

extracted with absolute or 95 per cent. alcohol, possessed anti-scorbutic qualities, whereas the residue was of no value in this respect. Neutralized orange juice, given subcutaneously to a group of guinea pigs, also failed in this respect. "Artificial orange juice," made up according to McCollum's formula, composed of the various salts, citric acid, and sucrose in the proportions which they are found in the natural juice, was given to numerous pigs, but was ineffective in protecting them against scurvy.

"Artificial orange juice" was likewise tried in the treatment of two infants suffering from scurvy. In both it failed absolutely to ameliorate the symptoms, which yielded rapidly to natural orange juice.

We wish to report especially that *orange juice may be given intravenously*, after it has been boiled, and made slightly alkaline to litmus, by the addition of normal sodium hydrate just before using, and that such injections produce no untoward reaction, and have a marked curative effect. This intravenous therapy is of interest from a practical standpoint, as its action has been found to be most rapid, and its dosage small; it is therefore especially indicated where the symptoms are urgent. It is also of theoretical interest in a consideration of the pathogenesis of scurvy, as it is the first time that this disorder has been cured by a therapy which was not introduced by way of the alimentary tract.

194 (1372)

A delicate method of determining invert activity.

By **C. K. WATANABE** and **V. C. MYERS**.

[*From the Laboratory of Pathological Chemistry, New York Post-Graduate Medical School and Hospital.*]

A delicate method of estimating invert activity (sucrase) would be of advantage in connection with a number of physiological problems. A substitution of one per cent. cane sugar for the one per cent. soluble starch or glycogen, employed by Myers and Killian,¹ in the estimation of the diastatic activity of the blood, furnishes a very delicate method for sucrase.

¹ Myers and Killian, *Jour. Biol. Chem.*, 1917, XXIX, 179.

The technic of the method is as follows: To 8 c.c. of water in a 50 c.c. centrifuge tube is added 1 c.c. of the extract to be examined, and the solution warmed to just 40° C. in a water bath with thermostat attachment. One c.c. of one per cent. cane sugar is now added and incubation carried out for 30 minutes. The solution is rapidly cooled in cold water and 0.5 to 1.0 gram of dry picric acid added, thoroughly mixed, centrifuged and filtered. The inverted sugar is now estimated colorimetrically in 3 c.c. portions as already described.¹

One must not let the sucrose stand for a long time in contact with the picric acid, owing to the hydrolytic action of the picric acid.² For this reason it might be of advantage to employ sodium picrate, as recently recommended by Benedict.³

Utilizing the above method we have been unable to satisfactorily demonstrate sucrase in human blood or that of rabbits. With one per cent. yeast extract there was 60 per cent. inversion in one-half hour, *i. e.*, 6 of the 10 mg. were inverted, while a one per cent. yeast extract in human blood gave a 54 per cent. inversion. With a 10 per cent. extract of the mucous membrane of rabbit's intestine figures of 13.2 and 12.8 per cent. were obtained. Controls were all negative.

195 (1373)

The phosphate and calcium content of serum in the condition of guanidine tetany.

By C. K. WATANABE.

[From the Laboratory of Pathological Chemistry, School of Medicine, and The Sheffield Laboratory of Physiological Chemistry, Yale University, New Haven.]

In the altered metabolism in parathyroidectomized dogs, Greenwald⁴ found a marked decrease in the elimination of phosphate in the urine together with a distinct retention in the blood.

¹ Myers and Bailey, *Jour. Biol. Chem.*, 1916, XXIV, 147.

² Rose, these PROCEEDINGS, 1917, XX, 16.

³ Benedict, *Jour. Biol. Chem.*, 1918, XXXIV, 203.

⁴ Greenwald, I., *Am. Jour. Physiol.*, 1911, XXVIII, 103.

Greenwald, I., *J. Biol. Chem.*, 1913, XIV, 363; *Ibid.*, 1913, XIV, 369.