

At the optimum of invertase action, the salt effect of the sodium chloride seems to approach zero, and as we depart either side from the optimum, we get an increasing salt effect.

The use of buffers (tampons) for regulating the concentration of hydrogen ion introduces a certain salt effect. The most satisfactory region for using buffers in invertase velocity measurements is in the neighborhood of the optimum zone where the salt effect is a minimum.

In the region of enzyme activity it is necessary to measure the concentration of hydrogen ion, and it is not permissible to calculate it from the molarity of acid used.

The addition of sodium chloride to solutions of hydrochloric acid causes an increase in the concentration of hydrogen ion as measured by the electromotive force method and by the hydrolysis of cane sugar solutions.

NEW YORK, N. Y.

CORRECTION.

The Dissociation of Carbon Oxy-sulfide.—Through the kindness of Professor J. Sakurai, of the University of Tokio, my attention has been called to an important error in sign in the recent paper by Lewis and Lacey.¹ There it is stated, "It is evident that with diminishing temperature the equilibrium is shifted in favor of CO." This should have read "with increasing temperature." Consequently, the van't Hoff equation gives for the heat of formation of COS from liquid sulfur and carbon monoxide not -11000 but $+11000$ calories. For this reaction Berthelot found -4000 and Thomsen $+10000$ cal. Our value therefore corroborates that of Thomsen, and we may now feel safe in using this value in the calculation of the free energy of the reaction at standard temperature. This calculation will be made in another place. GILBERT N. LEWIS.

NEW BOOKS.

Laboratory Manual to Accompany "A Course in General Chemistry." By WM. McPHERSON AND WM. E. HENDERSON. Ohio State University. Pp. v + 140. Ginn and Co., 1915. Price, 60 cents.

The role this manual plays is well stated in the preface by the authors: "For one who sets about the task of arranging an experimental course for the beginner, there remains little opportunity for originality or invention. His problem is rather one of selection. Accordingly, this laboratory manual lays no claim to originality, either in method or in content." When used in connection with the text-book, by the same authors, it proves to be a fairly satisfactory guide for an elementary course. The introductory experiments are not well chosen. For example, the student infers from the experiment that when salt is dissolved in water the change

¹ THIS JOURNAL, 37, 1981 (1915).

is merely physical. Since the beginning student invariably uses an excess of acid, it is suggested in the preparation of zinc sulfate that the water bath be used in place of the sand bath, thus avoiding the disagreeable fumes of sulfur trioxide. Iron, sulfur and iron sulfide could be more completely identified in Experiment 11, by the use of suitable solvents. While large quantities of oxygen are isolated by a laboratory method in Exp. 15, no mention is made that this oxygen is to be used later in Exp. 18. More experiments to illustrate the chemical activity of oxygen should be given. The diagrams and the apparatus used in the isolation of hydrogen and oxygen can be improved. In the preparation of carbon monoxide, the generator should be provided with a safety tube or else an empty bottle should be inserted between the generator and the bottle containing sodium hydroxide. On the whole, the experiments are well selected and the manual serves the purpose for which it was intended.

LILLIAN COHEN.

Annual Reports of the Progress of Chemistry for 1915. Issued by the Chemical Society of London. Vol. XI. New York: D. Van Nostrand Co., 1915. 15 X 21 cm. Pp. viii + 303. Cloth: Price, \$2.00 net.

The subject matter of this volume has been divided under the following headings: General and Physical Chemistry, Inorganic Chemistry, Analytical Chemistry, Physiological Chemistry, Agricultural Chemistry and Vegetable Physiology, Mineralogical Chemistry, and Radioactivity. In each case the reviewers have endeavored to select the important articles which have appeared during the year, devoting a reasonable amount of space to the presentation and discussion of their principal points of merit. This has resulted in the omission of a goodly number of articles from the report, some of which other reviewers might have included. On the whole, the volume must be pronounced a decided success. The work has been done thoroughly and courageously, for it certainly does require courage to go ahead and select from a large mass of material that which seems important and worthy of special mention.

The work done during the year on the structure of atoms, the mechanism of electrical conduction, the atomic weight of lead as bearing on the question whether atomic weights may change or not, the researches on sugars, improvements in methods of gas analysis and water analysis, enzymes, vitamins, the study of crystals by X-ray methods, liquid crystals and radioactivity is especially well presented. The reviewer has read the volume with interest. No article of special importance seems to have been omitted in this summary for the year. The work of the authors is highly commendable.

LOUIS KAHLBERG.

Brief Course in Metallurgical Analysis. By HENRY ZIEGEL. Easton, Pa.: The Chemical Publishing Co. 1915. Pp. vi + 72. Price, \$1.00.

The author states that the "book is written for the use of upperclass-

men," the work to require ten to twelve hours per week for two semesters, and to include "standard analyses in daily use in various analytical laboratories." The analytical procedures include those for iron ores, iron and steel, limestones, slags, clays, non-ferrous alloys, and some non-ferrous ores. A bibliography is appended.

The book contains so many imperfections in proof-reading, composition and chemistry that it is difficult to see how it can fulfil a useful purpose.

H. P. TALBOT.

Anesthesia. BY JAMES TAYLOR GWATHMEY, in collaboration with CHARLES BASKERVILLE. With 283 illustrations in the text. D. Appleton and Company, New York and London. 1914. xxxiii + 945 pp.

Dr. Gwathmey and Professor Baskerville have been assisted in the preparation of the volume by the following investigators, who have contributed individual chapters: W. B. Gatch, Walter S. Sutton, James F. Mitchell, Hermann Prinz, Louise G. Robinovitch, James J. Walsh, H. W. Frink and John W. H. Crim.

The main purposes of the book as set forth by the authors are:

1. To give in a practical and utilizable form the essentials of the subject of the administration of anesthetics.
2. To save the busy medical practitioner or student the labor of weeding out from the voluminous literature upon the subject the facts which he must constantly bear in mind in the successful practice of this important branch of medicine.
3. To emphasize, wherever possible, the thought that "to bring a living being to that borderland in which life in many respects so simulates death should at no time be a fool's occupation;" and
4. While primarily intended as a work for the active practitioner and student, to suggest many lines for further research.

An important feature of the book is the discussion of the chemistry of anesthetics. "As modern medicine now more fully recognizes the importance of a knowledge of chemistry in all of its branches, that phase of the subject has been quite fully developed, not only along lines of original purity of the drug used, the conditions favorable to its preservation in its highest purity, but its course within the body, resulting either in the destruction of the drug or its elimination from the body."

Over one hundred and fifty pages are devoted to a very complete list of anesthetics with important data and references pertaining to the same. This feature of the book should appeal to the chemist as well as physician.

The volume is thoroughly up-to-date in every respect and impresses the reviewer as the most acceptable treatise on anesthesia which has yet appeared.

PHILIP B. HAWK.