fissured appearance cannot be satisfactorily explained.

ALBUMINURIA.

Duration of illness seven months; cardiac disease; dilatation of right heart; hepatic engorgement; pulmonary œdema and diffuse general dropsy; fatal.

PLATE I, *Fig.* 6.—A fibro-granular cast; small oval epithelial cells from pelvis of the kidney and ureters; squamous epithelial cells from urethra; a group of mucous cor-

puscles; octohedral crystals of oxalate of lime; crystals of uric acid, two forms; a collection of minute cubes, and a modification of the thorn-apple crystal of uric acid, which consists of a globular concretion, from the margin of which issue spikelets, branching outwards star-like.

Case IV.—A Greek merchant, æt. 55. Symptoms at commencement—frequent dyspnœa on slightest exertion; several attacks of pulmonary congestion, followed by anasarca of the legs; ascites; with scanty and albuminous urine, sp. gr. 1020, and albuminous.

The sounds of the heart were sharp, but the second or diastolic sound was defective and obscure; strong pulsation of the jugular of the right side of the neck.

Temporary improvement and disappearance of the dropsy was brought about by treatment; but the dropsy and pulmonary engorgement returned, and death occurred about the seventh month from the first break down of the general health.

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ALBUMINURIA—CHRONIC—FATAL.

Duration of the albuminuria said to be six years.

Plate II.

Fig. 1.—A densely fibro-granular and oily (fat) cast; a granular cast containing compound granule-cells; a group of fat-granules without a cell-wall; scales of urethral or vaginal epithelium.

Fig. 2.—Three highly granular cysts, a transparent or hyaline cast, and some squamous epithelium.

Case V.—A lady, æt. 44. Since the last child, six years since, her health had failed. She was told, at that date, that the urine was albuminous. She was imprudently told she had not a year to live, and from nervous excitement acquired the habit of frequently boiling her water in a spoon. The urine had acquired a sp. gr. of 1012, and was moderately albuminous. There was anasarca of the lower extremities, which subsequently became general. There had been attacks of pulmonary congestion, which her medical attendant had treated by cupping.

The heart's impulse was augmented, but the valvular sounds were of ordinary character, but remote and obscure.

The most prominent symptom of this case was the constant irritable state of the stomach, frequent vomiting, inappetency, and reliance chiefly on stimulants.

Towards the termination the dropsy rapidly increased, and she is reported to have died from pulmonary œdema.

ALBUMINURIA.

Granular and amyloid degeneration.

PLATE I, *Fig.* 3.—Casts densely granular; large size granular corpuscles.

The casts exhibited the characteristic reaction with iodine.

CASE VI.—A gentleman, æt. 59, at the age of sixteen had primary syphilis, and subsequently, some years later, suffered both the secondary and tertiary forms—nodes on the frontal bones, copper-stained cicatrices on the skin, with frequent recurring attacks of syphilitic rheumatism, which the iodide of potassium appears always to have relieved.

He passed a good deal of water, which was pale, lemon coloured, and highly albuminous. There was no dropsy. Symptoms towards the close were chiefly in reference to the digestive organs, inability to take food, vomiting, exhaustion, with a brown dry tongue, and all the conditions of death by asthenia.

ALBUMINURIA.

Duration about one year.

PLATE II, *Fig.* 4.—Casts densely granular, with many highly resplendent fat-nuclei; a cast almost hyaline, slightly granular; large granular corpuscles; a few scattered blood-discs; some mucous corpuscles.

CASE VII.—A man, æt. 37, said to be of temperate habits; exposed much to weather in his avocation as a coachman; had severe gonorrhœa about a year before; shortly after had shortness of breath, with great frequency of micturition.

About a month ago felt bulky about the waist, and shortly after œdema of the face, hands, and ankles

appeared. Suffered also from frequent palpitation and wheezing at the chest.

The urine was dusky coloured, not clear; sp. gr. 1011; faint acid reaction, and was highly albuminous.

The microscope, as seen by the figure, showed the presence of a few blood-discs.

The case afforded an example of the recurring attacks of renal congestion which are so frequently observed in this form of chronic granular degeneration of the kidneys.

Albuminuria.

Duration a year and a half; chronic granular degeneration; amyloid.

Plate II, *Fig.* 5.—Densely granular casts, exhibiting orange stain with iodine; faint hyaline casts, with a few resplendent nuclei; one hyaline cast enclosing renal epithelium.

The dark granular casts exhibited the characteristic reactions with iodine.

Case VIII.—A young lady, a governess, æt. 29, suffered rheumatic fever nine years since, and four years after, a second attack. A faint mitral systolic murmur indicated that some cardiac complication occurred at one or other of these attacks.

The urine had a sp. gr. 1009, was pale, acid, and highly albuminous. Four months previous she had, at Boulogne, had anasarca of the lower extremities to such an extent that locomotion was impracticable. Subsequently obstinate diarrhœa set in, which carried away the dropsical effusion. The urine became excessive in quantity; the diarrhœa continued, accompanied by frequent vomiting, and consequent emaciation and exhaustion. Every form of nourishment was rejected, and she died from æsthenia.

Albuminuria.

Granular and amyloid degeneration.

Plate II, *Fig.* 6.—Granular casts, with here and there an epithelial cell and numerous free fat-nuclei. Two or more large granular corpuscles.

The granular casts retained the orange stain produced by iodine.

Case IX.—A gentleman, æt. 42, had been the subject of spinal abscess for ten years. The disease appeared connected with one of the dorsal vertebra. Up to the time of the dropsy appearing he was able to attend to business. The urine was pale lemon colour, and almost solidified by heat. A subsequent sample, on cooling, formed a mass which could not be forced from the tube. The dropsical effusion extended up the thighs, involving scrotum and penis and the integuments of the abdomen, which deeply pitted on pressure. The peritoneal sac also contained fluid. The wound in the back had ceased to discharge for some days, then a sudden return of a free outlet of a thin purulent fluid relieved the distension of the belly, and to a great extent the anasarca of the lower extremities. The appetite, however, failed, and aphthous state of the mouth and throat added to the suffering and hastened the death of the patient, which occurred three months after the first appearance of the dropsy, and consequent intimation of renal complication.

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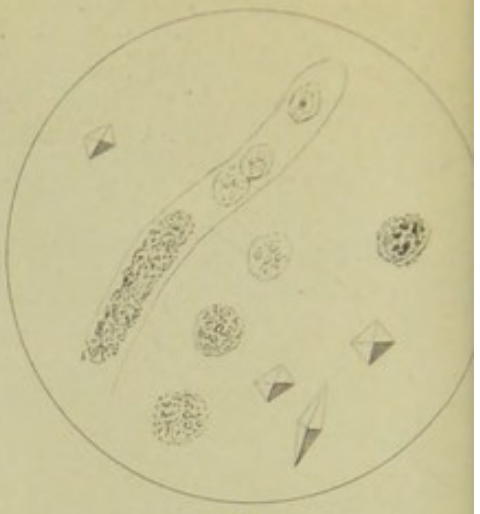

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ALBUMINURIA—CHRONIC.

Granular kidney; duration about two years and a half.

PLATE III.

Fig. 1.—Hyaline casts of small diameter, compound granule-cells, ordinary mucous corpuscles, and squamous epithelium, probably vaginal.

CASE X.—A lady, æt. 46, mother of a grown-up family; health unsettled for some months, catamenia having become irregular. Œdema of the ankles, and a general weariness on trifling exertion, and a peculiar, almost constant coronal headache, were the chief anticipatory symptoms. The urine had an average sp. gr. 1019, was at first strongly albuminous, but after treatment became less. The chief characteristic of the sediment was the number of large compound granule-cells containing fat-nuclei; but the casts were invariably hyaline, with here and there a highly resplendent fat-grain. These appearances continued throughout the progress of the disease. The urine, examined at intervals of three, four, and six months, always exhibited the same class of objects. Death occurred nearly three years after the renal disorder was first observed.

ALBUMINURIA.

Chronic granular degeneration; duration about twenty months.

