Our experiment thus shows that the roentgen radiation to which the solution of 0.6% cholesterol in chloroform was exposed did not induce any anti-rachitic potency to the cholesterol. The roentgen dose was neither exceedingly small nor exceedingly large. We therefore consider that enough change should have been produced to have had a noticeable effect on the rats if anti-rachitic properties were induced by irradiation with roentgen rays of a solution of cholesterol in chloroform, and doubt that the dose could have been large enough to both produce and destroy completely an antirachitic substance.

We wish to express our appreciation to Dr. Grace Medes for the advice received regarding the diet for the rats used in this experiment.

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A Streaming Potential Method of Measuring Electrokinetic Potentials of Proteins.

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The sign and magnitude of the electrical charge on proteins has profound effects upon the physico-chemical properties of protein systems, and various methods have been utilized to evaluate these factors in a quantitative manner.

Most of these methods have utilized the technic of cataphoresis Thus, Svedberg and Tiselius[1] photographed the migrating boundary between egg albumin and a buffer solution by the aid of the fluorescence produced by protein solutions in ultra-violet light. Loeb[2] coated particles of collodion with various proteins and observed with the aid of an ultra-microscope the direction and rate of migration in an electric field.

Freundlich and Abramson,[3] and Abramson[4] adsorbed protein on the surface of quartz particles and studied the influence of pH on the rate and direction of migration of these coated particles. They found that the quartz particles coated with protein behaved as pure protein particles.

[1] Svedberg, Th., and Tiselius, A., *J. Am. Chem. Soc.*, 1926, xlviii, 2272.

[2] Loeb, J., *J. Gen. Physiol.*, 1923, v, 395.

[3] Freundlich, H., and Abramson, H. A., *Z. physik. Chem.*, 1927, cxxviii, 25.

[4] Abramson, H. A., *J. Am. Chem. Soc.*, 1928, l, 390.

Briggs[5] has recently demonstrated that the streaming potential can be used as a rapid and extremely accurate method for determining the sign and magnitude of the ζ-potential. This method involves forcing liquid through the pores of a diaphragm and measuring the potential set up across the diaphragm. It seemed probable that a quartz diaphragm coated with protein would act as a protein diaphragm and allow for a rapid and accurate determination of the ζ-potential on the protein. Experiments to test this hypothesis were successful. It was found that the curves of Abramson[4] for quartz-egg albumin could be duplicated, and that the experimental error of the determination was apparently appreciably less when the streaming potential method was used, than when cataphoretic technic was employed. The streaming potential method (as described by Briggs[5]) is far simpler to operate and is less subject to error, inasmuch as it does not involve the determination of the limits of the boundary between the protein sol and the buffer, as in Svedberg's method, and is independent of convection currents and surface streaming which are troublesome factors in ultra-microscopic measurements of cataphoretic mobility. In addition to being more accurate, the streaming potential method is far more rapid. The same quartz-protein membrane may be used to follow the charge in the electrokinetic potential over a given pH range by simply altering the pH of the solution being streamed through the membrane. No streaming potential is set up at the isoelectric point. Accordingly, this method should prove exceedingly useful for determining the isoelectric point of proteins. With care, the method is capable of determining the isoelectric point with as high an accuracy as can be obtained in an electrometric pH measurement.

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Glass Surfaces versus Paraffin Surfaces in Blood-Clotting Phenomena—A Hypothesis.

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It is well known that when blood is drawn through a bare glass cannula or into a glass container, clotting occurs within a very short period of time. On the other hand, if the glass cannula and the con-

[5] Briggs, D. R., *J. Phys. Chem.*, 1928, xxxii, 641.