VIII. THE DETERMINATION OF SUCROSE BY HANES'S MODIFICATION OF THE HAGEDORN-JENSEN METHOD.

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HAGEDORN and Jensen's micro-method for estimating blood-sugar was modified by Hanes [1929] to make possible the estimation of larger amounts of sugar. Hanes standardised his new procedure for maltose as well as for glucose. It has now been found that the method is also applicable to sucrose.

The first stage in the estimation of sucrose is inversion. A standard solution of invert sugar was prepared by the method of Ling and Rendle [1905]. 0·95 g. of pure sucrose was dissolved in 150 cc. of distilled water; 30 cc. of 0·5 N hydrochloric acid were added, and the mixture was heated to boiling point. Boiling was continued for 1 minute. The solution was then rapidly cooled, 30 cc. of 0·5 N sodium hydroxide were added and enough distilled water to make 500 cc. This solution was tested by titration with Fehling's solution, using methylene blue as an internal indicator [see Lane and Eynon, 1923]. The concentration of the invert sugar was found to be exactly right, viz. 0·2 g. per 100 cc.

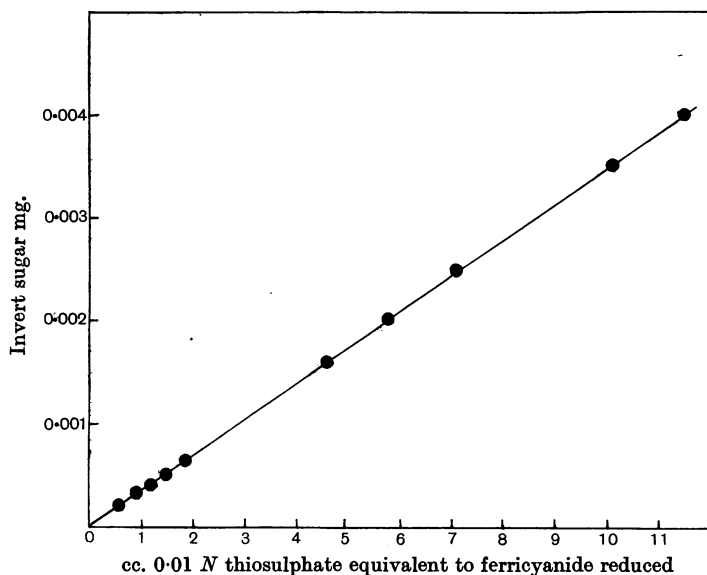cc. 0·01 N thiosulphate equivalent to ferricyanide reduced
Fig. 1.

This standard solution of invert sugar was used to prepare more dilute solutions of known strength. The thiosulphate equivalent of known volumes of these dilute solutions was determined by the Hanes-Hagedorn-Jensen technique. The estimations were carried out exactly as described by Hanes except that the final volume was in each case made up to 15 cc. instead of 10 cc. Concentrations of invert sugar between 0·2 and 3·5 mg. were used, six estimations being carried out for each concentration. The average of the six readings was used to construct the thiosulphate equivalent curve (Fig. 1). Since it is a straight line, there is a simple relationship between the thiosulphate equivalent and the invert sugar, viz. 1 cc. of 0·01 N thiosulphate is equivalent to 0·347 mg. of invert sugar or to 0·329 mg. of sucrose.

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