

(methanol, $c = 0.33$), *Anal. Calcd.* for $C_{27}H_{43}NO_2$: C, 78.40; H, 10.48; N, 3.39. Found: C, 76.41; H, 10.45; N, 3.42, mixed melting point and infrared spectrum identical with that given by an authentic specimen of solasodine; picrate, m.p. 141–142°, *Anal. Calcd.* for $C_{33}H_{46}N_4O_9$: C, 61.66; H, 7.21; N, 8.72. Found: C, 62.00; H, 7.30; N, 8.95.

The partial synthesis of spiroaminoketal steroid alkaloids by transformation from the sapogenins tigogenin, sarsasapogenin and diosgenin, will be reported shortly.

The author is indebted to Mr. Louis S. Harris and Miss V. Cecile Politis for preparative assist-

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BOOK REVIEWS

Colloid Science. Volume I. Irreversible Systems. By H. R. KRUYT, Formerly Professor of Physical Chemistry, Utrecht University, President of the National Council for Applied Scientific Research in the Netherlands, T.N.O., The Hague; English translation by Dr. L. C. Jackson (Bristol). Elsevier Publishing Company, 402 Lovett Blvd., Houston, Texas, 1952. xx + 389 pp. 16.5 × 25 cm. Price, \$11.00.

This treatise on colloid science was "for practical reasons" divided into two volumes. Volume I deals with *irreversible systems*, hydrophobic colloids, and Volume II with *reversible systems*, macromolecular and association colloids. Work was started on these volumes prior to World War II but as pointed out by the editor "through accidental circumstances" Volume II was completed and published in 1949 three years before the appearance of Volume I. The volumes were written by the Editor and Dutch collaborators so that the work as a whole is largely representative of the interests and researches of the highly regarded and the highly productive Dutch School of Colloid Science.

Volume I is divided into nine sections. Section I, written by Kruyt, consists of 57 pages, 15 of general introduction discussing the scope and history of colloid systems according to the "material of the particles," followed by 42 pages of discussion of general properties of colloid systems. Many of the topics of this introduction are further developed in later sections. Section II, 51 pages written by J. Th. G. Overbeek and entitled Phenomenology of Lyophobic Systems, is general in nature and relates to methods of preparation of lyophobic sols, to purification of sols, and to properties and stability of sols with theoretical considerations on stability and flocculation. The content of this section is material one might hope to find in a portion of any well organized college text book on colloids. Section III, 25 pages written by G. H. Jonker, deals with a condensed treatment of optical properties of colloidal solutions. Sections IV to IX inclusive, all by Overbeek deal with (IV) Electrochemistry of the double layer, (V) Electrokinetic phenomena, (VI) Interaction between colloidal particles, (VII) Kinetics of flocculation, (VIII) Stability of hydrophobic colloids and emulsions, and (IX) Rheology of lyophobic systems. These sections include material from the fundamental and more generally accepted researches which have been made in the fields represented. Each of these sections is well organized, interestingly presented and ably treated by the author whose own research interests happen to be closely related to these fields.

A minor criticism of the English language edition of Volume I is that, though the translation is adequate for understanding, one is often conscious of reading a transla-

tion from a foreign language. The main criticism which will be made of this volume is that many important areas of colloid science are not represented here nor in Volume II. The authors are fully aware of this shortcoming and state in the preface "The present work has no pretention of being a complete thesis. It is only meant to be a guide to the domain of colloid science with the (object) of providing a stimulus in the branch of research with which it deals." The editor and his collaborators have succeeded in their objective. This volume, and its companion volume, will serve to stimulate interest in this continuously expanding field of science. These volumes will probably prove to be of special value as reference books and should be available to all teachers and research workers whose interests carry them into the realm of colloid science.

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Neutron Cross Sections. A Compilation of the AEC Neutron Cross Section Advisory Group. By D. J. HUGHES, Chairman, Advisory Group. Office of Technical Services Department of Commerce, Washington, D. C. 1952. xiv + 186 pp. 42 × 28 cm. Price, \$1.00.

This book contains a table giving thermal neutron cross sections and, in addition, a set of experimental curves showing the variation of nuclear cross section (usually σ total) as a function of energy for isotopes scattered throughout the periodic table. In the Introduction the compilers state that they have not included all known data but have assembled what in their judgment is a set of "best values." Since the experimental information now available in this field is far from complete, the curves necessarily cover only a portion of the neutron energy spectrum, generally in the region under 10 Kev., although some extend to 100 Mev.

