

The book will be useful to anyone teaching or wanting to teach a crystal physics course. It will be of little use to a research worker wanting to measure a particular physical property of a crystal in which he is interested. The need for a book which would present crystal physics in a form which would be useful to him is very great.

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Tables de Constantes et Données Numériques. Organisme Affilié de l'Union Internationale de Chimie Pure et Appliquée. No. 7. Constantes Sélectionnées. Diamagnétisme et Paramagnétisme. By G. FOËX, Professeur à l'Université de Strasbourg, Correspondant de l'Institut. **Relaxation Paramagnétique.** By C.-J. GORTER, Professeur à l'Université de Leyde, and L.-J. SMITS, Masson et Cie., 120, boulevard Saint-Germain, Paris 6^e, France. 1957. 317 pp. 21.5 × 27.5 cm. Price, broché, 8,800 fr.; cartonné toile, 9,700 fr.

This volume extends the prime service underwritten by la Commission Internationale des Tables de Constantes, by UNESCO, and by le Centre National de la Recherche Scientifique. The larger part of the present volume is due to the exquisitely painstaking efforts of Professor Foëx. The tables include appropriate introductory matter; magnetic susceptibility data for a host of elements, compounds, minerals and mixtures; and various substances under a wealth of different conditions. Principal susceptibilities are also given for many crystalline solids. The section on paramagnetic resonance is brief and, as expected, authoritative. Ferromagnetism is not included in this volume.

Here and there a doubt may be raised as to why one author's work was preferred to another's; as to the significance of susceptibility data on many minerals; as to the very one-sided view presented concerning transition group oxides and supported oxides and metals; and as to the lack of warning concerning the ubiquitous effects of hydrolysis in aqueous solutions. The truth of the matter is, of course, that in any such tables of experimental data the figures presented should be considered the beginning rather than the end of a search. Professor Foëx knows this and in most, if not all, cases references are included to alternate or more extensive treatises. The publishers rather apologetically admit that for typographical reasons the number of references after each datum is limited to five. A valuable feature is the author index containing about 1400 names. Any worker in the field of magnetic susceptibilities may at once determine whether justice has been done his own publications.

The work is indispensable for anyone interested in the application of magnetic susceptibilities to chemical problems. Authors, publishers, and underwriting organizations are all to be congratulated.

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P. W. SELWOOD

The Chemical Dynamics of Bone Mineral. By WILLIAM F. NEUMAN and MARGARET W. NEUMAN. The University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. 1958. xi + 209 pp. 14.5 × 22 cm. Price, \$5.00.

The Neumans have produced a book which will almost certainly furnish a center for crystallization of interest in the chemistry of the calcified tissues. The small group of devoted investigators in this field will now receive additional recruits as a result of the impact of this book on the minds of investigators who, heretofore, have not seen the calcified tissues as anything more than static stones. This monograph brings together not only a judicious summary of a vast array of observations, but assembles also the authors' sound interpretations and imaginative projections to the circumstances in living systems.

The book consists of seven chapters. The first chapter is a clearly written application of modern concepts of solution chemistry to calcium and phosphate ions as they exist in complex biological fluids. The second chapter deals in a precise and quantitative fashion with the interrelations of

the ion products in body fluids with the precipitation and dissolution of the bone mineral. The far reaching and significant biological implications of the supersaturation of body fluids with respect to the bone mineral are thoughtfully pointed out. The variable stoichiometry of the bone mineral within the apatite structure is reasonably explained in the third chapter by synthesizing three diverse concepts which have been separately championed. The fourth and fifth chapters deal mainly with the exchange and substitution of ions between the mineral and its fluid environment and with the influence of the crystal surface and of the ionic composition of its hydration shell on these processes. Practically all of the relevant studies with radioisotopes are brought together in these chapters to describe on a physico-chemical basis the turnover of the mineral ions of bone. The sixth chapter gives the observations and arguments to account for the mechanisms of parathyroid hormone and vitamin D actions through the effects of these substances in modifying bone cellular activity so as to alter the ionic composition of the fluid in intimate contact with the bone mineral crystals. The evidence for citrate as the metabolic product of the cells of importance in this regard is clearly presented. The final chapter describes a mechanism of calcification which excludes the necessity for a booster mechanism for producing a local increase of concentration of phosphate ions, *i.e.*, the Robison scheme of hydrolysis of phosphate esters by phosphatase. The mechanism described involves the seeding of mineral crystal formation by the organic matrix of bone from the existing concentrations of calcium and phosphate ions in body fluids.

