

# SCIENTIFIC PROCEEDINGS.

VOL. XXV.

APRIL, 1928.

No. 7.

## Minnesota Branch.

*University of Minnesota Medical School,  
February 29, 1928, and March 27, 1928.*

3926

### Studies on Folin Method of Analysis for Glucose in Normal Urine.

R. H. HAMILTON, JR. (Introduced by J. F. McClendon.)

*From the Laboratory of Physiological Chemistry, University of Minnesota.*

Folin stated<sup>1</sup> that acid caused some interfering substance to dissolve from the Lloyd's reagent used in the determination of glucose in normal urine. It seemed that, if acid caused the interfering substance to dissolve, the Lloyd's reagent might first be treated with acid and this substance removed. Accordingly, some of the reagent was treated for some time with concentrated hydrochloric acid. The acid was diluted and filtered off, the Lloyd's reagent was sucked free of liquid, washed thoroughly, dried at 110° C., and powdered in a mortar. The reagent thus treated, while giving lower reducing values than the untreated reagent, still did not allow of quantitative recovery of added glucose. The reagent had changed in color to a greenish tinge, and the acid filtrate contained much iron. It was then treated similarly with concentrated nitric acid, when the color changed to a light gray—almost white. The latter product allowed of quantitative recovery of added glucose, without the use of permutite, and gave values that were somewhat lower than those obtained by the use of the untreated Lloyd's reagent with permutite. Powdering the permutite caused an increase of 5 or 6 mg. % in the

---

<sup>1</sup>Folin, Otto, and Svedberg, Andrea, *J. Biol. Chem.*, 1926, lxx, 405.

reducing value obtained for the urine. If permutite is used, some time can be saved by adding Lloyd's reagent and the permutite together to the diluted urine. There seems to be little change produced in the results by this slight modification.

The average of a number of determinations gave, per 100 cc. of normal urine, 55.4 mg. "glucose", when untreated Lloyd's reagent and permutite were used, 50.5 mg. when acid treated Lloyd's without permutite was used, 51.5 mg. when acid treated Lloyd's was used with permutite. The error in the recovery of 40 mg. added glucose per 100 cc. was -2.1 mg. when acid treated Lloyd's was used without permutite, and +1.6 mg. when the acid treated reagent was used with permutite.

## 3927

**Effect of Ionization on Antiseptics.**

H. O. HALVORSON AND ARTHUR R. CADE. (Introduced by A. T. Henrici.)

*From the Department of Bacteriology and Immunology, University of Minnesota.*

Results from our studies on antiseptics lead us to believe that the theories which are commonly advanced to explain such action are not satisfactory. To set forth the significance of our results it appears necessary to consider briefly the experimental basis of current theories.

Experiments performed by Krönig and Paul<sup>1</sup> on the antiseptic properties of  $\text{HgCl}_2$  and the effects of  $\text{NaCl}$  upon its germicidal properties led these investigators to the general hypothesis that the ionized part of the toxic molecule is the part that penetrates the cell and kills the organism. Their results would lead one to believe that if anything is added to a solution which decreases the amount of ionization of a germicidal molecule, the germicidal value is decreased. They concluded this from the fact that when  $\text{NaCl}$  is added to solutions of  $\text{HgCl}_2$  the germicidal value of the solution is decreased. They explained this by assuming first that the  $\text{Hg}$  ions are the toxic elements, and second, that by the addition of the common  $\text{Cl}$  ion the ionization of the  $\text{HgCl}_2$  was lowered. Because salts of mercury ionize very poorly, and because  $\text{HgCl}_2$  forms complex ions readily with various salts,<sup>2</sup> it would appear that the assumptions

<sup>1</sup> Krönig and Paul, *Z. Physikal. Chem.*, xxi, 419.

<sup>2</sup> Clark, *J. Phys. Chem.*, 1901, v, 289.