BOOK SECTION

New Publications

The Encyclopedia of Electrochemistry, by C.A. Hampel (Ed), published by Reinhold Publishing Corpn., New York, 1206 pages, $ 35.

Australasian Corrosion Directory, 1964-1965 Ed, published by Australasian Corrosion Association, North Sydney, N. S. W., 460 pages, 35 sh.

Electrochemistry of Molten and Solid Electrolytes, Vol. 2, by M. V. Smirnov (Ed), Consultant Bureau Enterprises Inc., New York, 1964, 96 pages, $17.50.

Chemistry in Engineering, by L.A. Munro, published by Prentice-Hall Inc, Englewood Cliffs, N.J., U.S.A., 460 pages, $ 9.75.

Iron Plating: An Annotated Bibliography, by J. B. Goldmann, published by U.S. Atomic Energy Commission, No. NP-13629, 94 pages, 1963.

Advances in Analytical Chemistry and Instrumentation, by C. N. Reilley (Ed), published by Interscience Publishers Inc., New York, 1964, 523 pages, $ 15.

Discussions of the Faraday Society, No. 37, Chemical Reactions in the Atmosphere, published by the Faraday Seciety, London, 1964, 225 pages.

Recent Progress in Surface Science, Vol. 2. by J. F. Danielli, K. G. A. Pankhurst and A. C. Riddoford (Ed), published by Academic Press Inc., New York, 1964, 541 pages, $ 18.

Progress in Materials Science, Vol. 10, by B. Chalmers (Ed), published by Macmillan Co., New York. 1964, 391 pages, $ 20.

Handbook of Applied Instrumentation, by D.M. Considane and S.D. Ross (Ed), published by McGraw-Hill, 1094 pages, $ 32.50.

The Chemical Stability Constants of Metal Ion Complexes, published by the Chemical Society, London, Special Publication No. 17, 1964, 754 pages, £ 8.

Elements of Materials Science, by L. H. Van Vlack, published by the University of Michigan, 2nd ed, 1964, 445 pages.

Proceedings Second International Congress on Metallic Corrosion — 1963, published by National Association of Corrosion Engineers, Houston, U. S. A., 1965, about 1000 pages, $ 50.75.

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Australasian Corrosion Enginerring, Vol. 8, No. 10-12, 1964, North Sydney, N.S.W.

UN Weekly Newsletter, Vol. 12, No. 49, 50, 1964; Vol. 13, No. 1-9, UN Information Service, New Delhi.

Science and Engineering, Vol. 17, No. 9-11, 1964, ISE, Calcutta.

Zinc Abstracts, Vol. 12, No. 9-11, 1964, ZDA, London through Indian Lead Zinc Information Centre, Calcutta.

Electroplating and Metal Finishing, Vol. 17, No. 11, 1964; Vol. 18, No. 1, 2, 1965, Robert Draper Ltd., Teddington, Middx. England.

British Patents, Division H1, London.

Australian Chemical Engineering, Vol. 5, No. 10-12, 1964, North Sydney, N.S.W.

Insdoc List—Current Scientific Literature, Vol. 11, No. 24, 1964; Vol. 12, No. 1-3, 1965, New Delhi.

Corrosion Bulletin, Vol. 1, No. 6, 1964; Vol. 2, No. 1, 1965, Jamshedpur.

CSIR News, Vol. 14, 23, 24, 1964; Vol. 15, No. 1, 2, 1965, New Delhi.

Metal Fininishing J, Vol. 10, No. 119-121, 1964, Fuel and Metallurgical Journals Ltd., London.

Industrial Finishing, Vol. 16, No. 197-199, 1964, Arrow Press Ltd., London.

Battelle Technical Review, Vol. 13, No. 11, 12, 1964, Battelle Memorial Institute, Columbus.

Review of Metal Literature, Vol. 21, No. 10-12, 1964, ASM, Metals Park, Ohio.

Lead Abstracts, Vol. 4, No. 9-11, 1964, LDA, London, through Indian Lead Zinc Information Centre, Calcutta.