PLATE III, *Fig.* 2.—A cast containing a few renal epithelial cells, with a collection of dark granular matter, distinctly surrounded by the outline of the cast. Large com-

pound granule-cells, containing fat-grains, crystals of oxalate of lime.

Urine, sp. gr. 1018, moderately albuminous by heat and nitric acid.

Case XI.—A tradesman, æt. 52, free habits, not absolutely intemperate; health gave way some years back; dyspnœa on the least physical effort, with great frequency of micturition, and subsequent œdema of the feet and ankles. About three months since, when dressing, he became momentarily unconscious, followed by hemiplegia (transient) of left side. After a few weeks the use of the paralysed limb returned. One or two severe attacks of pulmonary engorgement, bronchitis, and pulmonary œdema, marked the progress of the case, which ended fatally about twenty months from the first noticeable symptoms.

Albuminuria.

Duration uncertain.

Plate III, *Fig.* 3.—Dark granular casts, one partially hyaline; the lower part filled with granular matter; a hyaline cast, with a few free nuclei, mucous corpuscles, and epithelial cells.

Case XII.—A gentleman, æt. 44, till recently of very active habits—shooting, hunting, fishing, &c. First indications of failing health marked by great increase in the quantity of urine, with frequency of micturition, shortness of breath, and rapid decrease of physical energy; at the same time he became pallid and anæmic, but there was no dropsical effusion anywhere. He had never passed blood, nor had gout or rheumatism, but had, when young, primary syphilis.

The heart's sounds were, as it were, muffled, the second sound inaudible. There was some bronchial wheezing and moist murmurs in the chest. The dyspnœa became aggravated at night. There was no

headache, but dimness of vision, as if from incipient cataract. There was thirst and loss of appetite.

The urine was pale and abundant in quantity, sp. gr. 1020, highly albuminous, and contained evidence of the presence of sugar.

The patient lived not more than three weeks after the examination, and died comatose, with symptoms of uræmic poisoning, as reported.

Albuminuria.

Sequel to scarlet fever; curable.

Plate III, *Fig.* 4.—Hyaline casts, with free nuclei scattered through them; disintegrated compound granule-cells. Two blood-discs, crystals of uric acid, and two groups of the sporules of the penicilium glaucum, always rapidly developed in albuminous urine in warm weather.

Case XIII.—A boy, æt. 11, had scarlet fever eight weeks previous. On the fourteenth day from appearance of the eruption had hæmaturia, with great frequency of micturition. Convalescence was protracted and retarded by subsequent symptoms of hæmaturia. No dropsy was noticed.

The child had a fair, delicate complexion, light red hair, blue-gray eyes, and an observed pallor, but it was not the pasty alabaster whiteness often seen after scarlet fever.

There was neither cough nor any chest symptoms, no fluid in the chest or abdomen, nor œdema anywhere. The tongue was clean and the appetite unimpaired.

The urine had a sp. gr. 1013, and was moderately albuminous. Under a nutritive treatment with steel in three weeks the urine became free from albumen, and at the end of two months complete convalescence had been established.

ALBUMINURIA.

Chronic granulur disease ; fatal by symptoms of uræmia ; duration of disease about twenty months.

PLATE III, *Fig.* 5.—A delicate, translucent cast, containing a compound granule-cell, one or more cloudy epithelial cells, and a few free fat-nuclei ; a cast slightly granular, containing free fat-granules, coiled on itself.

CASE XIV.—A jobmaster, æt. 45, of free habits, having indulged in gin and beer for years ; had been ailing more than twelve months ; œdema of the ankles, accompanied by some wheezing at the chest and palpitation of the heart, the earliest symptoms of failing health. The urine was abundant in quantity, but there was not frequency of micturition. This fluid does not appear to have been examined for albumen till he came under my observation, which was some twelve months after the ankles first began to swell. The urine was very pale, sp. gr. 1010, and highly albuminous.

Under the agency of purgatives and the ammonio-chloride of iron the dropsical symptoms decreased, and his condition somewhat improved. In the autumn, about nine months after I was first consulted, the dropsy returned, with some pulmonary distress, dyspnœa and wheezing, and considerable irritability of the stomach.

The albumen in the urine increased largely. He soon after was seized with symptoms of uræmia (apoplexy, it was supposed), coma, stertorous breathing, and death.

ALBUMINURIA.

Temporary, after parturition.

PLATE III, *Fig.* 6.—Two delicate hyaline casts, a renal epithelial cell in each ; crystals of oxalate of lime.

CASE XV.—A married lady, æt. 26, of a florid healthy aspect. Suffered from swollen ankles before

marriage. During pregnancy the œdema extended up to the thighs. She suffered a tedious labour, and it was followed, or rather attended, by considerable cerebral excitement. Four months after delivery considerable anasarca was still present. The face, and even backs of the hands, were œdematous. The urine was scanty, turbid from urates, had a sp. gr. 1034, and there was great frequency of micturition. It was highly albuminous.

Under treatment by laxatives and the ammonio-chloride of iron the dropsical condition rapidly disappeared. The urine rapidly became more abundant, and the albumen was reduced to a trace. The Author was consulted by her four years afterwards. In the interim she had three children, and each confinement was natural, and her convalescence rapid and satisfactory.

ALBUMINURIA. — *Chronic form.*

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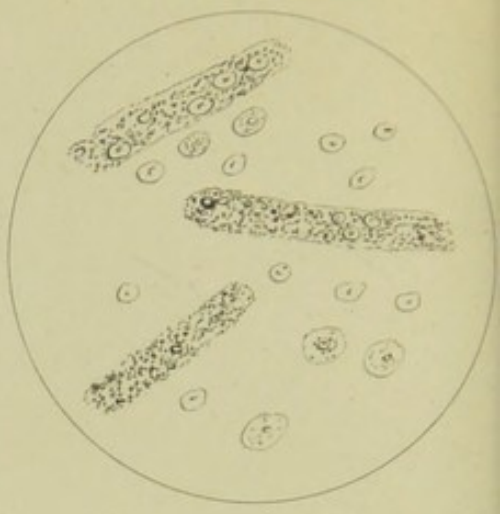

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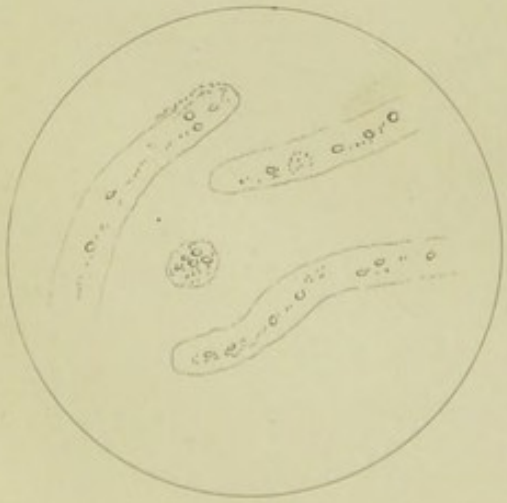

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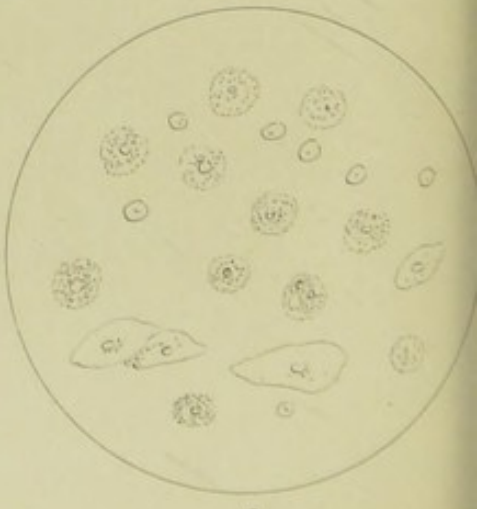

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ALBUMINURIA, CHRONIC, AFTER SCARLET FEVER.

Duration eight months.

PLATE IV.

Fig. 1. Casts slightly granular, containing renal epithelium; others more or less translucent and fissured, containing large compound granule-cells; some with, others without a cell wall.

