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NEW BOOKS

Physico-Chemical Methods. Volume I. **Measurement and Manipulation.** Volume II. **Practical Measurements.** By JOSEPH REILLY, M.A. (Cantab.), D.Sc. (N. U. I.), Sc.D. (Dub.), D.ésSc. (Geneva), F.Inst.P., F.R.C.Sc.I., F.I.C. Boyle Medallist, Royal Dublin Society, Professor of Chemistry, University College, Cork, and WILLIAM NORMAN RAE, V.D., M.A. (Cantab.), Sc.D. (Dub.), F.I.C., Professor of Chemistry and Physics, Royal College of Surgeons in Ireland. D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York, N. Y., 1940. xv + ix + 686 + 580 pp. 410 + 436 diagrams and 1 plate. 16 X 24 cm. Price, \$17.50.

This third edition of a well-known work has been increased by more than 50% in size. This has made it necessary to publish two volumes, the first entitled "Measurement and Manipulations," and the second, "Practical Measurements." Most of the material of the second edition has been brought up to date and included together with several new chapters. This new material has dealt with "Measures and Units," a rather detailed chapter on dimensional analysis, "High Pressure Technique," a chapter on "Radioactivity," and several other topics which have been amplified into full chapters.

These volumes will serve as a convenient introduction to a great variety of physical measurements. In the words of the authors, "The temptation to convert the work into an unwieldy encyclopedia has been resisted. Ample references for further reading have been given, but no claim to ponderous inclusiveness is made. Theoretical developments have been avoided. Results of theory are envisaged only on the experimental or mensurational side." This last statement might seem a little too modest since a clear explanation accompanies the description of the experimental procedure. A new feature of this edition is a list of general references for each chapter which should assist greatly those interested in a more detailed treatment.

H. E. BENT

Micro-diffusion Analysis and Volumetric Error. By EDWARD J. CONWAY, M.B., D.Sc., Professor of Biochemistry, University College, Dublin. D. Van Nostrand Co., Inc., 250 Fourth Avenue, New York, N. Y., 1940. xiii + 306 pp. 49 figs. 14.5 X 22.5 cm. Price, \$6.00.

Micro-diffusion methods of analysis have achieved a place of real importance in the microchemical field by vir-

tue of their simplicity and fundamental accuracy. Until the publication of this volume, the literature in this field was scattered and the many advantages of the technique had not been effectively called to the attention of the many laboratory workers who could profit thereby.

The author has arranged the material relative to the micro diffusion technique in two parts, the first dealing with apparatus and principles, the second with the description of methods. To this is added a third part dealing with the error of volumetric analysis, the material being extended to cover not only the application to diffusion methods but to the generalized field of volumetric analysis. In addition to general and theoretical considerations, specific quantitative methods are described for the micro-determination by diffusion methods of ammonia, total nitrogen, urea, anenylpyrophosphoric acid, adenylic acid, adenosine, volatile amines, chloride, bromide, carbonates and bicarbonates and the oxidation rates of organic substances. Qualitative tests for acetone and alcohol are also included. An appendix carries a discussion, valuable to the biochemist, of urea excretion as a renal function test. The somewhat unorthodox views there expressed are so effectively presented as to merit immediate consideration by all workers interested in this subject. The reader must be impressed by the varied applications which have been made of diffusion technique in the short time which has elapsed since it was first described.

Throughout the book the thoroughness of study and treatment is conspicuous. This is especially noticeable in the third part dealing with volumetric error. It would indeed be difficult to find a more complete and systematic treatment of the subject. The fact that all conclusions are dependent on, and expressed in terms of statistical considerations will lessen the value to chemists not versed in this subject, though this may be an argument in favor of wider study of statistics by chemists rather than a criticism of this type of treatment.

Aside from a small number of minor errors such as the use of "outer" instead of the obviously meant "inner" in line 1, p. 76, the most important errors noticed were those dealing with the work of the reviewer. It was cause for chagrin to realize that most of these were due to inadequate original descriptions of that work rather than to lack of care by the author. The buret shown in Fig. 12 has not been employed for years by the reviewer, but rather that mentioned in a single sentence at the end of paragraph 2, p. 53. Likewise, the stirrer shown in Fig. 11 has long since been replaced by a much more efficient and slightly device employing the same fundamental principle.

The nomenclature employed in designating various types of volumetric errors seemed to the reviewer to leave room for improvement. The use of such terms as "end-point emergence" without adequate definition did not add to the ease of reading and following the arguments presented.

This book appears to be a valuable if not actually indispensable addition to the library of any microchemist interested in biochemical methods, and a valuable possession as well for the general analyst because of the systematic and original treatment accorded the subject of volumetric errors.

