In general the curves parallel in a general way those obtained for the viability of bacteria in water, so far as the general influence of electrolytes is concerned except that here antagonism occurs in a more acid zone. They also correspond well to the observation of Falk and Shaughnessy[1] on the buffering power of suspensions of bacterial cells, particularly in the demonstration of a second alkaline isoelectric point. In general it appears that within the zone of hydrogen ion concentration which favors the viability of bacteria in water the bacterial cell exerts a high buffering power and maintains a normal electrical charge. In more acid or more alkaline solutions, or in solution of favorable reaction but in the presence of sodium and calcium salts in toxic concentration, the buffering power fails, the electrophoretic charge is reduced, and the bacteria die.

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The role of phosphate and potassium in carbohydrate metabolism following insulin administration.

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Following the administration of large doses of insulin to several diabetics, to two patients with diabetic coma, to a normal fasting individual, to a fasting dog, and to fasting rabbits, and coincident with the drop in the blood sugar which regularly occurs, a marked drop has been noted in the concentration of inorganic blood serum phosphate and serum potassium. A sharp drop in the urinary output of phosphorus and of potassium accompanies the drop in the blood serum concentration, and is later followed (3-12 hours) by a well marked compensatory increase in the urinary excretion of these substances, so that the total excretion over daily periods is not much altered.

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[1] PROC. SOC. EXP. BIOL. AND MED., 1923, XX, 426.

In sharp contrast to the above findings during the convulsions of insulin shock, a very marked increase in the serum phosphate and serum potassium has been found during strychnine convulsions in rabbits, in which condition, as is well known, an extreme destruction of muscle glycogen occurs.

In seeking an explanation of the above phenomena, attention is drawn to the recent work of Embden, Meyerhof, A. V. Hill, and others, which indicates that a hexose diphosphate is an intermediary between glycogen and lactic acid in the contractile process in the muscles. It is suggested that an analogous phosphate compound is formed during the process of storage of glycogen and that insulin causes or accelerates its synthesis. This would account for the disappearance of phosphate into the tissues during the period in which insulin is acting, and the subsequent increased excretion of phosphate may be due to the further conversion into glycogen of the hexose portion of the hexose diphosphate, thus leaving the excess of phosphate available for excretion. The massive, rapid breaking down of the phosphate compound during the tetanic convulsions of strychnine, would further account for the appearance of inorganic phosphate (as well as lactic acid) in the blood stream, as has actually here been shown to occur. The shift in concentration of the potassium indicates the formation of a monopotassium salt.

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An electrocardiographic sign in pericardial effusion.

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The electrocardiogram as ordinarily taken is a record of the differences of potential occurring between various parts of the body remote from the heart. While these differences of potential can be shown to be due to a primary electrical effect in the