CASE XVI.—The daughter of a clergyman, æt. 9. Five months previously suffered a severe attack of influenza, and two months afterwards had sore throat, with some doubtful symptoms, either of diphtheria or of scarlet fever. Anasarca followed, with slight hæmaturia and scanty urine. The dropsy soon became general, infecting all the tissues and cavities. At the time of my examination of the urine, three months after the first appearance of the dropsy, there was diffuse general dropsy, a considerable amount of pulmonary œdema, the peculiar alabaster whiteness of the cutaneous surface, and there had been several attacks of convulsions (uræmic?)

The urine had been more or less dull coloured or smoky ever since the hæmaturia, till within a week or two of this examination. It was now more abundant, of a sp. gr. of 1006-8 (two samples), and became gelatinous by heat from the large amount of albumen. The prognosis was unfavorable. Notwithstanding several subsequent paroxysms of convulsions the patient lived two months longer, some diminution of the dropsy being effected by laxatives and nourishment, aided by steel remedies.

Albuminuria.

Acute, passing into chronic form; result unknown.

Plate IV, *Fig.* 2.—Granular fibrine casts, containing blood-corpuscles, scattered blood-corpuscles, and mucous corpuscles.

Case XVII.—A boy, æt. 7, whose health had been for some months very unsettled, was noticed to suffer much from frequency of micturition, with dark coloured urine. His mother soon noticed a puffy state of the face, the eyelids being almost closed in the morning by the œdema of the lids. The anasarca elsewhere was moderate, and there does not appear to have been any pulmonary distress. There was no history of either scarlet fever or diphtheria, or any specific fever.

The urine had a sp. gr. of 1020, was clear, with a moderate sediment when set at rest. It was only slightly albuminous by heat and nitric acid. Two months afterwards I learned that his health had improved; but the ultimate result is unknown.

Albuminuria.

Chronic, duration from three to four years.

Plate IV, *Fig.* 3.—Casts translucent and slightly granular, containing free nuclei; one containing an epithelial cell or two, mucous corpuscles, and squamous epithelium, probably vaginal.

Case XVIII.—A widow lady, æt. 48, mother of six children, whose health had been unsettled for the past year. The catamenia had become very irregular, with great irritability of the stomach, nausea, vomiting, and loss of appetite. These symptoms recurring with the expected catamenial period, left no doubt that they were greatly

dependent on the uterine changes at this important period of a woman's life. The ankles at this time became œdematous. The urine was pale and clear, of a sp. gr. 1007, slightly albuminous. Two months later a faint catamenial show was followed by great abatement in the more urgent symptoms. The urine continued, however, to be slightly albuminous. The health for a few months appeared to improve. Subsequently dropsical symptoms returned, ankles and thighs becoming anasarcous, with increase of albumen in the urine. The appearance of some granular fibrine casts was an unfavorable omen. The appetite began to fail, and she lingered on for several weeks, and eventually died, nearly four years after the first general indications of chronic albuminuria.

Albuminuria.

Acute; recovery; duration two years.

Plate IV, *Fig.* 4.—A granular fibrine cast; casts less granular, with here and there detached nuclei; compound granular corpuscles; mono-nuclear cells (mucous), held together by viscid mucin, probably bronchial sputum.

Fig. 6. A few scattered blood-discs; large granule-cells; one or two mono-nuclear mucous cells; squamous epithelial cells.

Case XIX.—A medical gentleman, æt. 30. For two years past was subject to lumbar pain. Scanty urine and great frequency of micturition every two hours. About three months since had hæmaturia, and which, being followed by some griping abdominal uneasiness, led him to imagine that he suffered from renal colic. Another attack of hæmaturia almost justified the suspicion that he had stone in the bladder. Mr. Heath sounded him, but none was found.

About this time, exposed to cold and wet in long

drives in his country practice, on one occasion he got thoroughly drenched to the skin; allowing, under the force of necessity, his clothes to dry on him. Shortly, forty-eight hours after, severe dyspnœa on the least exertion, aggravated at night, and amounting to orthopnœa, with severe headache, feverishness, thirst, and inappetency, were the prelude to a diffuse anasarca of the face, wrists, and ankles. I did not see him till a fortnight after these symptoms had declared themselves.

The urine had a sp. gr. of 1021, was cloudy, and highly albuminous. Warm baths, diluents, and purgatives (the Pulv. Jalapæ Co.) were taken with advantage. In a fortnight the urine increased considerably in quantity, and the anasarca disappeared, except from the ankles. His breathing became less disturbed, and he was able to walk without difficulty. The albumen in the urine became less. At the end of a month the dropsical effusion had entirely disappeared. The most prominent symptom now was an excessively irritable state of the heart, with occasional intermissions of the pulse. The urine continued albuminous (Plate IV, fig. 6). Three months afterwards the aspect had very much improved; there was the faintest trace of albumen in the urine. Months passed, and his general health appeared quite restored, except that an irritable state of the heart still prevailed, so that palpitation was caused by the least excitement. At the end of a year there was not a trace of albumen in the urine, and his complete restoration enabled him to return to the onerous duties of a country practice. A year after this, two years from the date of his illness, I was glad to find him hearty and well, and the urine without a trace of the disorder, which at one time so alarmingly threatened his life.

Albuminuria.

Chronic.

Plate IV, *Fig.* 5.—Delicate, transparent, hyaline casts, containing scattered and isolated nuclei or fat-granules; a large compound granule-cell, containing similar nuclei.

Case XX.—A lady, æt. 46, the mother of one child. For some years past appeared to have had delicate health. Her medical attendant had, as far back as six years, detected albumen in the urine. At the time the casts were observed there was considerable dropsy of the lower extremities, extending above the knees. Indigestion and want of appetite were the chief symptoms.

The urine was pale, sp. gr. 1010; threw down a flocculent sediment, and was abundantly albuminous by heat, becoming milky by heat, and forming a dense granular deposit by nitric acid.

ALBUMINURIA. – *Chronic form.*

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ALBUMINURIA.

Acute, passing into chronic form; fatal; duration probably ten years.

Plate V.

The figures from 1 to 6 represent the microscopic character of the sediment at intervals during the last four years; they illustrate the recurring congestive condition which occur so frequently in chronic granular disease.

Fig. 1.—Faintly granular casts, containing renal epithelium and compound granule cells; a few blood-corpuscles.

Fig. 2.—Granular casts, containing renal epithelial cells, detached mucous corpuscles, and vaginal or urethral epithelium.

Fig. 3.—Casts containing renal epithelium, several bi- and tri-nuclear cells contained in the casts, and several free blood corpuscles, and oval and obcordate epithelial cells from the pelvis of the kidney and ureters; squamous vaginal epithelium.

Fig. 4.—Casts more or less translucent, containing fat nuclei isolated, as well as clustered, a compound granule cell, and a group of cells having the tri-nuclear character of pus cells.

Fig. 5.—A hyaline cast, containing aborted epithelial cells, several compound granule cells, and several mono-nuclear cells, a group of vaginal or urethral epithelium.

Fig. 6.—A hyaline cast, containing fat nuclei; a slightly granular cast, containing tri-nuclear (pus) cells; several

large tri- and bi-nuclear cells, one with a reniform nucleus; squamous epithelial cells, highly fatty.

The six figures in Plate V represent periodic microscopic examination of the urine during a period of three years, made at uncertain intervals. And as the case was continuously under the observation of the author up to its fatal termination, the objects seen may to a certain extent be pronounced typical of the changes which from time to time take place in the material washed from the renal tubes in these cases of chronic granular renal degeneration.

The figures also illustrate the recurrence of congestive conditions of the kidneys at intervals of months, the only indication of which is the presence of blood corpuscles in the sediment; the urine rarely being discoloured.

Case XXI.—A young lady, æt. 17, naturally having a very fair complexion, light hair, and brilliant blue, lustrous eyes, and of a sprightly temperament, had, it was stated, a few months previous, after being exposed to the night air at a ball at Oxford, caught a severe cold, and with a certain degree of feverishness; the urine became very scanty, and of a dark mahogany colour, accompanied by swelling of the ankles and œdema of the lower extremities up to the thighs. The urine had a sp. gr. 1028; was cloudy, highly albuminous, and the sediment contained the objects seen in Plate V, fig. 1.