OSU Research Review, Vol. 1, No. 2, 3, 1964, Ohio State University, Columbus, Ohio.

Chemical Age of India, Vol. 15, No. 12, 1964; Vol. 16, No. 1, 2, 1965, Technical Press Publications, Bombay.

Corrosion Prevention and Control, Vol. 11, No. 11, 12, 1964; Vol. 12 No. 1, 1965, Scientific Surveys Ltd., London.

Corrosion Technology, Vol. 11, No. 11, 12, 1964, Grampian Press, Ltd., London.

ISI Bulletin, Vol. 16, No. 12, 1964, New Delhi.

Metals Handbook, 8th Ed., Vol. 2 — Heat Treating, Cleaning and Finishing, published by American Society for Metals, Metals Park, Ohio, 1964, 708 pages, $ 20.

Wiggin Nickel Alloys, No. 78, 1964; No 79, 1965, Henry Wiggin and Co. Ltd., Birmingham.

The Nickel Bulletin, Vol. 37, No. 9-11, 1964, The International Nickel Co. (Mond) Ltd., London.

Materials Protection, Vol. 3, No. 11, 12, 1964, NACE, Houston.

Encyclopedia of Surface-Active Agents, Vol 11, by J. P. Sisley, translated from the French and revised by P. J. Wood, published by Chemical Publishing Co., Inc. New York, 1964, 501 pages, $ 16.50.

Inco-Mond Nickel, No. 9, 1964. The International Nickel Co. (Mond) Ltd., London.

Metal Finishing, Vol. 62, No. 12, 1964; Vol. 63, No. 1, 1965, Metals and Plastics Publications Inc., Westwood, N.J., USA.

Modern Aspects of Electrochemistry No. 3, by J. O'M. Bockris and B. E. Conway (Ed), published by Butterworths, London, 1964, 455 pages, 95 sh.

Corrosion and Protection of Metals, published for the Institution of Metallurgists, London by Iliffe Books Ltd., London, 1965, 130 pages, 27sh 6d.

The Aluminium Courier, No. 68, 1964, Aluminium Federation, London.

Electro-Technology, Vol. 8, No. 4, 1964, Society of Electronic Engineers, Bangalore.

Indian Science Abstracts, Vol. 1, No. 1, 1965, Insdoc, Delhi.

Florida Engineering News, Vol. 6, No. 4 1964, Florida Engineering and Industrial Experiment Station, Gainesville, U.S.A.

Physical Chemistry, by D. F. Eggers Jr., N.W. Gregory, G. D. Halsey Jr and B. S. Robinovitch, published by John Wiley and Sons Inc., New York-London-Sydney, 1964, 783 pages, $ 9.95.

Inorganic Reaction Mechanisms, by J. O. Edwards, published by W. A. Benjamin Inc, New York-Amsterdam, 1964, 190 pages, $ 7.70.

NML Technical Journal, Vol. 6, No. 4, 1964, Jamshedpur.

Cobalt, No. 25, 1964, Cobalt Information Centre, Brussels.

Quarterly Bulletin of Electric Energy Statistics for Europe, Vol. 9, No. 3, 1964, UN, Geneva.

Quarterly Bulletin of Steel Statistics for Europe, Vol. 15, No. 2, 1964, UN, Geneva.

Indian Chemical Directory, 8th Ed, 1965, published by Technical Press Publications Bombay, 148 pages, Rs. 15.

Information News Letter, Vol. 3, No. 4, 1964, CSIR, New Delhi.

Catalogue of Indian Chemical Plant — 1965, published by Technical Press Publications Bombay, 80 pages + annexures, Rs. 15.

Corrosion, Vol. 20, No. 11, 1964, NACE, Houston, U.S.A.

Journal of the Indian Institute of Science, Vol. 47, No. 1,1965, Bangalore.

Science Library Bibliographical Series No. 789, 1964, Science Museum, London.

