However, this may be from a clinical point of view, our experiments show that the solutions which gave an orange color in aqueous solution, contained a substance capable of reacting with ninhydrin because they gave a violet color when Herzfeld's conditions were used to make the test more sensitive. For example, the digestion containing 0.1 mg. of Trypsin I gave the color Orange, Tint 2, when the test was carried out in aqueous solution, and a color between Violet-red and Red-violet, Normal Tones, in alcoholic solution. Many other examples could be cited to the same effect.

But even with the increased delicacy given by the Herzfeld modification the ninhydrin test is, in our hands, a less delicate, and certainly a much less definite, means of demonstrating slight proteolytic action than is the determination of total nitrogen of digestion products or of amino nitrogen by the method of Van Slyke.

Summary.

Eight methods for the study of proteolytic action have been examined: The Mett method, the determination of total nitrogen of digestion products, the measurement of increase of amino nitrogen by the Van Slyke method, the titration of acidity of digestion products, the increase of electrical conductivity, the polariscopic method, and the biuret and ninhydrin reactions.

The results obtained in comparable experiments upon typical commercial pepsin and trypsin are so tabulated as to permit detailed comparisons of the delicacy, accuracy and applicability of these methods. (The comparisons thus made possible are too numerous to be concisely summarized.)

In general it may be said that the quantitative determination of the total nitrogen or the amino nitrogen of the digestion products (or both) appears to be more delicate as a means of detecting proteolysis than either the biuret or the ninhydrin reaction and more delicate, accurate, and generally applicable as a means for its measurement than any of the other quantitative methods here studied.

The results emphasize the importance, in quantitative comparisons, of so limiting the amount of enzyme preparation and the time of its action as to keep within the region in which the velocity of hydrolysis is directly proportional to the enzyme concentration (Fig. 4.).

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CORRECTION.

In the article by C. S. Hudson and J. K. Dale in the July number of This Journal (p. 1434, line 3 from bottom), entitled "The Isomeric

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