37 (1997)

Some limiting factors in the use of picramate as a measure of reduction.

By SISTER MARY DENISE, S. S. N. D., and A. R. ROSE.

[*From the Department of Chemistry, Fordham University, New York City.*]

This report pertains to the colored solutions formed by the reduction of picric acid. The color is not due to a single substance but to a mixture of several colored substances. In solutions where the color is due to some one substance, there is a simple and definite ratio between the concentrations and the color values. When the color is due to two or more substances a definite ratio holds for differences in concentrations only within relatively narrow limits. The colorimetric determination of picrate reduction mixtures is therefore limited. It is thought that this limitation can in part be counteracted by isolating the most characteristic component of the color. This is done by extracting the products after the reduction of picrates with immiscible organic solvents, shaking this extract with an alkaline solution. The alkaline solution assumes a color which is qualitatively very like the original reduction mixture. The number of colored constituents has been reduced. The color values of the reduction mixture and the isolated color component are affected by change in temperature. One degree centigrade decreases the color value one per cent. Salts, cane sugar and alkalies increase the color value. These tests were made by diluting picramate mixtures with molar solutions and comparing them with a standard prepared in the same manner as the picramate mixtures which were tested. In half-molar solutions there is but a slight error for sodium chlorid; for the sugar it came to 10 per cent., and for potassium carbonate to 12 per cent. Molar solutions gave an error of 17 per cent. in the case of salt, 14.5 per cent. for sugar, and 16 per cent. for potassium carbonate. Sodium hydroxide at this concentration caused an error of 8 per cent. Higher concentrations made very difficult readings. Sodium chlorid in three-molar concentrations decreased the readings 25 per cent. and five-molar 29 per cent. Sodium hydroxide in two-molar solution caused a 25 per cent. decrease

and four-molar a 41 per cent. In all these cases there was an increase in color value. This is probably due to an increase in a brownish color component. There was some precipitation. In many instances there was a finely divided sediment in the picrate reduction mixture. For this reason a study was made as to the effect of filtration. Ashless paper was used and in all but very few cases filtration was followed by a decreased color value. The error from such a cause ranged from 0.5 to 6 per cent. A solution passed through six 9-cm. papers had a decrease in color value amounting to 17 per cent.

38 (1998)

Factors involved in the quantitative reduction of the tissues in the stomach and intestine in amphibian larvæ during metamorphosis.

By ALBERT KUNTZ.

[*From the Department of Anatomy, St. Louis University School of Medicine, St. Louis, Mo.*]

According to data recorded elsewhere[1], the following changes in the digestive tube occur in Rana pipiens and Ambystoma tigrinum during metamorphosis.

	R. pipiens	*A. tigrinum*
Average reduction in length of stomach and intestine	82.5 per cent.	45.8 per cent.
Average reduction in weight of tissue in stomach and intestine	56.5 per cent.	46.9 per cent.

The rôle of autolysis and phagocytosis in the quantitative reduction of the tissues in the gills, fins, and tail of amphibian larvæ during metamorphosis has been studied repeatedly. Autolysis and phagocytosis also account for a large part of the quantitative reduction in the tissues in the stomach and intestine. The extrusion of tissue elements, especially from the mucosa and submucosa, into the lumen of the stomach and intestine

[1] Kuntz, A., Anatomical and physiological changes in the digestive system during metamorphosis in Rana pipiens and Ambystoma tigrinum. *Journal of Morphology* (not yet published).