

ments is finally controlled by a special experiment; the degree of cloudiness, permanently obtained on mixing 20 cubic centimeters of the test liquor with 10 cubic centimeters of the solution of common salt with urea, must be kept in view when making the real estimations.

In these quantitative determinations of chloride of sodium—a source of error easily avoided, however, by a little practice—exists in using too much mercurial solution, whereby the cloudiness is increased; or too little, whereby it is diminished. The test liquor, the preparation of which I have just described, is calculated for those cases in which no other salts besides chloride, and no excess of urea exist in the solution; it leads however to a slight error, when employed for determining the chloride of sodium in urine, inasmuch as it indicates a smaller amount in urine than really exists therein. This error is occasioned by the cloudiness; the index of the termination of the experiment, appearing somewhat earlier in the presence of much urea and other salts than without, inasmuch as the precipitate is less soluble in such liquids. A deposit of nitrate of urea and protoxide of mercury is, as a matter of course, not produced until the liquor is saturated with it; the mercurial solution always contains free nitric acid, which dissolves more of it than water, and this again more than a nitric solution of urea.

Since, then, urine generally contains more urea than has been added to the solution of chloride of sodium when graduating the mercurial solution, and this urea seizes part of the free nitric acid of the mercurial salt, forming nitrate of urea, the solvent power of the liquor for the precipitate is diminished, and the precipitate appears somewhat sooner—that is, somewhat less of the test liquor is required to produce the cloudiness. This error is completely obviated by adding 5 cubic centimeters of a cold saturated solution of sulphate of soda to the 10 cubic centimeters of solution of chloride of sodium mixed with 3 cubic centimeters of solution of urea, and then graduating the test liquor.

Nitrate of protoxide of mercury produces, with a solution of sulphate of soda, a yellow pulverulent precipitate of turpethum minerale. If the sulphate of soda contains chloride of sodium, the precipitate of turpethum, on addition of nitrate of protoxide of mercury, is not formed until the chloride of sodium is converted into sublimate; the solution of sulphate of soda therefore alters the experiment only in this manner, that the free acid of the mercurial salt combines with the sulphate of soda to form an acid salt,