BOOK REVIEWS

Automatic Methods in Volumetric Analsyis, *by,* D. C. M. Squirrell, published by Hilger & Watts Ltd., London, 1964, 201 pages, 42 sh.

A variety of automatic recording type of instruments have come into vogue recently as tools of investigation for economising time and labour of a chemist. Volumetric methods of analysis occupy a unique position in analytical chemistry which involves the detection of the end point in a titration by an individual chemist. It has been realised that the registration of the end point becomes more formidable particularly in non-aqueous media. A successful attempt has been made by Mr. Squirrell to focus the attention of chemists for the necessity of adopting automatic methods (partial or complete) even in volumetric methods and their limitations in 7 chapters of the book under review. These chapters deal with titrations to preset end points followed by full-scale automatic potentiometric titrations in

aqueous and non-aqueous media. Some applications of spectrophotometric, turbidimetric, thermo-metric, conductometric, amperometric and other miscellaneous automatic electrometric procedures have also been dealt with. Although there are quite a few books on instrumentation for automatic devices, there is a need for a book which gives a good introduction to automatic methods in volumetric analysis. It is a longfelt need and the present publication is a welcome addition. Each chapter is adequately illustrated, and references to original papers provide guidance for further details The book is complete with author index and subject index.

This small volume written by an expert with a long experience in an industrial laboratory furnishes useful tips even for beginners who plan to embark on a programme with automatic devices in volumetric methods of analysis.

—A.R.V.

Limitations of Detection in Spectrochemical Analysis, published by Hilger & Watts Ltd., London, 1964, 135 pages, 12sh 6d.

Several excellent books have appeared on spectro-chemical analysis; but this monograph remains unique covering only a very specialized aspect of spectrochemical analysis. This book is a collection of papers presented at a conference held at the University of Exeter in July 1964. Eleven papers are presented covering the limitations of detection in a wide range of methods of spectrochemical analysis. It starts with a good non-mathematical introductory paper on the limitations of detection in spectro-chemical analysis and discusses the definition and significance of limit of detection, factors affecting the limit of detection and the methods of improvement of the limit. This chapter is followed by several papers covering limitation of detection of trace elements by x-ray fluorescence method, mass spectrometric method etc. The usefulness of these methods in deciding the ultimate limit of detection in inorganic compounds has been discussed in great detail in chapter 9. Finally a brief summary is given of the limit of detection of spectrochemical methods in metallurgy.

The book is produced by an offset lithographic process in the best possible manner. Though there are a number of typographical mistakes, they do not break the continuity of thought. The publication will no doubt be quite useful to the routine analyst as well as to the research chemist interested in trace element analysis.

—S.R.Y.

Modern Aspects of Electrochemistry, No. 3, *by* J. O'M'. BOCKRIS and B. E. CONWAY (Ed), published by Butterworths, London, 1964, 455 pages, 95sh.

This publication is the third in the series dealing with the recent advances in certain topics in electrochemistry. The earlier volumes have established themselves as advanced treatises and reference books in this field.

The present book covers (1) Theories of elementary homogeneous electron-transfer reactions, (2) Proton solvation and proton transfer processes in solution, (3) Adsorption of organic compounds at electrodes, (4) The mechanism of the electrodeposition of metals and (5) The behaviour of intermediates in electrochemical catalysis. Two of the authors are well known for their contributions in electrochemistry. In each case the subject matter has been dealt with exhaustively, with special reference to the theoretical aspects and the recent work. There are a large number of references right upto 1964, in every chapter. However, the initials of the authors should have been given. A sample check brings out a spelling mistake—Leidheiter in place of Leidheiser—reference 117, page 344. There is a subject index in the end.

The treatment of the topics is excellent and maintains the standards of volumes 1 and 2. The price is moderate. There is no doubt that this monograph will be a 'best-seller' in the field. It is strongly recommended as a 'must' to research students, physical chemists and electrochemists.

—T.L.R.

Corrosion and Protection of Metals, Published for the Institution of Metallurgists *by* ILIFFE BOOKS LTD., LONDON, 1965, 103 pages, 27sh 6d in U. K.

