

by heat, from the presence of albumen derived from the serous portion of the blood. The colour of the urine must not be alone depended on, as indicating the presence of blood, for a colour not unlike that produced by the solution of the hæmotosine of the globules may be owing to the presence of bile pigment, colouring matter of the urine in excess, (purpurine,) or from certain principles taken into the stomach, as logwood &c. These, however, may be readily distinguished, for if the colour depends on blood, heat causes it to become altered, and it is thrown down when the albumen is coagulated. Again, bile pigment gives the peculiar play of colours when treated with nitric acid, and that from vegetable colouring matters is not altered by a boiling temperature. The only difficulty in these cases is to distinguish whether the albumen of the urine is entirely due to the effused blood, or not, as hæmaturia not unfrequently occurs during the course of affections of the kidneys, giving rise to albuminous urine. If such, we can, however, generally determine the point by comparing the coagulum of albumen, which the clear portion gives when heated, with the amount of blood discs deposited; or we can wait and re-examine the urine, when blood is not present in the fluid, and see if it then contains albumen.

Albuminous Urine.—In perfectly healthy urine, not a trace of albumen can be detected by the most delicate tests, but in many morbid conditions we not unfrequently meet with this substance, and as a knowledge of its presence is of the greatest importance, I will endeavour to make you acquainted with the best methods of proceeding for obtaining such information.

Albumen possesses the property of coagulation by heat, about 160° Fahr., and therefore when urine containing this principle is heated, a coagulation will occur, and the fluid become opaque; this will generally happen, as the urine has usually an acid reaction, but should it be alkaline from any cause, then exposure to heat alone is not sufficient, the alkaline state of the fluid holding the albumen in solution; we can, however, guard against this by insuring an acid state of the fluid, by the addition of a few drops of some acid, as the nitric; and if urine, thus made slightly acid, gives a precipitate when heated, we may conclude that albumen is present. Coagulation by heat alone is not a certain sign of its presence, as in some non-albuminous urines a precipitate of phosphates may occur, even when the urine is slightly acid; these, however, are re-dissolved by the addition of a few drops of acid. Nitric acid alone is not sufficient, as when a large quantity of urates are in solution a precipitation of uric may occur; which, however, is re-dissolved, when the fluid is heated with the acid; and again, after the administration of cubeba and copaiba, certain matters of an oily nature are sometimes found in the urine, which, on the addition of cold nitric acid, causes an opacity. Many other modes of detecting albumen have been proposed, but none are so easy of application, and so certain in their results, as the method I have just mentioned; for example, the albumen may be thrown down by ferrocyanide of potassium, after the urine has been previously made acid with acetic acid, or a solution of the bichloride of mercury may be employed for the purpose, which causes its coagulation; these latter tests, however, will cause the precipitation of other protein compounds besides albumen, and therefore are less valuable. When it is desired to estimate the quantity of albumen contained in the urine, we may proceed as follows:—take a weighed portion of the fluid, and heat it in a platinum crucible, having first acidulated with a few drops of nitric acid, keep constantly stirring with a glass rod, till the boiling point is attained, then pour the whole on a weighed filter, and afterwards thoroughly wash, dry, and re-weigh; the excess of weight above that of the filter gives the amount of albumen contained in the urine.

Pathology of Albuminous Urine.—When albumen exists in the urine, independent of the presence of blood or pus, it seems to be owing to some morbid condition of the kidneys themselves. Probably the immediate cause is congestion, or an obstructed flow of blood through the renal capillaries. Thus it can be artificially produced by obstruction to the veins, as shown by Dr. Robinson, and it also at times occurs during pregnancy, as noticed by Dr. Lever, (here the same explanation probably holds good;) also from certain abdominal tumours causing a like pressure. This I had an opportunity lately of observing in a patient who suffered from ovarian disease, and in whom the kidneys were found to be perfectly healthy. Albuminous urine also not unfrequently occurs during the congestive stages of febrile disease, and disappears on the recovery from such. This is especially the case after scarlatina, and sometimes, it is stated, after measles also, and other skin affections; likewise in certain cases where the kidneys appear to become intensely congested from exposure

to cold. But by far the most common cause of this state of the urine is that disease of the kidneys first made known by the researches of Dr. Bright, and to which the name of Bright's disease, or granular kidney, has been given.