PAUL L. KIRK

Die Methoden der Fermentforschung. (Methods of Enzyme Investigation.) Edited by Prof. Dr. EUGEN BAMANN, Tübingen, and Prof. Dr. KARL MYRBÄCK, Stockholm. Lieferung I. Georg Thieme Verlag, Rosspatz 12, Leipzig C 1, Germany, 1940. ix + 172 pp. 2 figs. 20 × 27.5 cm. Price, RM. 18.

This is one of the most important texts on enzymes that has appeared. Its object is to cover the practical or laboratory side of enzyme chemistry. Something like fifteen more Lieferungen, or numbers, will appear in the future. These will not be sold separately. The number of authors contributing is 124; the total number of pages will amount to about 3500 and there will be 800 illustrations. The contributors have been working upon their articles for the past two to three years, but every effort is being made to present material which is strictly up to date. The publication is well planned and is an ambitious undertaking. The subject matter covers a field which is often difficult to seek out in the literature and about which the non-biological chemist is altogether too inadequately informed. The printing and typography are excellent.

This first Lieferung describes the preparation, properties and testing of important substrates, intermediate products and end-products of enzyme action. It covers esters, lipids, tannins, chlorophyll, phosphorus compounds and carbohydrates. The next Lieferung will include nucleic acids, proteins and their hydrolysis products and amides. The individual articles in this first Lieferung are written in a straightforward and unbiased manner in a sincere attempt to give the reader a correct idea of the facts.

In the introduction Bamann and Myrbäck present a general discussion of the nature and action of ferments, or enzymes. This is followed by a description of methods employed with enzymes and by an explanation of enzyme terminology. This is admirably done. Naturally enough, the introduction contains certain points of view which are of debatable nature. The isolation of pancreatic lipase by Bamann and Laeverenz in 1934 is mentioned, but, as far as can be ascertained, no later references are given. The statement is made that older literature contains descriptions of enzymes which contained less protein than recent crystalline enzymes per unit of activity. This is explained as due to an anchoring of prosthetic groups upon smaller protein molecules. The reviewer does not agree with this statement, but is inclined to regard such compounds as artifacts. Lyo- and desmo-enzymes are men-

tioned as instances where more or less protein is united with the prosthetic group. The reviewer is skeptical of the existence of lyo- or desmo-enzymes.

Mention is made of a prosthetic group composed of amino acids for such enzymes as pepsin, trypsin and urease. In this instance it would appear difficult to decide which amino acids would belong to the prosthetic group and which would belong to the protein part of the molecule. The statement is made: "The enzymes are 'Eiweissstoffe' and proteins." This the reviewer fully agrees with. One of the greatest mysteries yet to be explained is why the prosthetic group of an enzyme, sometimes possessing feeble catalytic properties by itself, acquires such extraordinary catalytic activity when united to some specific protein.

The reviewer wholeheartedly recommends "Die Methoden der Enzymforschung." Professors Bamann and Myrbäck deserve praise for their publication.

JAMES B. SUMNER

BOOKS RECEIVED

October 10, 1940–November 10, 1940

- LOUIS J. BIRCHER. "Physical Chemistry, A Brief Course with Laboratory Experiments." Prentice-Hall, Inc., 70 Fifth Avenue, New York, N. Y. 429 pp. \$3.00.
- R. HENRY CRIST. "A Laboratory Course in General Chemistry." McGraw-Hill Book Co., Inc., 330 West 42nd St., New York, N. Y. 219 pp. \$1.50.
- HORACE G. DEMING. "Fundamental Chemistry. An Elementary Textbook for College Classes." John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y. 756 pp. \$3.50.
- CARL J. ENGELDER, TOBIAS H. DUNKELBERGER and WILLIAM J. SCHILLER. "Semi-micro Qualitative Analysis." Second edition. John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y. 305 pp. \$2.75.
- JAMES JEANS. "An Introduction to the Kinetic Theory of Gases." The Macmillan Co., 60 Fifth Avenue, New York, N. Y. (Cambridge, England: At The University Press.) 311 pp. \$3.50.
- J. A. RADLEY. "Starch and its Derivatives." D. Van Nostrand Co., Inc., 250 Fourth Avenue, New York, N. Y. 346 pp. \$6.00.
- GEORGE HOLMES RICHTER. "Laboratory Manual of Elementary Organic Chemistry." John Wiley and Sons, Inc., 440 Fourth Avenue, New York, N. Y. 128 pp. \$1.25.
- CLARENCE E. ROSE. "Matrix and Tensor Algebra for Engineers and Chemists." Chemical Publishing Co., Inc., 148 Lafayette St., New York, N. Y. 143 pp. \$4.00.
- ATHERTON SEIDELL. "Solubilities of Inorganic and Metal Organic Compounds." Third edition. Vol. I. D. Van Nostrand Co., Inc., 250 Fourth Avenue, New York, N. Y. 1698 pp. \$12.00.