It was ascertained that from the first appearance of the catamenia, at the age of twelve, or probably after an attack of scarlet fever, which occurred at that period, the urine had been constantly discoloured almost like red wine; but singularly enough, the general health being moderately good, the suspicious character of this excretion does not appear to have excited alarm, for it

had never been examined. At the time the author first saw the patient there was some pulmonary œdema, with dyspnœa, and a sense of suffocation at the chest.

The catamenia had not appeared for four months. Two months after this first examination of the urine, and when relief had been obtained by appropriate remedies, the sediment again exhibited blood-corpuscles, with exudative corpuscles, and granular epithelial casts. These were followed by a general improvement, a great increase in the amount of urine passed, and a diminution of the dropsical state. In six months' time the sediment exhibited the forms in fig. 4. Here and there a disintegrated granule cell, hyaline casts, and cells with a tri-nuclear appearance. During the subsequent autumn and winter there was a certain improvement, seen in the lessened amount of dropsy and the increase of physical power. The dropsy continued to decrease, though the urine continued highly albuminous.

At intervals of a few weeks blood corpuscles were recognised in the sediment, and as the catamenia did not appear, these periodic congestions may have been excited by that suppressed function. Nevertheless, with the subsidence of the dropsy the general health manifestly improved. During the succeeding year all trace of dropsy had disappeared. The ankles were no longer œdematous, even after walking exercise. The waist returned to its natural dimensions. The aspect gave assurance of health, and the pallor, so characteristic of these forms of albuminuria, was replaced by some ruddiness of the cheeks, and the hands got redder than the young lady thought consistent with lady-like delicacy.

The urine was pale and abundant, and still highly albuminous. The casts for a time were not visible, and compound granule-cells and mucous corpuscles in small number were alone seen in the sediment. In the course of the year the catamenia returned at the proper intervals, and all the functions, but that of the kidneys

seemed naturally performed. Another year passed without any striking alterations in any symptom. The urine, however, was throughout albuminous, of low sp. gr. 1010—1012, and very abundant. Her general health was fairly maintained till the summer. The digestive organs were the first to fail, and after a few weeks the exhaustion consequent on the failure of the powers of assimilation indicated the near approach of the end. There was no return of dropsy.

The last examination of the sediment was made nearly seven months before the fatal termination. The casts were slightly granular, and contained cells having the tri-nuclear character of pus-cells, and the squamous epithelium exhibited a fatty aspect.

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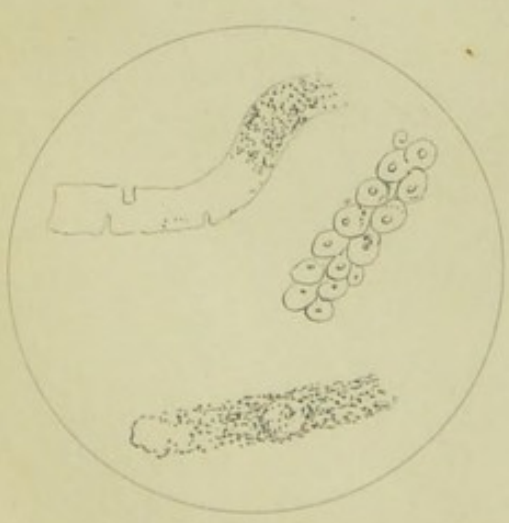

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ALBUMINURIA.

Chronic gout; fatal; duration about fifteen months.

Plate VI.

Fig. 1. Hyaline casts; a portion of a small granular cast; compound granule cells; two epithelial cells (oval); several blood-corpuscles in a state of exosmosis.

Case XXII.—A gentleman, æt. 46, largely engaged in business, suffered from frequent attacks of a peculiar form of headache, occupying a defined spot, which could be covered with the finger, usually located posteriorly, worse at night, causing disturbed rest. Had suffered mild attacks of gout in the feet. Was of a gouty family. Had lived freely. The digestive organs occasionally disturbed. Any error of diet, such as drinking port wine or beer, invariably aggravated the headache. Micturition frequent—two or three times in the night. The urine was clear and of natural colour, and moderately albuminous. He suffered one attack of gout a few weeks after the examination of the sediment. Subsequently the headache became more persistent. There was frequent morning retching and occasional nausea. He died in the spring of the year, with symptoms, as reported, of uræmia. A brother was stated to have died the year previous of Bright's disease.

Albuminuria.

Chronic; fatal; cardiac and pulmonary complications; duration about four years.

Plate VI, *Fig.* 2.—A portion of a cast slightly granular,

containing an epithelial cell; several translucent casts containing numerous free nuclei; four renal epithelial cells detached; a group of mucous corpuscles; a film of urate of ammonia; sporules and commencing filament of Penicilium glaucum.

Fig. 3. One granular cast, with detached free nuclei; one less granular, with numerous free nuclei; a cast (hyaline).

Fig. 4. Two oval epithelial cells from pelvis of the kidney; three cells with compound nuclei; crystals of oxalate of lime.

Fig. 5. A large translucent cast, with two epithelial cells with compound nucluei; a granular cast containing a crystal of oxalate of lime; detached crystals of the same; small spherical epithelial cells, and scales of squamous epithelium.

Case XXIII.—These figures represent the sediment of the urine, examined at intervals of a few weeks, in a case of pulmonary cardiac and renal dropsy. It was that of a gentleman, æt. 66, of independent means, of cultivated tastes, and fond of the contemplative man's recreation, fishing. For many years he suffered habitually from cough, particularly in the winter time, and of late the London atmosphere seemed to aggravate his chest symptoms, that he removed, with some temporary advantage, to a residence some few miles from London. About three years before his death his health began slowly to break, chiefly shown by decrease in his bodily strength, shortness of breath, frequent asthmatic form of cough, swelled ankles, and small quantity of albumen in the urine. The urine subsequently became scanty, had a sp. gr. 1024, and was highly albuminous.

The dropsy slowly increased. The anasarca extended upwards, involving thigh, scrotum and penis, the walls of the abdomen, and cutaneous surface generally. The

cavity of the abdomen also contained fluid, and there were signs of œdema of the pulmonary organs. The lungs themselves, before their tissues became infiltrated with fluid, gave the signs of emphysema, and the heart-sounds distinctly indicated a dilated condition of the right cavities, rendered still more manifest by the pulsation of the external jugular vein of the neck.

The progress of the symptoms was materially aggravated by an attack of asthma and subsequent diffuse bronchitis, the dropsy rapidly increasing, and eventually death took place by apnœa, the bronchial tubes filling with a pituitous fluid, which the failing strength of the patient was unable to expectorate.

Albuminuria.

Chronic; fatal; duration uncertain.

Plate VI, *Fig.* 5.—A cast, partly hyaline, with well-marked fissures in its outline; one extremity granular; a granular cast, containing an epithelial cell; a group of renal epithelial cells, arranged in a columnar form, as if detached from a renal tube, without an accompanying investing material.

Case XXIV.—A young man, æt. 31, engaged in business, had been out of health for several months, stating that he suffered from severe lumbar pain, frequent desire to pass water—from four to six times in the night. He had great thirst, constipation, great irritability of the stomach, frequent vomiting, shortness of breath, and palpitation. The least bodily effort exhausted him. The ankles and legs to the knees were anasarcous. The urine was pale, clear, sp. gr. 1010, moderately albuminous. The patient was not seen again, but his death was reported about three months afterwards.

Albuminuria.

Chronic; fatal; duration about three years.

Plate VI, *Fig.* 6.—A slightly granular cast; casts more or less hyaline; several mono-nuclear cells (epithelial); sporules of the Penicilium glaucum, one becoming filamentous.

