

scanty, because the kidney failure often shows a failing heart; and after an abdominal operation it considerably cheers an experienced operator to learn that the kidneys are acting freely, because this shows that the patient's vital powers have not been seriously impaired by the operation. In patients suffering from infectious fevers, again, in which complications affecting the kidneys are of frequent occurrence, it is often a matter of the greatest importance to learn how these organs are carrying on their work; and after what has been said it will be obvious that the knowledge of the specific gravity and of the quantity of urine passed by such patients furnishes most valuable indications of danger, or its absence.

Next to these details in importance, come the various methods of testing the urine. It is a good general rule that, in every case, some of the fluid should be boiled in a test tube over a spirit lamp. There are many important indications discoverable by this simple process. For example, the urine may be thick, or red, and on boiling in the test tube the sediment or cloudiness will disappear. This shows, at once, the presence of an excessive amount of *Urates* in the urine. The specific gravity is almost invariably higher than normal. The amount of urine is frequently lessened; and the condition is found in persons suffering from fevers of various types, these who have rheumatism or gout, or even in some individuals as the result of a bad cold. Whatever the condition may be, it shows that the kidneys are throwing off more solid matter than at ordinary times, and that there is present what is popularly known as "acidity of the blood." For this reason, when a patient is suffering from a chill, or from fever, medicines are given in order to stimulate the kidneys, as well as the skin, to greater activity; and so to assist in the excretion of, or throwing off, materials from the system which are perhaps assisting in the causation of the illness. Then, again, if a little of the urine be boiled in a test tube it may, as it becomes heated, show a greater or less cloudiness or deposit. This is due to one of two causes—either to the presence of an excessive amount of *Phosphates* in the urine, or of *Albumen*; the latter being congealed by heat, just as the white of an egg becomes solid on boiling, because this is composed of pure albumen. To distinguish between these two constituents, in the boiled fluid, a few

drops of nitric acid are poured into the test tube. If the cloudiness be due to the presence of Phosphates, the nitric acid will dissolve these, and the cloudiness will disappear, reminding one of the manner in which a mist lifts and rolls away. If it be Albumen, on the other hand, which has caused the deposit, the addition of the nitric acid will make the cloudiness appear more solid, and heavy flakes will probably fall to the bottom of the test tube. The importance, then, of boiling the urine is evident, because the ordinary method of testing for albumen—that is to say, the addition of nitric acid to a little cold urine in the test tube—merely causes the deposit due to the presence of albumen—if that be present—while it does not show the presence, if any, of phosphates. The presence of the latter, in any large quantity, is usually a serious sign, because it represents in any case the throwing off from the body of the phosphorus which is the chief nourisher of the brain and nervous system. The sign is, therefore, found in people whose nervous system has been overtaxed by anxiety, overwork, or grief, and is especially dangerous because of its tendency to form deposits in the kidney or the bladder, in the form, first, of minute grit or crystals, and the gradual addition of other similar bodies to these, building up, in time, minute stones or *Calculi*. As we shall see hereafter, the presence of these concretions in the kidney are sooner or later followed by serious disease. Whenever, therefore, an excess either of urates or of phosphates are found in the urine, it is necessary to remember the practical point, that the kidney is throwing off these substances in excess, and may probably be consolidating these crystals in its *pelvis* into minute calculi.

From this, then, can be understood the extreme importance of giving persons who are suffering from excess of urates or phosphates in the urine, large quantities of water to drink, so as to flush the kidneys, and thus to wash away any grit which may possibly be forming. During recent years, great benefit has been derived from the employment, in such cases, of distilled water—that is to say, water which has been boiled and its steam recondensed. This contains, therefore, none of the solids which ordinary water holds in solution, and it naturally absorbs solid material more easily than fluid which is already loaded with such matters could possibly do.

(To be continued.)

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