Characters of the Urine in Bright's Disease.—In the early stages, or acute form of this disease, albumen appears to be thrown out, in addition to the ordinary urinary constituents, and with it we frequently find the colouring principles or globules of the blood. Hence the specific gravity is usually high, the amount of secretion diminished, and frequently a deposit of urates takes place on the cooling of the fluid. Even in this stage, however, the urea is deficient; at least, the total amount eliminated in the twenty-four hours; and this principle is found to be retained in the blood. As the disease advances and becomes chronic, the character of the urinary secretion greatly alters, the albumen often becomes less in amount, and the total quantity of solids is also much diminished, and hence the urine is of low specific gravity, paler in colour, and generally slightly opaline, an appearance due to the suspension of certain insoluble matters, consisting of the cylindrical lining of the urinary tubules, fat globules, epithelium scales, &c., (fig. 11,) these, by standing, form a light flocculent deposit; the persistence of these bodies in the urine may be almost regarded as pathognomonic of the disease; although temporarily, they may occur in any affection in which there exists an irritated or congested condition of the kidneys. The quantity of urea excreted in the twenty-four hours is generally very deficient, and its relative amount, compared with the total solids, is also much lessened. It is in these cases that we find abundance of urea in the blood and effused fluids, the kidneys having lost their power of eliminating this body. The amount of watery excretion may be either large or small; sometimes it considerably exceeds the normal average, at others it falls far short of it, and in the last stages the urinary secretion may be totally suppressed. In the following table two analyses are seen, taken from Becquerel, showing the amount and characters of the urine in two cases of the disease.

	I.	II.
Amount of urine in } twenty-four hours }	28 oz. ...	78 oz.
Specific gravity ...	1016.3 ...	1008.4
Water	965.0 ...	986.3
Urea	11.6 ...	1.8
Uric acid	0.8 ...	0.2
Extractives	4.6 ...	5.5
Fixed salts	6.6 ...	2.9
Albumen	11.9 ...	3.4
	1000.0	1000.0

Albumen is stated occasionally to occur in the urine after the ingestion of certain articles of diet, as pastry; also after the administration of mercury, and the application of blisters of cantharides. Of the power of the first-named cause I have never seen an example, and that mercury by no means frequently produces such a state of urine I have had ample proof, although, in Bright's disease, salivation is often readily produced by this mineral, which may have led to the opinion of its having caused the presence of the albumen in the fluid. The application of blisters appears sometimes to cause albuminous urine, probably from irritating the kidneys, and we know that hæmaturia also is at times thus produced.

MEDICAL FEES AT ASSURANCE OFFICES.

To the Editor of THE LANCET.

SIR,—I imagine it is an acknowledged principle throughout the profession, to resist, under all circumstances, all unjust and indecent demands—and the plain and unquestionable duty of every one of its members *not* to desert to the enemy, who would fain lead us in triumph at his chariot-wheels.

A few days ago, I received from the "Clergy Life Assurance Society" a paper, with the usual request, that I would answer the "queries on the other side in as full a manner as possible," to save "further inquiry"—but *without* the usual fee. I replied, that "on the receipt of a fee, I should be happy to forward immediately the information they required." Receiving no answer to my communication, I wrote to my patient, who was also an intimate friend, the subject of the inquiry, mentioning the motives by which I was actuated, and recommending an office which conducts its business fairly and properly; but as I have heard no more of the matter, I necessarily conclude some gentleman has obligingly enabled them to complete their "policy." Upton-on Severn once more.

I remain, Sir, your faithful servant,

Birmingham, Nov. 1848.

T. CLARKE RODEN.