Case XXV.—A gentleman, æt. 50, a physician, in general practice in a Scotch town, suffered from broken and interrupted health, chiefly expressed by dyspeptic symptoms and inappetency, occasional retching and vomiting of food, with considerable loss of flesh and bodily strength; and he noticed at the same time that his urine was very large in quantity and very pale, and became faintly albuminous. He did not appear ever to have had regular gout, although he came from a gouty family. The ankles were slightly œdematous, but only towards evening. The chest was free from morbid indications, and the heart-sounds were moderate in force, and without any valvular disorder. The urine was pale, had a sp. gr. 1010, and was moderately albuminous. By the end of the year, partly from the rest enjoyed from retiring from the duties of a large general practice and the effect of remedies, his general health manifestly improved, and he expressed himself as having nothing the matter with him but the knowledge of his urine being albuminous. A year passed in this satisfactory state. During the next winter he appears to have suffered a severe attack of bronchitis, which severely taxed his powers. He recovered in the spring, and was very greatly benefited by coming south, and remaining at Hastings for the spring and summer months. The urine, however, continued albuminous. He returned north in the autumn, was attacked with bronchitis again in the following January, and died in February, three years and some months from the date of the first examination of the urine.

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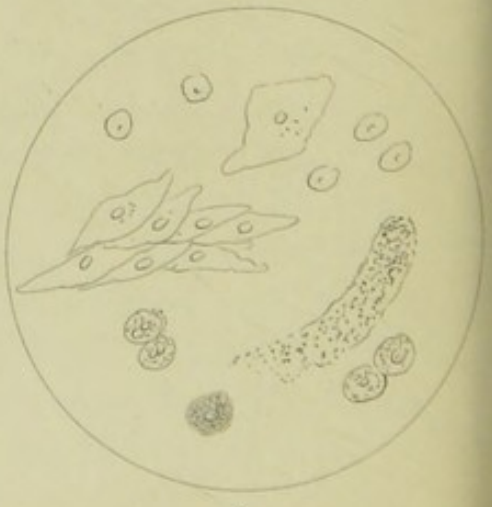

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ALBUMINURIA.

Acute; curable; duration about ten weeks.

Plate VII.

Fig. 1.—Hyaline casts with an epithelial cell and free nuclei; detached renal epithelial cells; a compound granule cell; squamous urethral or vaginal epithelium.

Case XXVI.—A young lady, æt. 15, had been out of health, apparently the sequel to sore throat, some weeks antecedent, whether diphtheritic or not could not be determined; became very pallid, with great loss of energy, and some œdema of the ankles; whose urine, though natural in colour, was highly albuminous. In five weeks from the date of the examination of the urine the albumen had sensibly decreased, and in seven weeks it had entirely disappeared, and the general health was completely restored.

Albuminuria.

Acute, becoming chronic; curable; duration about eighteen months.

Plate VII, *Fig.* 2.—A granular cast; two translucent casts, the larger containing a disintegrated granule-cell and free nuclei; mono-nuclear epithelial cells, compound granule-cell, and a blood-disc.

Fig. 3.—A cast containing renal epithelial cells, a cast slightly granular, three compound granule cells, and free blood-corpuscles.

Case XXVII.—A young gentleman, æt. 14, in the preceding Easter, three months antecedent to this examination, at school, suffered, with several other boys, from an epidemic sore throat, and was sent home, when

his water was observed to be much discoloured, and contained blood and albumen. He became very pallid, but no dropsy appeared. A sample of the urine was sent up for examination. It was dirty coloured. Had a sp. gr. 1012, and was moderately albuminous. It contained free blood-corpuscles and several isolated epithelial cells, &c. A month later another sample was examined. It was more albuminous than the first, contained casts, &c., as represented in fig. 3.

It was not till a month later that the author saw and examined the patient. He had a very pallid aspect. There was no dropsy, nor had been. The general condition of the patient was favorable. The appetite was good. There were no pulmonary nor cardiac symptoms; the bodily energy was slowly returning. Under appropriate treatment his health appeared restored, although the urine, for the succeeding ten months, contained albumen. Fifteen months after the first examination there was a trace to be found. Eventually, however, the urine became perfectly healthy, and entirely free from all morbid indications. He grew rapidly, and is now a robust and healthy young man.

Albuminuria.

After scarlet fever; curable.

Plate VII, *Fig.* 4.—A slightly granular cast, containing renal epithelial cells (epithelial cast); others less granular, with isolated epithelial cells; several cells, bi- and trinuclear (mucus); isolated blood-corpuscles; barrel-shaped and lozenge-shaped crystals of uric acid.

Case XXVIII.—A boy, æt. 2½, had suffered obscure symptoms of an eruptive fever; but it having been preceded by sore throat, it in all probability was a defective rash of scarlet fever.

Attention was subsequently drawn to the urine, which became dirty coloured and turbid, throwing down a

copious dingy sediment, and was very highly albuminous. The sediment contained the objects in the figure, which are characteristic of the early stage of acute albuminuria after scarlet fever, the epithelial casts and blood-corpuscles being the most prominent features.

Subsequent examination, at an interval of five weeks, found the urine still albuminous, but without any casts being seen, only a few mucous corpuscles. The convalescence was slow, but ultimately complete recovery took place.

ALBUMINURIA.

Acute, after scarlet fever; perfect recovery; duration three months.

PLATE VII, *Fig.* 5.—An epithelial cast, one end translucent, containing free nuclei; another, more granular, containing the same; a group of mucous corpuscles; three compound granule-cells, and rhombic crystals of uric acid.

CASE XXIV.—Scarlet fever broke out with great intensity in a gentleman's family, in a district of the Thames Valley. A daughter died in thirty-six hours with symptoms of the most malignant character. Other children had the disease in a milder form, and on the fourteenth day had severally an attack of hæmaturia, with highly albuminous urine, but without any dropsical symptoms. In the two eldest, æt. 7 and 9, the urine became almost suppressed, so small was the amount passed. The eldest, some twenty hours after the scanty blood-stained urine was noticed, suffered a succession of convulsive attacks, which, with intervals of abatement of but a few minutes, lasted eight hours. No urine was passed during these paroxysms. After their subsidence he passed, freely and voluntarily, nearly a pint. This urine was smoke-coloured (blood-stained), highly albuminous, and the sediment presented the appearances in fig. 5. Notwithstanding the return of the urinary secretion in the night following, a repetition of the fits

occurred. They were epileptiform in character. One side of the body was more convulsed than the other.

The second attack of convulsions lasted eleven hours. These paroxysms were unlike those most usual in renal convulsions. The spasmodic movements were confined to one side. There was some facial paralysis (temporary). At one period, late in the attack, there was violent screaming and jactitation. The urgency of these symptoms required energetic treatment. An enema of one drop of croton oil was followed by copious alvine evacuations, a subsidence of the convulsions, succeeded by a calm sleep and capability to take nourishment.

Urine was now secreted copiously, and was albuminous, with a few casts, slightly granular. Convalescence proceeded rapidly and favorably, and in three months health was completely restored.

Albuminuria.

After pregnancy; curable.

Plate VII, *Fig.* 6.—A fibro-granular cast; a few mucous corpuscles; a blood-corpuscles; squamous, vaginal, and urethral epithelium.

Case XXX.—A lady, æt. 44, of a ruddy, healthy aspect, the mother of grown-up children, became pregnant after a long interval of child-bearing, and had enjoyed good health up to the last pregnancy, which was six months since. She nursed her baby for three months, but suffering from swelling of the ankles and back of the hands, lumbar pains, and great debility, it was weaned.

The urine became scanty, dark coloured, stained with a brownish sediment, containing the objects in the figure, the most characteristic of which were the fibrinous granular casts and blood-corpuscles. It was moderately albuminous.

The urine, from time to time, at intervals of a few weeks, indicated the recurrence of blood. The anasarca disappeared, and the general health was finally restored about ten months after the last confinement.