This monograph is based on the lectures delivered at the Institution of Metallurgists refreshed course held in 1964: (1) The fundamental principles of corrosion, (2) Critical review of corrosion test methods, (3) Selection of materials for corrosion resistance and (4) Control of corrosion in common environments.

The first lecture on the fundamentals of corrosion has been adequately discussed, the treatment being restricted to aqueous environments. It covers the electro-chemical theory as well as the various types of corrosion damage. There are 130 references, including many recent ones, at the end. One is apt to get the impression that the other 3 topics have not been dealt with

in fair detail. But those that are quite familiar with these subjects will readily find that the discussions have brought out all the important points, although somewhat briefly. Testing methods are of great help in the choice of a material or a process, and the highlights have been adequately outlined in the second lecture. The next lecture on corrosion resistant materials has also touched upon the economic aspects. A very wide range of materials are available today for the corrosion and design engineers, and the inclusion of some references would have served as a ready source of information specially for those who cannot keep in touch with the rapid progress in new materials. The last lecture is concerned with the various corrosive environments and corrosion control methods. Anodic protection, which is quite a new tool, has also been mentioned. There is a subject index at the end of the book.

This collection of lectures makes a concise and excellent volume on the principles of metallic corrosion and the practice of corrosion preventive methods. It will certainly be a very useful publication for metallurgists, electrochemists, engineers and others interested in corrosion and its prevention.

—T.L.R.

Inorganic Reaction Mechanisms, *by* J. O. EDWARDS, published *by* W. A. BENJAMIN Inc., New York—Amsterdam, 1964, 190 pages. $ 7.70.

The recent resurgence in the field of inorganic chemistry stems primarily from the application of physics and physical chemistry concepts to inorganic problems. Consequently, the need to familiarize with the physical concepts as with descriptive information is felt by students and active research workers in the field. The book which is one of five in the *Physical Inorganic Chemistry* series edited by R. A. Plane and M. J. Sienko, describes the subject matter in a clear and critical manner. The first three chapters contain a stimulatory account of linear free-energy relations to serve as an introduction. Chapters 4-9 deal with nucleophilic displacements in square planar, octahedral and peroxo compounds of phosphorus, electron-transfer reactions, reactions of oxyanions and free-radical reactions. The tenth and last chapter refers to a few unsolved problems. An understanding of reaction kinetics and thermodynamics and of organic reaction mechanisms aside inorganic chemistry is implied. It should be read by every student of modern inorganic chemistry. It could be prescribed for study in the university classes.

—P.L.N.

Encyclopedia of Surface-Active Agents, Vol.II *by* J. P. SISLEY translated from French and revised by P. H. Wood, published *by* Chemical Publishing Company, Inc., New York, 1964, 501 pages, $ 16.50.

J. P. Sisley is well known to textile chemists, and P. J. Wood should be congratulated for his painstaking efforts in translating the book from French to English.

A general survey of development of production has been made in the earlier pages of this book, together with some interesting tables on supply and disposition, and per capita consumption of detergents and synthetic soaps. Further, the first few pages have been allotted for applications of sulfonated oils and modern detergents, properties of surface-active agents, and builders and synergists. The latter portion of the book is devoted to the encyclopedia part in a most systematic way. To those who are interested in details, abbreviations regarding journals and firms dealing with surface-active agents have been listed. This publication will be quite useful for all those concerned with the handling of surface-active agents.

—D.V.S.

Metals Handbook, Vol. 2 — Heat Treating, Cleaning and Finishing, *by* Taylor Lyman (Ed.), published by American Society for Metals (ASM), Metals Park, Ohio, U.S.A., Eighth Edition, 1964, 708 pages, Members $ 10, Non-Members $ 20.

This book on heat treating, cleaning and finishing, in its eighth edition, is the second volume of the ASM Metals Handbook series. Three more volumes are to be published progressively. This handbook provides a detailed coverage of the equipment, control, applicability and results of processes for heat treating, cleaning and finishing. Practical information has been gathered from committees of engineers from industry; 46 committees of technical experts and 672 individuals with particular speciality have contributed their knowledge and experience in this compilation. The amount of information in this volume has increased two fold when compared with the previous edition.

