

shares the same principle of reaction as governs Fehling's, Trommer's, Haines and other less well-known modifications, which are included in that class. They all depend for their reaction upon the power which grape-sugar possesses of reducing cupric oxide to a lower form of oxidation, with the formation of a yellowish-red precipitate of suboxide of copper or cuprous oxide. The power of reducing cupric oxide in alkaline solution is possessed by certain urinary products of organic nature, principal among which are uric acid, creatin, creatinin, and glycuronic acid, bodies which are present in both normal and abnormal urine. Although ordinarily not present in sufficiently large amount to give rise to confusion in testing for sugar, they may be obscuring factors when the urine becomes concentrated to any considerable extent through the operation of one or more of the many circumstances which may raise the specific gravity and increase the urinary acidity. If in examining such a urine a sufficient quantity be added to the test solution, these non-saccharine reducing substances become operative, a partial reduction of the test ensues, resulting in a reaction closely resembling in appearance that due to small traces of sugar. It is a frequent occurrence to encounter a urine of greatly increased density and heightened acidity, but containing no sugar. Such urines are always scrutinized with double carefulness with reference to the presence of sugar. It is in such cases where discrimination is essential that Fehling's test, the most popular of the copper tests is most misleading. This is owing to the manner of its application, so large a quantity of urine being used as to introduce such an abundance of organic reducing bodies, when dealing with concentrated urine as to produce a distinct reaction.

Haine's test, although constituting a considerable improvement over Fehling's in manner of application, leaves much to be desired in point of delicacy, and also in stability.

Delicacy with reliability of reaction and stability of reagent are the essential attributes of a perfect test for sugar. These qualities, it is claimed, my test possesses in larger measure than any of the copper tests heretofore devised.

The formulæ for the preparation of the reagents for my test are as follows :

Reagent No. I.—

Sulphate of Copper C.P.....27 grains.