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A Scopometric Method for the Estimation of Sugar in Urine.

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The mercuric atom of the double mercuric-sodium chloride salt in carbonate solution is reduced by glucose at room temperature, giving a fine crystalline precipitate of mercurous chloride. This precipitate bears a quantitatively reproducible relation to the concentration of glucose which can be easily measured in the Junior Scopometer.[1] With low concentration (circa. 5 mg. glucose per cc.) the turbidity is equivalent to 8 scale divisions per mg. on a wedge calibrated for urinary proteins precipitated by Exton's reagent and with high concentration (100 mg.) somewhat less than one scale division. This gives a wide range in its practical application and sensitiveness where this is most important for clinical interpretation.

The microscopic crystalline precipitate consists of stubby needles when precipitated from a pure solution in the presence of certain colloids. Without the colloid the needles form crosses, and in the presence of acetate ions these fill out giving square plates with cross figures. The crystal habit and size are reasonably controllable even in urinary filtrates. Other substances also reduce the mercuric atoms. Of those which may be present in urine the volatile aldehyde and ketones reduce the mercury before the solution is made alkaline and the mercurous chloride from this source may be removed before the glucose reduction is initiated by the addition of carbonate.

Creatinine and many other substances are removed by a preliminary clarification. Mercuric salts have been found convenient for this purpose, each salt and combination of salts removes most of the urinary constituents in definite fractions. This matter is being investigated in detail and will be the subject of subsequent contributions since it is considered of practical value in clinical chemistry.

[1] Exton, W. G., *J. Lab. Clin. Med.*, 1928, xiii, 385; *Arch. Path. Lab. Med.*, 1928, v, 49.