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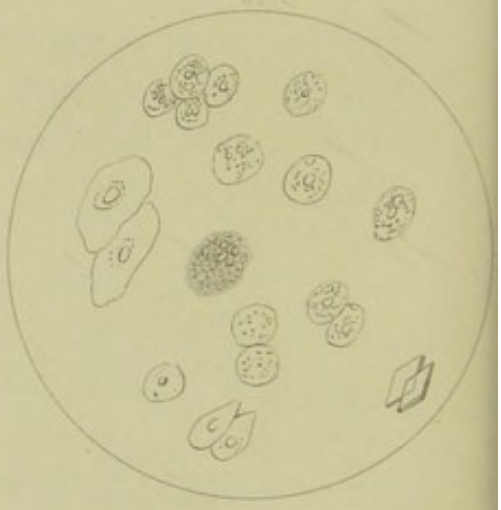

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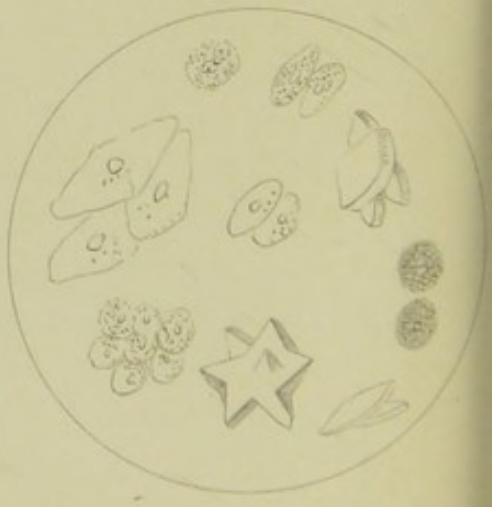

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ALBUMINURIA.

Gouty.

PLATE VIII.

Fig. 1.—Casts translucent and very faintly granular; mucous corpuscles; scales of urethral or vaginal epithelium; crystals of oxalate of lime.

CASE XXXI.—A lady, unmarried, æt. 44, of a florid complexion, stout, and well nourished, descended from a very gouty family. A year or two since, when the catamenia first began to recur irregularly, suffered from persistent frontal headache, with rapid loss of physical energy and activity, became very stout, and had œdema of the ankles and wrists. Urine was abundant, pale, and micturition frequent. Subsequently there was numbness of the ring and little fingers of the left hand, with a distressing buzzing and noise in the ears. She had suffered severe local rheumatic pain, but never a distinct attack of gout. The urine was pale lemon-yellow, sp. gr. 1010, slightly albuminous, and contained the objects shown in the figure.

This lady has been under the author's observation for the last three years. The urine examined from time to time continues slightly albuminous, and the objects seen are similar in character and import to those figured. Within the last four months some redness and tenderness about the knuckles and wrist were suggestive of a gouty attack.

ALBUMINURIA.

Gouty; duration fourteen years; continues under observation.

PLATE VIII, *Fig.* 2.—Delicate hyaline casts, containing an

epithelial cell or two; several free mucous corpuscles; three epithelial cells from pelvis or infundibulum of the kidney; a flake of urate of ammonia.

Case XXXII.—The urine from which these objects were taken was pale, had a sp. gr. 1015, slightly cloudy with urates, which cleared by heat, and became cloudy again at a more elevated temperature, and ultimately gave evidence of albumen.

The patient was a gentleman, æt. 35, tall, and vigorous habits of body, fond of out-door exercise, especially in shooting and fishing; never himself had gout, but his family history exhibited an hereditary disposition, and he himself, from childhood, had suffered, and continued to suffer, from periodic eruptions of the skin, the more permanent of which were of the type of psoriasis, while the more evanescent and troublesome, occurring for the most part in spring and autumn, had all the characters of urticaria (nettle-rash). The student may here be reminded of the constant association of these cutaneous disorders with the gouty or uric acid diathesis.

The author's notes of this case, extending over so many years, are copious; but it is sufficient for his present purpose to state that the urine examined on the last occasion was still faintly albuminous; it contained a few mucous corpuscles, but no casts could be seen. The general condition of the patient was but little different from the first record of his symptoms, recurrence of the nettle-rash from time to time, bodily activity unimpaired, occasional attacks of indigestion, and a peculiar form of headache, which seems attendant on the state of the stomach, but which is usually attended by an eruption of the nettle-rash, the urine at these times containing both urates and uric acid, and in excess, with a minute quantity of albumen.

Albuminuria.

With renal calculus, complicated with cardiac, pulmonary, and hepatic disorder.

Plate VIII, *Fig.* 3.—Two faintly granular casts, two compound granule-cells, epithelium from the pelvis, and infundibulum of the kidneys, these latter small-sized oval epithelial cells generally coalescing in twos or threes, or of an outline similar in miniature to a Knight Templar's shield, are specially characteristic of irritation from renal calculus or gravel.

Case XXXIII.—A gentleman, æt. 52, had been more or less in unsettled health for several years. Increased frequency of micturition, with digestive disorder and albuminous urine, were the most marked symptoms. He had suffered from more than one attack of hæmoptysis. It was supposed that he had disease of the mitral valve.

He had all the characteristic signs of hypertrophy, with anasarca of the lower extremities, and subsequently general dropsy, of which that of the abdominal cavity was the most marked and most distressing. The dropsical state ebbed and flowed, treatment more than once having considerably reduced the accumulated fluids; but it quickly returned, and death shortly followed.

The kidneys were nodulated on the surface, contracted, and dense in structure. Calculous concretions were present; in both, a large irregular-shaped concretion was moulded into one of the calyces of the right kidney, and the left contained a quantity of uric acid grit. The heart was the seat of considerable hyperophy, with extensive deposit in the pouch of the aorta.

The liver was in the early stage of cirrhosis. The spleen was also much enlarged.

The case should be of interest to the student, as ex-

hibiting complications not frequently associated with renal calculus. The albuminous urine, the general dropsy, might be accepted as indications of Bright's disease. But the general dropsy was cardiac, pulmonary, and hepatic, and not renal; while the latter disease was essentially calculous or gouty, depending on the uric-acid diathesis.

ALBUMINURIA.

Gouty.

PLATE VIII, *Fig.* 4.—Several large compound granule-cells; a group of mucous cells; small oval cells, twin-grouped from the pelvis and infundibulum of the kidney; two scales of urethral epithelium; lozenge or rhombic crystals of uric acid.

CASE XXXIV.—A gentleman, æt. 44, of strongly pronounced gouty habit, having had six severe attacks in four years. Father and mother both gouty. The urine was clear, acid reaction, and a sp. gr. of 1015, and moderately albuminous. Micturition of late had become frequent and troublesome. There was great digestive disorder, irritability of stomach, morning retching, gastric catarrh, which symptoms were speedily relieved by the appearance of gouty inflammation in the feet. For some months he greatly improved under treatment and rigid attention to diet. Before a year had elapsed, however, the eyesight became affected. Amblyopia, confusion of thought, followed; drowsiness and lethargy followed. He became comatose and died.

ALBUMINURIA.

Gravel and renal calculus; calculous pyelitis.

PLATE VIII, *Fig.* 5.—Several compound granule-cells; blood-corpuscles; scutiform epithelial cells from the pelvis and

infundibulum of the kidney; pus and mucous corpuscles; crystals of uric acid.

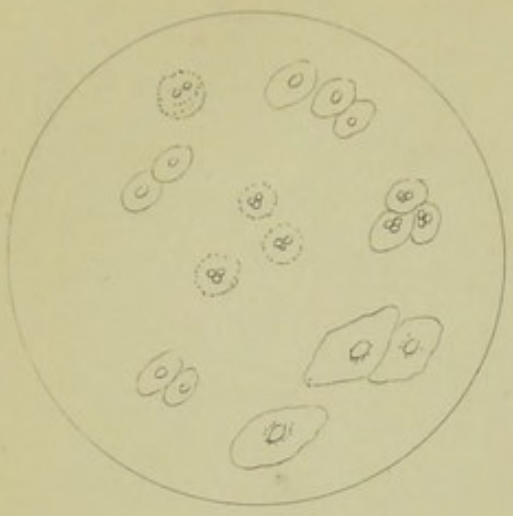
Fig. 6.—Compound granule-cells; squamous epithelial cells, from urethra or vagina; scutiform epithelial cells in pairs; several mucous corpuscles, grouped together; uric-acid crystals.

Case XXXV.—A lady, unmarried, æt. 38, had for the past two or three years suffered from occasional attacks of hæmaturia, often appearing to be brought on by the jolting of a carriage or riding on horseback, with great frequency of micturition in the intervals of the attacks.

Her father was gouty; her mother also, and a brother suffered from similar attack, but she had never so suffered. For many years past, almost from childhood, had suffered from psoriasis.