The handbook consists of two major chap-

ters — heat treatment and, cleaning and finishing. The subject matter on heat treating has been presented in eight sections. The subjects in the first four sections have been so arranged that the titles of the section describe the names of the processes, dealing mostly with the processes of heat treating carbon and low-alloy steels, furnace atmospheres and carbon control, case hardening of steel and induction and flame hardening. The next four sections deal with the heat treating of metals other than carbon and low-alloy steel, the titles of the sections referring to the type of metal being heat treated — heat treating cast irons, heat treating of tool steel, heat-treating of stainless steel and heat resisting alloys, and heat treating of non-ferrous metals. The subject matter in all these eight sections has been presented in a different way closer to the present day practice. To achieve this objective profuse illustrations, tables and examples have been resorted to. In this adition sections on heat treating stainless steel, heat resisting alloys and heat treating non-ferrous metals have been expanded considerably. By emphasizing more on industrial practice in heat treating, the authors purposely have omitted discussions on the theoretical metallurgical fundamentals. The editor has stated that the omission is justified due to the avialability of the ASM book, 'Principles of Heat Treatment' 1964, 5th edition.

Chapter on cleaning and finishing consists of seven sections. Out of these, five sections form one group dealing with processes and their primary applications to iron and steel, the titles of these sections being the names of the processes — metal cleaning, mechanical finishing, electroplating, metallic coating processes other than plating and non-metallic coating processes. The section on electroplating has been considerably enlarged with emphasis on process control under shop conditions. As in the heat treating, in this section, a large number of illustrations, tables and examples have been included. The section on metal cleaning is also covered comprehensively. The last two sections in this chapter deal with the cleaning and finishing of metals other than ordinary steel and cast iron — cleaning and finishing of stainless steel and heat resisting alloys and non-ferrous metals. In the chapter on cleaning and finishing, discussions on the theory and fundamental principles involved have been omitted to make the publication a a practical book. An exhaustive index has been included at the end.

This well-written handbook is comprehensive, authoritative and useful source of information on metal working processes. The get-up is excellent and reading is easy. The publishers are to be commended not only for keeping pace with the voluminous data collected, but also for seeing to it that this is not merely a dictionary of data on heat treating and cleaning and finishing, but a very useful handbook for the metallurgists, electrochemists and engineers to keep abreast of the scientific and engineering developments.

—S.K.

Physical Chemistry *by* D. F. EGGERS, Jr., N. W. GERGORY, G. D. HALSEY, Jr. and B. S. RABINOVITCH, published by John Wiley and Sons, Inc., New York—London—Sydney, 1964, 783 pages, $ 9.95.

This text book on physical chemistry is intended for one year course to engineering and science students at the University of Washington. The authors assume a knowledge of calculus and a good background in general physics for science students. Hence the presentation of the topics is based on the foundation of quantum and statistical mechanics.

The book consists of eighteen chapters. The first eleven chapters deal with statistical mechanics, quantum mechanics and thermodynamics. The remaining seven chapters cover applications of these principles—solutions, transport and rate processes, chemical kinetics, scattering and diffraction, crystal structure, molecular spectra resonance phenomena, reaction rates under non-equilibrium conditions and phenomena at interfaces. To emphasize fundamental understanding, physico-chemical principles are applied to data from modern literature and relevant references to researches are made. Towards the end of each chapter more advanced material is presented. Worked problems are presented to clarify the subject at the end of each section and further problems are given to serve as incentive to independent study at the end of each chapter. An appendix, answers to the problems and index are included at the end.

This text book on physical chemistry has been presented in a novel way from the usual texts on this subject. The printing and format, typical of John Wiley publications, are good. This book will be of invaluable help to the students preparing for pre-professional and graduate courses to have a grasp of the principles in physical chemistry.

— S. K.