tions, and on all kinds of catalytic reactions in pure and industrial arts. In beef-broth-peptone media, for example, the glycerophosphates do not give the troublesome precipitates formed by phosphates, and can therefore be added in the form adjusted sterile tablets or solutions to warm sterile media, with or without agar; the resulting medium is buffered, adjusted, clear and sterile for immediate use. The glycerophosphates can be sterilized in solid or liquid condition without appreciable decomposition. Similar reports will soon be made on other carbohydrate phosphates.

Hydrogen electrode measurements of the acid and basic ionization constants of asparaginic acid and its value as a buffer and nutrient material in culture media: J. H. Hopfield, J. B. Halstead, Marguerite A. Brennan and S. F. Acree. The hydrogen ion concentrations of solutions of $M/50$ asparaginic acid vary from 10^{-16} to 10^{-12} when the asparaginic acid is treated with acid and alkali varying from two mols of the former to three mols of the latter. Between $C_H = 10^{-5}$ and 10^{-9} there is a sharp inflection in the titration curve because of the completion of the neutralization of the stronger acid and the beginning of the neutralization of the second carboxyl. From the complete titration curve and the ionization values of the salts the constants $K_{a_1} = 1.1 \times 10^{-4}$, $K_{a_2} = 1.4 \times 10^{-10}$ and $K_b = 1.2 \times 10^{-12}$ are calculated. These are in good agreement with the values of K_{a_1} and K_b obtained by conductivity, catalysis and hydrolysis methods. The value of K_{a_2} is new and is lower than the value of $K_a =$ about 10^{-9} for asparagin, as expected for an acid salt. In another article we have shown that the inflection curves of asparaginic and phosphoric or pyrophosphoric acid mutually annul each other, and make such mixtures very fine buffer materials as well as nutrients in media for bacteria and fungi.

The nitrogenous constituents of condensed milk as compared with fresh milk: A. W. Homberger and B. Mathin.

The buoying up of the equilibrium of milk salts during meat treatment: Harper F. Zoller. The precipitation of calcium from solutions of milk salts, prepared in accordance with the composition and concentration occurring in the average of normal cows milk and at the reaction of normal milk, was followed quantitatively and with the hydrogen electrode during the effect of temperature. The loss of calcium was progressive with the time and intensity of heat treatment. The hydrogen ion concentration proportionately with the removing of the buffer material (phosphates) by the calcium. Doubling the quantity of citrates above normal although not changing the initial pH of the solutions greatly reduce the precipitation of the calcium phosphate and at the same time maintained a higher final pH. Lactates and malates acted likewise. This serves to aid in explaining how the lactic souring of milk may increase its stability towards heat.

Hydrogen electrode study of the curdling in casein solutions at high temperatures: Harper F. Zoller. When solutions of pure Hammarsten casein in carbonate free NaOH or KOH are heated in sealed tubes to temperatures ranging from 118° C. to 135° C. a precipitation of curd takes place, the formation of which is dependent upon the hydrogen ion concentration and the duration of heating. The casein solutions contained no calcium. All of the caseinate solutions remained clear, whose initial hydrogen ion concentration is less than 3.16×10^{-7}, (pH 6.5) although the solutions had been heated to 135° C. for forty minutes. There is a regular heating period of from 0.18 to 0.54 pH corresponding respectively to solutions of initial pH of 5.78 and 8.26. The precipitated curd is soluble in acids and alkalies and resembles the curd made from sterilized milk or milk heated to high temperatures as described by the author in a previous communication. The term β casein is suggested for this product to differentiate it from the products obtained by Lacquer and Sackur from dry casein. The significance of this phenomena in connection with the coagulation in evaporated milk is discussed.

Chemistry of digitalis: H. C. Hamilton.

Charles L. Parsons,
Secretary

(To be continued)

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