The urine examined was cloudy when passed, was moderately albuminous, contained both blood- and pus-corpuscles, and a good deal of uric acid grit; when allowed to settle, it separated into a clear upper portion (sp. gr. 1012), acid and albuminous, and a sediment distinctly separated from the clear urine, and which consisted essentially of pus and mucous corpuscles.

Frequent attacks of indigestion, as well as of catarrh with obstinate hard cough (sympathetic), occasional paroxysms of lumbar pain, and irritable state of the urinary passages, were the more prominent symptoms. From time to time, under treatment, the pus-cells disappeared from the urine, at which time the albumen was absent. An attack of hæmaturia would then follow, and urine abounding in mucous cells, and eventually pus-cells would again be present in the urine. A course of Vichy waters was taken with advantage.



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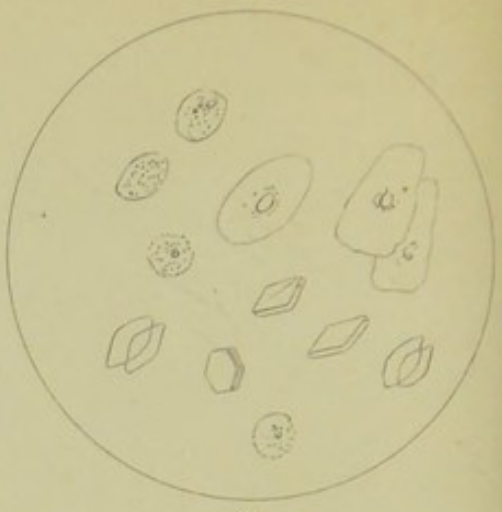

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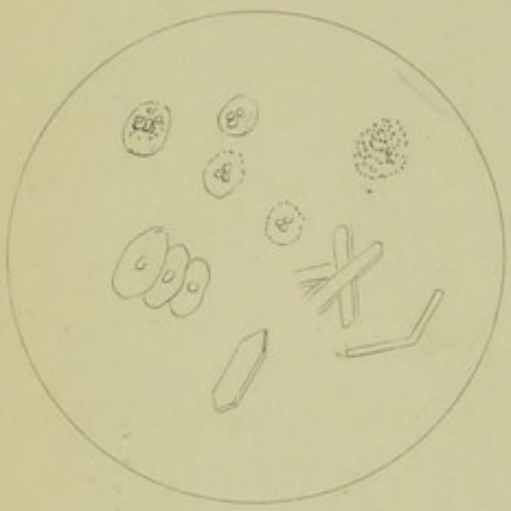

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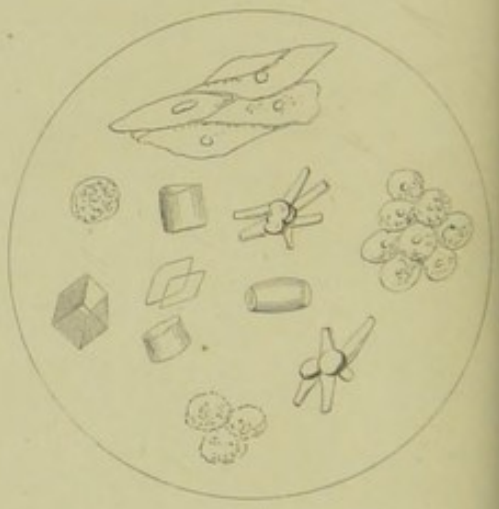

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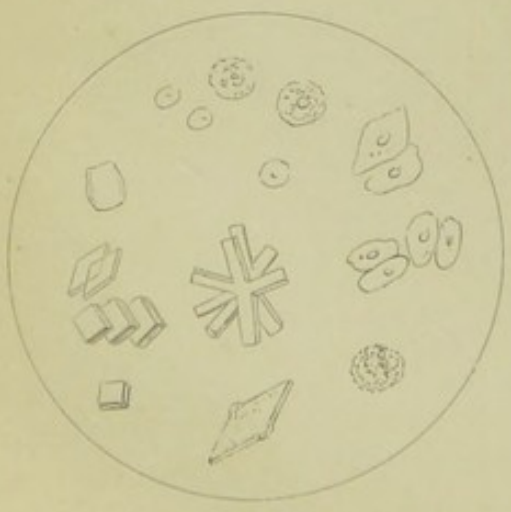

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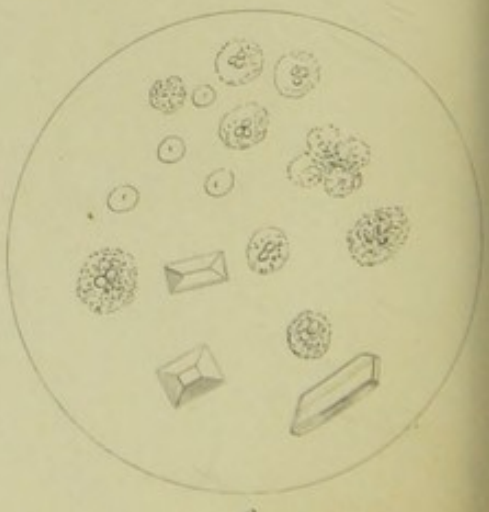

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ALBUMINURIA.

Gravel and renal calculus; calculous pyelitis.

PLATE IX.

Fig. 1.—Pus-cells, isolated and grouped; epithelial scales from the urethra; oval and scutiform epithelium from pelvis and infundibulum of the kidney.

CASE XXXVI.—A gentleman, in the profession, æt. 61, enjoying fair average health, had for some months suffered from severe lancinating pain in the extremity of the urethra, with darting sensations in the perinæum and neck of the bladder. These symptoms temporarily disappeared after micturition, which of late had become very frequent and troublesome.

The urine was cloudy, almost milky, when passed. He did not recollect ever having passed any blood. The urine separated into two distinct portions, the upper clear and albuminous, the lower white and opaque, and composed of pus-cells, mucus, and epithelium.

Under treatment the purulent sediment decreased, and ultimately disappeared, and in two or three months complete recovery was established. The author recently saw this gentleman, now seventy years old, enjoying a fair share of health and activity.

ALBUMINURIA.

Gouty, with gravel.

PLATE IX, *Fig.* 2.—Large compound granule-cells; urethral epithelium; lozenge and rhombic crystals of uric acid.

Case XXXVII.—A gentleman, æt. 48, a citizen of the United States, much exposed to weather, having commanded a steamer in the United States, had suffered gout for several years, two and three attacks a year. Is subject to attacks of indigestion, with violent cramps in the stomach (gastralgia). Confessed to having lived pretty freely; "liquored much," "early and late," cock-tail chiefly, "never touch sugar," "but I liquor up frequently."

The urine was bright, clear, and acid, sp. gr. 1016, and was moderately albuminous. In addition to the albumen the chief and most marked character of the urine was the large proportion of uric acid it contained. It proved a very favorable case for treatment.

Albuminuria.

Renal calculus; pyelitis; renal colic.

Plate IX, *Fig.* 3.—Compound granular cells; three pus-cells; scutiform epithelium from pelvis of the kidney; crystalline forms of uric acid, having much the character of crystals of hippuric acid.

Case XXXVIII.—A doctor of divinity, æt. 50, head master of a provincial school of some celebrity, about ten years before the period of examination had passed a calculus, which was called a mulberry calculus by those whom he consulted. He was subsequently examined by a distinguished surgeon, and pronounced to be free from stone in the bladder. Of late he had suffered agonising attacks of pain in the direction of the right ureter, lasting from one to three hours, attended by retching and vomiting. In the intervals of these attacks suffered from indigestion, and the pain in the back was increased by any jolting motion. He was uncertain as to any attack of hæmaturia. The urine was examined a few days after a severe attack of renal colic, and the

objects are seen in fig. 3. These attacks are generally preceded either by a paroxysm of indigestion, in which acidity of the stomach is the predominant symptom, or by some imprudence in diet.

This gentleman still lives (eight years since the author's first examination), in the enjoyment of very fair health.

Albuminuria.

Gout and renal calculus series; uric acid, sand or gravel.

