

a very short time thereafter we find sugar in the urine. The blood may be rendered saccharine by over-oxidizing the blood. . . . How does this apply to diabetes? A vaso-motor paralysis of the arteries of the body will produce those conditions. If, as may be witnessed, we have a vaso-motor paralysis of the arteries of one side of the head and neck, we find that the region becomes distended, not with venous blood, but with semi-arterial blood. As the result of such, the blood will arrive at the liver without being fully de-arterialized; in other words, in an imperfect venous condition. If the arteries of the chylopoetic viscera become enlarged, so that the blood passing through them does not become perfectly de-arterialized the chemical action of the liver becomes so changed as to permit the carbo-hydrates to pass through it, and get into the circulation and so charge the system with sugar. The worst forms of diabetes I have met with are those in which there is a dilated condition of the vessels of the mouth. This is due to a vaso-motor paralysis which has extended to the chylopoetic viscera and visibly involved the mouth. In these cases we have an exceedingly red tongue.

Again, puncture of the fourth ventricle, that celebrated experiment of Bernard, leads to the presence of sugar in the urine. In this instance Bernard observed a dilatation of the chylopoetic viscera. In all such cases the first thing to do is to determine the presence of sugar. This is a common cause of difficulty. One physician finds sugar, and another does not. "I believe the most reliable test for sugar in the urine is the copper test, or Fehling's solution. But the difficulty is, it will not keep. A pellet of it can, however, be made in a certain way." The sulphate of copper is to be placed in the die first, next some Rochelle salt, next the caustic potash, and finally some more Rochelle salt to complete the mass. If kept in well-stoppered bottles, these pellets will keep any length of time. But further, a quantitative analysis is necessary to proper management of a case. Pavy requires that two samples of urine be sent, one passed in the evening and one in the morning on rising. By this method we can discover errors of diet, otherwise impossible. In many cases we may find sugar at night and none in the morning. The following is Pavy's method for estimating the amount:—The amount is estimated from the amount of liquid being examined, that is required

to decolorize a given quantity of the Fehling's solution. The solution is made with sulphate of copper, Rochelle salt, caustic potash, and water of ammonia; into a given quantity of this, the liquid containing sugar is dropped. It is best in testing urine to dilute it with twenty or thirty parts of water in order to make the test more delicate. This is placed in a graduated burette, from which it is dropped into the ammoniated copper solution after the latter has been heated to the boiling point, letting it flow drop by drop until the color has entirely disappeared. The dropping is regulated by a screw adjustment. The exact point at which the reduction takes place can be exactly determined, for there is no precipitate to obscure the view of the reduction. Sometimes albumen is likewise in the diabetic urine. A convenient test for albumen is sodium, the latter being used because it makes a looser pellet than the ferrocyanide of potash. If albumen is present there is a precipitate, and if a precipitate there is albumen. It requires no check and is extremely delicate. To use it, the citric acid pellet must be used first. It readily dissolves in urine containing albumen. This may bring down a precipitate of uric acid, but if so, the urine diluted will dissolve it. The other pellet is now added and it will bring down at once the albumen.

The disease has different stages of intensity. A healthy person after eating much preserves will pass off the sugar. Persons also partaking moderately of carbo-hydrates may pass sugar. Severe cases are in young subjects, mild cases are in old subjects, and the more advanced the age the better the prognosis. It is most common between forty and sixty. It runs in families to a considerable degree. A point of special importance, only recently noticed by the author, is that many patients suffering from it complained of pains in the legs, often put down to gout or rheumatism. There is also more or less ataxia. Such can stand or walk with their eyes shut, but not well. Again, there is some anæsthesia, hyperæsthesia and various forms of paræsthesia. There is an aching in the bones, especially at night. The condition appears to be due to peripheral neuritis. In young subjects, the most that can be done is to stay the disease. It cannot be cured in them. It is a progressive disease, and seems to advance like muscular atrophy or locomotor ataxia. Success may, however, be attained in treating older subjects. Pavy