cent. K_2HPO_4 is added before the urease. *Time law of urease action:* The velocity of urea decomposition is expressed by the isotherm,

$$t = \frac{1}{e}\left(x + a \log \frac{b}{b + x}\right),$$

where t is the time of reaction, e the enzyme concentration, and x the concentration of ammonia formed. The derivation of the equation will be given later.

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A method for the estimation of sugar in small quantities of blood.

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The red color obtained by heating a dextrose solution with picric acid and sodium carbonate is employed as the basis of the present method for the determination of blood sugar, the reaction being so delicate that it is possible to determine the dextrose in as little as 0.5 c.c. of blood. Following is the method in detail as ordinarily used by us.

Two c.c. of blood are drawn from a vein through a hypodermic needle into an Ostwald pipette, a little potassium oxalate in the tip of the pipette preventing clotting. The blood is discharged immediately into a 25 c.c. volumetric flask containing 10 c.c. of N/100 acetic acid previously heated in a boiling water bath. The pipette is rinsed once with distilled water. The flask is replaced in the boiling water bath and shaken occasionally for five minutes. After cooling, 1 c.c. of 5 per cent. dialyzed iron (Merck) is added to precipitate any protein still in solution. Distilled water is added to the mark, the contents of the flask are filtered, and an aliquot of the clear filtrate (10 c.c. or 15 c.c.) is measured into a large Jena test tube (200 × 22 mm.) and evaporated to 1 c.c. or below (but not to dryness) over a direct flame, two glass beads being used to prevent bumping. Two c.c. of saturated picric acid solution and 3 c.c. of 20 per cent. sodium carbonate are added

and the tube is placed in a boiling water bath for ten minutes. The contents of the tube are then cooled and washed quantitatively into a 10 c.c. volumetric flask. After making up to the mark, the red solution is filtered into the colorimeter chamber and read at once against a standard freshly prepared by the same procedure from 1 c.c. of a solution containing 1 mg. of dextrose per c.c. The standard is usually set at 15 mm.

If less than 2 c.c. of blood is collected, the quantities of N/100 acetic acid and of dialyzed iron must be correspondingly decreased. With 1 c.c. of blood 20 c.c. of the clear filtrate are taken for dextrose determination; with 0.5 c.c. of blood the coagulum must be thoroughly washed and the entire filtrate and washings used for analysis. In the latter case the standard is made one half as strong as usual and set at 30 mm.[1]

The method suggested yields results closely approximating those obtained by the Allihn gravimetric method.

35 (852)

Electric currents in conductors with distributed capacity considered in relation to the propagation of the nerve impulse.

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Nearly two centuries ago it was surmised that the nervous impulse might be of the nature of an electric current, but in the absence of definite proof the hypothesis was rejected, especially as objections were raised to it which seemed insuperable. It is difficult, if not altogether impossible, to reconcile all experimental results with the consequences of the molecular theory. If, however, we regard the nerve as an electrical conductor with distributed capacity, we are able to account for many of the fundamental experimental phenomena and also to predict the results of new experimental conditions. It has long been known that the speed of electricity on wires is less than the speed in free space

[1] The reading of 10 c.c. of solution at 30 mm. in a Duboscq colorimeter is quite possible if a piece of thick glass tubing 50 mm. long and 16 mm. inside diameter is placed in the colorimeter chamber.