Plate IX, *Fig.* 4.—Scales of urethral epithelium, pus, and mucous corpuscles in groups; crystalline forms of uric acid, lozenge-shaped, cubeiform, barrel-shaped, columnar, and globo-stellar, the latter probably uric acid and urate of ammonia in combination.

Case XXXIX.—The hostess of a public tavern had suffered from great frequency of micturition, scalding heat in the urethra, with a copious deposit of red sand from the urine after cooling and set at rest, exhibiting almost every form of uric-acid crystals.

The urine was faintly albuminous, and contained many cells, many of which had the characters of pus-cells.

She had been subject to attacks of gravel for some years; suffered much from indigestion, with great acidity, acid eructations; has had rheumatism, but not gout.

The figure represents the usual character of the sediment in cases of excess of uric acid in the shape of sand (cayenne pepper deposit).

Treatment soon moderated the distressing frequency of micturition, which, however, returned again and again in intervals of some months, always preceded by indigestion, but which each time was relieved by similar means.

Albuminuria.

Lithiasis; uric acid, sand, or gravel.

Plate IX, *Fig.* 5.—Various forms of uric-acid crystals, stellar lozenge-shaped, quadratic, barrel-shaped; three blood-corpuscles; some mucous corpuscles; four epithelial cells from pelvis of the kidney; two of squamous epithelium from the urethra.

This figure represents the most characteristic objects in that form of renal irritation arising from excess of uric acid, often termed lithiasis, and in common language sand or gravel.

Case XL.—A tradesman, æt. 52, complained that for some months past he had suffered from great frequency of micturition, accompanied by a burning sensation along the urethra; the urine was passed in small quantities at a time. He suffered an aching pain in the lumbar region, and a few years since had an attack of gravel. He never had gout, but suffers occasionally from indigestion, which exhibits all the most characteristic signs of the gouty habit. The urine was slightly cloudy when passed; was faintly albuminous from a trace of blood present, and contained in the sediment the objects represented in the figure. Appropriate treatment quickly removed the disorder.

Albuminuria.

Calculous pyelitis; hæmaturia and renal colic.

Plate IX, *Fig.* 6.—Pus-cells and large compound granule-cells; blood-corpuscles; crystals of the triple phosphate.

These objects are common to most cases of calculous pyelitis and inflammatory condition of the pelvis of the kidney from the irritation or presence of a calculus.

A few blood-corpuscles testify to the irritation and

engorgement of the tissues, the pus-cells to the inflammatory action. The large compound granule-cells are common in all cases of irritation of mucous surfaces; they are seen equally in bronchitic sputa, pneumonic sputa, in Bright's disease, wherever epithelial structures are the seat of active disorganization. The crystals of triple phosphate are caused by the molecular changes which the urine containing pus certainly undergoes a few hours after being voided. They are not present in purulent urine examined immediately after it has passed.

Case XLI.—A member of the profession, æt. 40, had for some years suffered from disorder of his urinary organs, pain in the region of the kidneys, and upon one occasion a severe attack of gravel. More recently the chief symptom was distressing frequency of micturition, with pain settled in the left hip, extending to the groin, with aching and drawing up of the testicle of that side, a dragging pain at the glans penis, relieved by passing water, was followed by the appearance of blood in the urine. This was followed by paroxysms of pain commencing in the left lumbar region, and assuming a colic-like character, accompanied by nausea, retching, and vomiting. Warm baths and treatment alleviated the attack.

Subsequently he observed that any unusual bodily exertion, horse exercise, riding in a cab, or any jerk or jolt of the body, induced pain, and frequently caused blood to appear for a few hours in the urine. During the last five years these attacks have moderated in intensity, although one or more may occur in the year.

A few months since the urine was examined, and still contained pus-cells, but fewer in number than five years previously, which corresponded with the earliest indication of the existence of a calculus in the kidney.

A calculus may be lodged in the kidney, perhaps

retained in one of the crypts of the calyces, and there remain for years, and, unless dislodged by some untoward accident, neither the health nor the life of the individual in any degree is jeopardised by its presence. The author has known several similar cases, particularly one of a lady who for seventeen years was under his observation, and eventually died at seventy-five of general decay, and with symptoms in no way connected with the kidneys, in which organs the calculus was found securely imbedded in a sac, providentially and happily formed for its retention.

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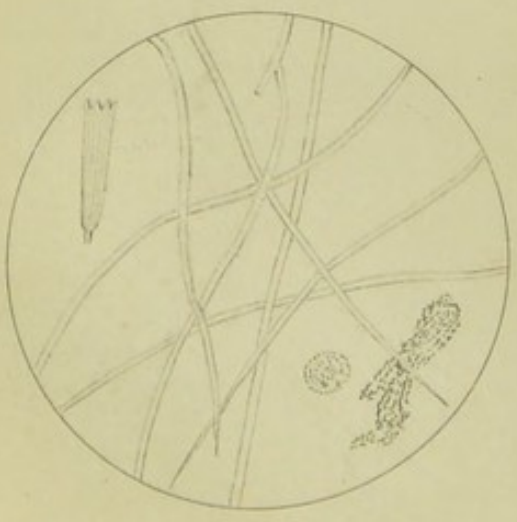

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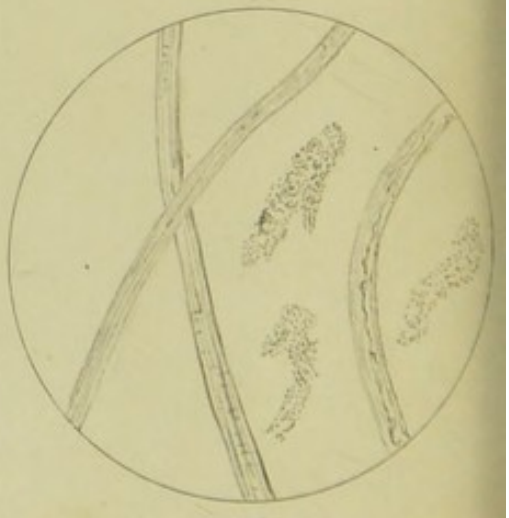

6

W. R. Basham ad. nat. del.

Adventitious Objects often seen in the Urinary Sediments.

These objects are derived from the fluff or floating dust of the bedroom. They are not visible to the unaided eye; they are essentially microscopic objects; they fall into the chamber vessel, and when urine is taken for examination from those vessels some one or more of these adventitious objects are certain to be seen. When the urine is passed directly into an appropriate glass vessel, and immediately examined, these objects are not present; they frequently perplex the student, who may mistake some of them for pathological objects. Those most frequently seen are represented in Plate X.

Plate X.

Fig. 1.—Hemp-fibre, derived from towelling, sheeting, &c. &c.; one or more mucous corpuscles.

Fig. 2.—Cotton fibre, derived from various articles of dress; two scales of epithelium from the urethra; two mucous corpuscles; sporules of the Penicilium glaucum, constantly seen, after a certain interval, in albuminous urine.

There is not much difference in the appearance of hemp from cotton fibre, except that the latter is more delicately marked, and often present a ribbon-like flatness, as if folded on itself.

Fig. 3.—Woollen fibre. This may be known by the delicate markings on the external sheath, and is, moreover, often coloured. The other objects are a scale from a moth's

wing, three scales of urethral epithelium; columnar, barrel, and lozenge-shaped crystals of uric acid.

Fig. 4.—Eider-down feathers, two scales from the moth's wing, a mucous corpuscle, and an epithelial scale from the urethra.

Fig. 5.—Silk fibre. This may be recognised by the straight parallel fibre, often coloured; a mucous corpuscle; a scale from the moth; a flake of urate of ammonia, not seldom mistaken for a granular cast. They may always be distinguished by the irregular outline, although some are more uniform in outline, but chiefly by the disappearance of them if a drop of warm distilled water be added to the drop of urine in the field of the microscope.

Fig. 6.—Fibres of human hair. These are usually of much larger diameter than woollen fibre, although the markings on the surface are somewhat similar; they are much more manifest to the unaided eye, as they can be distinctly recognised in the drop of urine when placed on the stage of the glass; with these are represented some flakes of the urate of ammonia.

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