

Pentacetates of Glucosamine and of Chondrosamine," the melting point of β -pentacetyl glucosamine recorded as 118–189° should be 188–189°.

NEW BOOK.

A System of Physical Chemistry. Vol. I. Kinetic Theory. Vol. II. Thermodynamics and Statistical Mechanics. By WILLIAM C. McC. LEWIS, Professor of Physical Chemistry in the University of Liverpool. Text-Books of Physical Chemistry, edited by Sir William Ramsay. New York and London: Longmans, Green and Co., 1916. Pp. xiv + 523, vii + 522. Price \$2.50 each volume.

In the preface the author states that "this book is intended to be used as a general text-book of physical chemistry by those who already possess some knowledge of both physics and chemistry," and "suggests to the reader the advisability of first familiarizing himself with the broad outlines" of physical chemistry. The "System" referred to in the title "consists in regarding all physico-chemical phenomena as being capable of separation into two classes: first, phenomena exhibited by material systems when *in* a state of equilibrium; and secondly, phenomena exhibited by material systems which have *not* reached a state of equilibrium." The book is divided "into three parts, in which the phenomena exhibited by systems in equilibrium and not in equilibrium are treated, first, from the 'classical' kinetic standpoint only (Vol. I); then independently from the thermodynamics; and finally from the standpoint of thermodynamics and the new or 'modified' principles of statistical mechanics (Vol. II)." This division into parts is not an essential feature of the System and is "introduced for the purpose of making the book as readable as possible from the students' point of view."

On account of the novel arrangement of the material the principal subjects considered are listed below:

Volume I, Part I. Chapters I and II, kinetic theory, evidence for the real existence of molecules (Perrin's work is discussed in detail), electron theory of matter, transmutation of the elements (radioactivity), continuity of the liquid and gaseous states, molecular association; Chapters III to VI, chemical equilibrium in homogeneous systems, law of mass action, gaseous systems, liquid mixtures, osmotic pressure, theory of electrolytic dissociation, solid solutions; Chapters VII and VIII, chemical equilibrium in heterogeneous systems, first in the absence of effects due to capillarity, radiation, etc., and second as modified by capillary and electro-capillary effects (colloidal solutions); Chapter IX, homogeneous systems not in equilibrium, diffusion, reaction velocity, catalysis; Chapter X, heterogeneous systems not in equilibrium, reaction velocity, catalysis.

Volume II, Part II. Chapters I and II, principles of thermodynamics; Chapter III, continuity of the liquid and gaseous states; Chapter IV, thermodynamic criteria of equilibrium; Chapters V to VIII, chemical

equilibrium in homogeneous systems, law of mass action, gaseous systems, dilute solutions, osmotic pressure, electrochemistry of dilute solutions, osmotic pressure of concentrated solutions; Chapters IX and X, parallel to VII and VIII above, phase rule, adsorption; Chapters XI and XII, parallel with IX and X above, affinity and its measurement, Nernst Heat Theorem.

Volume II, Part III. Chapter I, photochemistry; Chapter II, applications of the Quantum Theory.

Physical chemists will be especially interested in the excellent discussions of important recent investigations, such as the work on molecular reality, electron theory of matter, radioactive transformations, colloids, Nernst heat theorem, photochemistry, quantum theory and the calculation of the specific heats of solids. The date on the title page is 1916 but only a few brief references to work done since 1912 are given. The work on X-ray spectra and atomic numbers is entirely omitted.

An unusual and commendable feature of this book is the introduction of direct quotations from a number of original papers. The author has made it a point to present the principles of experimental methods and to give experimental results in some detail. These features, together with the large number of references to original papers and the excellence of the subject and author indexes for each volume make the book a valuable reference book for all chemists.

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