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Annual Review of Physical Chemistry. Volume 3. By G. K. ROLLEFSON, Editor, University of California and R. E. POWELL, Associate Editor, University of California. Annual Reviews, Inc., Stanford, California. 1952. x + 416 pp. 16 × 23 cm. Price, \$6.00.

About a half century ago, it became evident that a scientist could not keep informed about all the published work of

interest to him without some kind of help. This problem was solved in part by expansion of abstract facilities which enabled the scientist to find readily the literature he wanted. However, we have now reached another stage of development in which it appears that even abstract services won't do; now we need someone to digest the material for us, either to keep us informed about subjects of borderline interest, or to help us decide which of the many abstracted articles are going to be most useful. Widespread use of reviews promises such relief, and, in particular, the third volume of the Annual Review of Physical Chemistry provides excellent summaries of topics of current interest to physical chemists.

For the most part, the third volume is concerned with work reported in 1951, although there are some departures from this plan. The book consists of nineteen chapters, of which six deal with molecular structure and closely related topics, four with thermodynamics including solutions, three with photochemistry and kinetics, three with nuclear, radiation and isotope chemistry, and one each for polymeric electrolytes, ion exchange and polarography. The variety of subjects covered appears to be adequate, so this volume in conjunction with earlier ones should prove most helpful to those who want to be brought up to date on some physical chemical subject.

Since the book was written by numerous authors, considerable variations in style of writing and in effectiveness of presentation are found. On the whole, however, the reviews have been well written and the topics carefully selected. Some of the reviews plunge into their subjects with little or no introduction and, accordingly, are not as useful as one might wish for those who are not specialists in the field. A few of the reviews, unfortunately, approach collections of references, and although these can be quite helpful to those who intend to do work in the subjects covered, they are not particularly readable for those who want summaries of unfamiliar topics.

The volume starts out with one of its best chapters, namely, that on "Quantum Theory, Theory of Molecular Structure and Valence" by C. A. Coulson. Whenever necessary, the author of this chapter made appropriate reference to work done prior to 1951, thus constructing a coherent story and simultaneously making it easy for the reader to become attuned to the subject. It is to be hoped that future reviewers will likewise feel free to introduce their subjects with a little background for the benefit of the great majority of readers.

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BOOKS RECEIVED

March 10, 1953–April 10, 1953

"COMPTES RENDUS DE LA DEUXIEME REUNION ANNUELLE TENUE EN COMMUN AVEC LA COMMISSION DE THERMODYNAMIQUE DE L'UNION INTERNATIONALE DE PHYSIQUE." "Changements de Phases." Paris, 2-7 Juin 1952. Societe de Chimie Physique, 13 rue Pierre Curie, Paris-V^e, France. 1952. 486 pp. 3.750 fr.

LAWRENCE S. DARKEN AND ROBERT W. GURRY. "Physical Chemistry of Metals." McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, N. Y. 1953. 535 pp. \$8.50.

"DISCUSSIONS OF THE FARADAY SOCIETY." "Radiation Chemistry." The Faraday Society, The Aberdeen University Press, Ltd., 6 Upper Kirkgate, Aberdeen, England. 1952. 319 pp. 35 s.

JESSE P. GREENSTEIN AND ALEXANDER HADDOW (edited by). "Advances in Cancer Research." Volume I. Academic Press Inc., Publishers, 125 East 23rd Street, New York 10, N. Y. 1953. 590 pp. \$12.00.

MICHAEL LEDERER. "Progres Recents de la Chromatographie." Deuxieme Partie—Chimie Minerale. Hermann and C^{ie}, 6 Rue de la Sorbonne, Paris, France. 1952. 131 pp. 1.200 Fr.

B. ROSEN (edited by). "Constantes Selectionnees. Atlas des Longueurs d'onde caracteristiques des Bandes d'emission et d'absorption des Molecules Diatomiques." Hermann and C^{ie}, 6 Rue de la Sorbonne, Paris V^e, France. 1952. 389 pp. 5.600 Fr.

ROBERT W. SCHRAGE. "A Theoretical Study of Interphase Mass Transfer." Columbia University Press, 2960 Broadway, New York 27, New York. 1953. 103 pp. \$3.50.

E. SEGRÈ (edited by). "Experimental Nuclear Physics." Volume I. John Wiley and Sons, Inc., 440 Fourth Avenue, New York 16, N. Y. 1953. 789 pp. \$15.00.

JAMES B. SUMNER AND G. FRED SOMERS. "Chemistry and Methods of Enzymes." Third Edition. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1953. 462 pp. \$7.50.

JAMES L. TULLIS (edited by). "Blood Cells and Plasma Proteins. Their State in Nature." Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1953. 436 pp. \$8.50.