

of healthy urine appear to interfere to a certain extent, for the author states that "nearly all specimens of urine color more or less the basic nitrate of bismuth." Mr. Attfield therefore objects to this test as a means of detecting sugar in urine, because of its extreme delicacy, and because other substances, and especially albumen, may produce the same reaction. For the mere detection of sugar in alkaline solutions generally, it is however exceedingly sensitive. The author concludes his communication by recommending Trommer's test, which he considers "for medical purposes fulfills all desirable conditions."

There can be no doubt, however, that Trommer's test is subject to certain objections. Mr. Attfield, in his paper, does not mention the test commonly known as Moore's, which consists in adding to the urine an equal volume of liquor potassæ, and boiling for some minutes, when, if sugar is present, a peculiar and very characteristic brown coloration is produced. This test is subject to many less objections than either of the above, and is now very commonly employed in the examination of urine, and for the detection of grape sugar generally. This test possesses, in addition to its being very trustworthy, one great advantage, namely, that it can be almost as readily used for determining the amount of sugar as for recognizing its presence. This depends upon the fact that the depth of color produced bears a strict relation to the amount of sugar present. If, therefore, a standard solution of grape sugar is prepared and a given quantity colored to the fullest extent by boiling with potash, upon taking an equal quantity of the urine and treating it in a similar manner, by comparing the colors, and diluting until the tint is equal, the proportion of sugar present in the urine is readily arrived at.

2. At a recent meeting of the Chemical Society, a paper was read by Dr. Bence Jones, on the presence of sugar in the urine. The author described a number of experiments which he had undertaken with a view, first, of ascertaining the most delicate process for the detection of minute traces of sugar when added to urine; and, secondly, for obtaining further proof of the correctness of Brücke's statement, that sugar is always present, and is a normal constituent of healthy urine. His principal conclusions were as follows: Lehmann's process for detecting sugar in the urine by extracting the evaporated residue with absolute alcohol, and precipitating the sugar therefrom in the form of potash sugar, by means of alcoholic potash, cannot be employed when small quantities are present in large quantities of urine. The process of fermentation is stopped by the residue of the urine, by much urea, and still more decidedly by oxilate of urea. Half a grain of sugar in water can be detected by the alcohol produced, and may be estimated by the carbonic acid produced, but much larger quantities may be entirely overlooked in concentrated urine. In decolorizing urine for examination in the polarizing saccharometer, some sugar is always lost. Animal charcoal removes sugar in proportion to the amount of charcoal used. This sugar may be recovered by washing with boiling water. Two-thirds of the sugar in urine may be lost by Robiquet's method of decolorizing with basic acetate of lead and ammonia. Pettenkofer's test for sugar, by means of cholic or glycocholic acid and sulphuric acid, is the most delicate known. Two-thirds of a milligramme may be detected in a little distilled water, and the presence of a small amount of urinary coloring matter does not affect the reaction. Trommer's test with sulphate of copper and potash is capable of discovering one-twentieth of a per cent. of sugar, in urine, but when very small quantities of sugar are in solution with muriate of ammonia or urea, the reduction of the oxide is not perceived. Brücke's alcohol process was not found to be satisfactory, but his lead process furnished excellent results. The urine is precipitated first with neutral acetate of lead, then with basic acetate of lead, and lastly with ammonia. The ammoniacal precipitate contains the sugar, which is extracted by treating the precipitate with oxalic acid, or preferably by sulphuretted hydrogen. By Brücke's process one-seventh of a grain of sugar added to 200 cubic centimetres of urine could be detected, and two-thirds of all the sugar added could be recovered. Moreover the sugar is obtained free from salts, so that it can be fermented, and free from color, so that it may be examined by the saccharome-