The volume is well printed and bound. Only one typographical error has been noted. The literature citations are ample and are correct, but they are inconveniently arranged by chapters as a separate section at the end of the book.

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Interscience Monographs in Physics and Astronomy.

Edited by R. E. MARSHAK, University of Rochester.
Volume 1: The Fundamental Constants of Physics. E. RICHARD COHEN, Atomic International, A division of North American Aviation, Inc., Canoga Park, Calif., KENNETH M. CROWE, Radiation Laboratory, University of California, Berkeley, Calif., and JESSE W. M. DUMOND, Norman Bridge Laboratory of Physics, California Institute of Technology, Pasadena, Calif. Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1957. xii + 287 pp. 16 × 23.5 cm. Price, \$7.50.

The title of this book is indeed an appropriate one with which to inaugurate a series of monographs in Physics and Astronomy. The authors are well known for their contributions to this field and have made manifestly evident their appreciation of their predecessor in this field, Prof. R. T. Birge, to whom the book is dedicated. Their philosophy and objectives are stated in the preface and in the first chapter titled Introduction. This is followed by seven chapters entitled: 2, Arbitrarily Defined Physical Units and Standards; 3, Classical Measured Constants and Units; 4, Masses of Atoms and Mesons; 5, History of the Atomic Constants; 6, Postwar High-Precision Measurements; 7, The Method of Least Squares; 8, Least Squares Adjustment of the Atomic Constants. Each chapter is followed by what seems a fairly complete set of references and there is an ample author and subject index.

In part, this reviewer found the book a vivid study in contrast. On the one hand there is exhibited a very critical approach in both the study of experiments and their analysis in the reduction of constants on what can be referred to as the "atomic scale," as contrasted to the treatment of physical parameters on the "nuclear scale," *e.g.*, the masses, lifetimes and properties of the various complex of mesons currently constituting the nuclear zoo. It is readily admitted of course that the latter field is currently rapidly developing and a really critical study would be difficult to carry through at the present time, but it would seem that some approach other than the mere listing of large numbers of experimental results with essentially no discussion, could have been arrived at. There does appear to this reviewer that there have been two serious omissions. Nowhere in the book does there appear any statement (or even an al-

lusion to the existence of) concerning the magnitude of the nuclear coupling constant and the β -decay interaction constant. These play an analogous role in nuclear forces and β -decay to that played by e in the electromagnetic interaction. Though it is true that they are not constants in the sense that their values are currently known, they are parameters of fundamental importance in nuclear physics and their values will certainly be prominent in some future listing of physical constants. It would appear that some statement concerning their order of magnitude and their role could have been made. On the nuclear scale the book seems lacking.

On the non-nuclear scale (omitting chapter 4) "The Fundamental Constants of Physics" is satisfactory. Chapters 2, 3 and 5, which are primarily historical, make very interesting, and in some cases illuminating, reading. Chapter 6 is an adequate summary of the postwar advances (but requires more than a casual acquaintance with modern physics for full appreciation) and chapter 7 on the method of least squares is a highly lucid account of this technique which is well worth reading. The last chapter renders an account of the application of this method to the adjustment of the atomic constants and contains tables of the adjusted values which are quite a valuable adjunct.

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MORTON F. KAPLON

Foam Stability. A Fundamental Investigation of the Factors Controlling the Stability of Foams. By DR. A. J. DE-VRIES, former Staff-member of the Rubber-Stichting. Rubber-Stichting, Oostsingel 178, Delft, The Netherlands. 1957. 88 pp. 16 × 24 cm. Price, hfl. 6.—

This small book contains detailed treatment of the fundamental principles relating to the highly specialized topic of the structure and stability of foams. The author has had extensive experience in the Rubber-Stichting Laboratories at Delft where he has been engaged in extensive researches on properties of foam including foam stability and gelation of foam. The general trend of his researches might be anticipated when one considers the fact that he has had close association with the Colloid Chemistry center at Utrecht.

A fairly good idea of the general contents of this book can be obtained from a glance at its table of contents. The work is divided into five parts as follows: I, Structure and stability of foams; II, Gas diffusion in foams; III, Spontaneous foam destabilization resulting from gas diffusion; IV, Kinetics and activation energy of film rupture; V, Mechanism of film rupture.

