

Physical Chemistry of the Proteins

Handbuch der Kolloidwissenschaft in Einzeldarstellungen. Herausgegeben von Prof. Dr. Wolfgang Ostwald. Band 6: *Kolloidchemie der Eiweisskörper.* Von Prof. Dr. Wo. Pauli und Dr. Emmerich Valkó. Zweite völlig neu bearbeitete Auflage. Pp. xiv+353. (Dresden und Leipzig: Theodor Steinkopff, 1933.) 28 gold marks.

THE first edition of this monograph was published in 1920; since that time there have been important developments both in the theoretical and the practical aspects of this subject, among which may be mentioned the conception of the amino acid as a *zwitterion*, the general adoption of the activity notation, the measurements of molecular weights of proteins and the application of the interionic attraction theory of strong electrolytes to protein systems.

In the preparation of the second edition, Prof. Pauli has been assisted by Dr. Valkó, who is joint author with him of the larger textbook "Electrochemie der Kolloide". The authors are to be congratulated in that they have gone far towards the achievement of the purpose set forth in the general preface to the series of monographs by their general editor, Prof. Wo. Ostwald, namely, that the publications should serve the purpose of collecting and correlating papers on the subject of colloid science that are widely dispersed through an extremely large number of diverse journals. The authors have amassed data from physical, chemical, biological and technical publications, and the mode of presentation is much to be commended, in that the results under discussion are largely given in the form of tables and curves, and diagrams descriptive of the technique employed are provided in many cases.

The chapter in which the mobilities of protein ions are discussed is of special value, as it includes a description of the methods and results of Tiselius, which were published in a journal difficult of access. The section dealing with the hydration of proteins is a lucid and discriminating summary of the subject, in which special prominence is given to the interesting researches of Sørensen, of Weber and of Moran.

The reference made to the work of Sørensen, Linderstrøm-Lang and Lund is rather brief in view of its importance. Their paper included the first definition of the isoionic point, and a comprehensive study of the effects of salts on the

ionisation of proteins. The studies of gas and electrolyte equilibria in the blood, published by Van Slyke and his colleagues, have been omitted.

It is to be regretted that the second chapter, entitled "The Chemistry of Proteins", should be so short, and that allusion to the stimulating papers of Max Bergmann should be restricted merely to references. The hypothesis due to K. H. Meyer and Mark, that the protein molecule consists of a long main valence chain, is given greater prominence. Reference is made to Meyer's hypothesis that protein exists in solution in the form of aggregates or micelles. In the light of Svedberg's work on the constancy of the molecular weights of proteins over a range of protein concentrations described in Chap. xiii, it would seem that the aggregation theory cannot have an universal application. Svedberg has shown, moreover, that in the case of many proteins, the sedimentation velocities agree with those calculated for spherical molecules.

The recent investigations of Sørensen and his colleagues on the fractionation of proteins, and the solubilities as affected by the mass of the solid phase, are described in Chap. vii. Sørensen has concluded that purified proteins are not chemical individuals, but systems of components which dissociate reversibly. The solubilities of fractionated globulins indicate that the solid phases may be complexes of eu- and pseudo-globulin.

Many tables of data relating to the physical properties of proteins, including their dielectric constants, have been given; a very considerable part of this material is not available in any other textbook on proteins. As an inclusive summary of recent investigations in this field, the handbook of Pauli and Valkó should be most useful to those interested in the physical chemistry of the proteins.

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Micro-organisms and Insects

L'Infection chez les insectes: immunité et symbiose.

Par Dr. A. Paillot. Pp. 535. (Lyon: Librairie médicale et scientifique, 1933.) 100 francs.

DR. A. PAILLOT has devoted a number of years to the study of the diseases and other microbial infections of insects. In the present work he reviews various aspects of insect microbiology and incorporates the result of his own researches. The broader theoretical problems of immunity and symbiosis are discussed at length, while the morphology and biology of a large