The author speaks with authority on the probable mechanism of the physical changes which occur within foams such as bubble growth, bubble shrinkage, bubble collapse etc. These topics are presented and directly related to the influence of surface tension, interfacial tension and changes in concentration through the process of adsorption. The changes postulated and observed are subjected to mathematical treatment. The author presents considerable experimental data to illustrate and to support the theoretical postulates presented.

This book is well written and will be of special value to those who have interest in the rather limited field of highly viscous foams such as are represented by foam-rubber and the like. For this limited field this book represents a very worthwhile contribution.

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F. E. BARTELL

BOOKS RECEIVED

April 10, 1958-May 10, 1958

G. CHARLOT, Edited by. "Modern Electroanalytical Methods. Proceedings of the International Symposium

on Modern Electrochemical Methods of Analysis, Paris 1957." Sponsored by the I.U.P.A.C.'s Sections of Analytical and Physical Chemistry (C.I.T.C.E.). D. Van Nostrand Company, Inc., 126 Alexander Street, Princeton, New Jersey. 1958. 186 pp. \$4.95.

J. W. COOK, Editor. "Progress in Organic Chemistry." Volume 4. Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. 256 pp. \$8.80.

FRIEDRICH CRAMER. "Papierchromatographie." Vierte, stark erweiterte Auflage. Verlag Chemie, G.m.b.H., Weinheim/Bergstr., Germany. 1958. 215 pp. DM 21.—

J. T. EDSALL. "Actualités Biochimiques." No. 20. "Aspects Actuels de la Biochimie des Acides Aminés et des Protéines." Publiées sous la direction de MARCEL FLORKIN ET JEAN ROCHE. Masson et Cie., 120 Boulevard Saint-Germain, Paris 6^e, France. 1958. 156 pp. 2,000 fr.

FREDERICK R. EIRICH, Edited by. "Rheology. Theory and Applications." Volume II. Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. 591 pp. \$18.00.

H. FRÖHLICH. "Theory of Dielectrics. Dielectric Constant and Dielectric Loss." Second Edition. Oxford University Press, 114 Fifth Avenue, New York 11, N. Y. 1958. 192 pp. \$4.80.

P. H. GROGGINS, Editor-in-Chief. "Unit Processes in Organic Synthesis." Fifth Edition. McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 36, N. Y. 1958. 1070 pp. \$17.50.

J. J. HARWOOD, HENRY H. HAUSNER, J. G. MORSE AND W. G. RAUCH, Edited by. "The Effects of Radiation on Materials." Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1958. 355 pp. \$10.50.

J. BARTON HOAG, Editor and Contributor. "Nuclear Reactor Experiments." By the Staff of Argonne National Laboratory, operated by the University of Chicago for the United States Atomic Energy Commission. D. Van Nostrand Company, Inc., 126 Alexander Street, Princeton, New Jersey. 1958. 480 pp. \$6.75.

C. A. JACOBSON, Compiled by, and CLIFFORD A. HAMPEL, Edited by. "Encyclopedia of Chemical Reactions." Volume VII. "Strontium, Sulfur, Tantalum, Technetium, Tellurium, Terbium, Thallium, Thorium, Thulium, Tin and Titanium." Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1958. 479 pp. \$12.75.

W. KLYNE AND P. B. D. DE LA MARE, Editors. "Progress in Stereochemistry." Volume 2. Academic Press, Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. 323 pp. \$8.80.

H. J. LIPKIN, Edited by. "Proceedings of the Rehovoth Conference on Nuclear Structure held at the Weizmann Institute of Science, Rehovoth. September 8-14, 1957." Under the Auspices of the International Union of Pure and Applied Physics (IUPAP). Interscience Publishers, Inc., 250 Fifth Avenue, New York 1, N. Y. 1958. 614 pp. \$12.50.

A. M. LOVELACE, DOUGLAS A. RAUSCH AND WILLIAM POSTELNEK. "Aliphatic Fluorine Compounds." ACS Monograph No. 138. Reinhold Publishing Corporation, 430 Park Avenue, New York 22, N. Y. 1958. 370 pp. \$12.50.

FRANZ RITTER. "Korrosionstabellen metallischer Werkstoffe geordnet nach angreifenden Stoffen." Vierte, erweiterte Auflage. Springer-Verlag, Mülkerbastei 5, Wien I, Austria. 1958. 290 pp. Ganzleinen \$11.65.