BOOK SECTION

New Publications

Electrochemistry: Theoretical Principles and Practical Applications, by G. Milazzo, published by Elsevier Publishing Co, London, 1963, 694 pages, 110sh.

Advances in Electrochemistry and Electrochemical Engineering, Vol. 3: Electrochemistry, by P. Delahay (Ed), published by John Wiley & Sons, Inc., New York, 1963, 397 pages, $15.00.

Electrodeposition of Alloys — Principles and Practice, Vol. 1: General Survey, Principles and Alloys of Copper and of Silver; Vol.2: Practical and Specific Information, by A. Brenner, published by Academic Press, New York and London, 1963, Vol.1—714 pages, $24; Vol.2—656 pages (approx), $22.50 (approx)

The Technology of Electroplating in Questions and Answers, by B. Gaida, published by Eugen G. Leuze Verlag, Saulgau/ Wurtt, 1963, 232 pages.

The Influence of Design on Electroplating of Zinc Die Castings, published by American Zinc Institute, New York, 35 pages.

Intercrystalline Corrosion and Corrosion of Metals Under Stress, by I. A. Levin (Ed), published by Leonard Hill Books Ltd, London, 1963, 320 pages, £6 sh6.

Dictionary of Metal Finishing Chemicals, by N. Hall, published by Metals and Plastics Publications Inc, Westwood, N. J., U.S.A., 2nd ed, 119 pages, $5.

Metal Cleaning, by S. Spring, published by Reinhold Publishing Corpn, New York, 1963, 224 pages, $9.75.

Fuel Cells, Vol. 2, by G.J. Young (Ed), published by Reinhold Publishing Corpn, New York, 1963, 225 pages, $8.

Electroluminescence and Related Effects, by H. F. Ivey, published by Academic Press, Inc., New York, 1963, 276 pages, $11.

Publications Received

CSIR News, Vol. 13, No. 12-17, 1963, New Delhi.

British Patents, Group 36, London.

Insdoc List—Current Scientific Literature, Vol. 10, No. 13-18, 1963, New Delhi.

Australian Chemical Engineering, Vol. 4, No. 5-7, 1963, North Sydney, N. S. W.

Comparison of Steel-Making Processes, published by the Economic Commission for Europe, UN, New York, 1962, 83 pages, $1.

Materials Protection, Vol. 2, No. 4-7, 1963, NACE, Houston, U.S.A.

Science and Engineering, Vol. 16, No. 3-6, 1963, ISE, Calcutta.

Australian Journal of Applied Science, Vol. 14, No. 2, 1963, CSIRO, East Melbourne.

Zinc Abstracts, Vol. 21, No. 4-6, 1963, ZDA, London.

Corrosion, Vol. 19, No. 4-7, 1963, NACE, Houston, U.S.A.

Science and Appliance, Vol. 27, No. 6, 1963, The Ohio State University Research Foundation, Columbus, Ohio.

Chemical Age of India, Vol. 14, No. 3-5, 1963, Technical Press Publications, Bombay.

ISI Bulletin, Vol. 15, No. 3, 4, 1963, New Delhi.

Advances in Electrochemistry and Electrochemical Engineering, Vol. 2-Electrochemical Engineering, by C. W. Tobias (Ed), published by John Wiley & Sons, New York, 1962, 300 pages, $12.

Review of Metal Literature, Vol. 20, No. 5-7, 1963, Metals Park, Ohio.

Battelle Technical Review, Vol. 12, No. 5-8, 1963, Battelle Memorial Institute, Columbus, Ohio.

Crerar Metals Abstracts, Vol. 11, No. 6, 7, 1963, The John Crerar Library, Chicago.

Electronic Processes in Materials, by L.V. Azaroff and J. J. Brophy, published by McGraw-Hill Book Co, Inc, New York-San Francisco-Toronto-London, 1963, 462 pages, $10.75.

Metal Finishing, Vol. 61, No. 6-8, 1963, Metals and Plastics Publications Inc, Westwood, N.J., U.S.A.

Lead Abstracts, Vol. 3, No. 5, 6, 1963, LDA, London.

Electroplating and Metal Finishing, Vol. 16, No. 6-8, 1963, Robert Draper Ltd, Teddington, Middx, England.

Corrosion Prevention and Control, Vol. 10, No. 6, 7, 1963, Scientific Surveys London.

Corrosion Technology, Vol. 10, No. 6-8, 1963, Technology Publications Ltd, London.

Metal Finishing Journal, Vol. 9, No. 102-104, 1963, Fuel and Metallurgical Journals Ltd., London.

Industrial Finishing, Vol. 15, No. 180, 181, 1963, Arrow Press Ltd., London.

Cobalt No. 19, 1963, Cobalt Information Center, Brussels.

International Atomic Energy Agency Bulletin, Vol. 5, No. 3, 1963, IAEA Vienna through UN Information Centre, New Delhi.

Florida Engineering News, Vol. 5, No. 2-3, 1963, Engineering and Industrial Experiment Station, Gainseville, Florida, U.S.A.

Journal of the Indian Institute of Science, Vol. 45, No. 3, 1963, I.I.Sc., Bangalore.

The Nickel Bulletin, Vol. 36, No. 4-6, 1963, The International Nickel Co. (Mond) Ltd, London.

Wiggin Nickel Alloys, No. 71, 1963, Henry Wiggin and Co. Ltd, Birmingham.

Philips Light Bulletin, Vol. 10, No. 1, 1963, Calcutta.

Australasian Corrosion Engineering, Vol. 7, No. 6, 7, 1963, North Sydney, N.S.W.

Electro-Technology, Vol. 7, No. 1, 1963, Society of Electronic Engineers, Bangalore.

Science Library Bibliographical Series No. 786, 787, 1963, Science Museum, London.

UNESCO Bulletin, No. 14, 1963, South Asia Science Corporation Office, New Delhi.

Electroplaters' Process Control Handbook, by D. G. Foulke and F. D. Crane (Ed), published by Reinhold Publishing Corpn, New York, 1963, 445 pages, $14.75.

Advances in Electrochemistry and Electrochemical Engineering, Vol. 3: Electro chemistry, by P. Delahay (Ed), published by John Wiley & Sons, Inc, New York, 1963, 397 pages, $15.

The Mechanical Properties of Nickel Alloy Steels at Subzero Temperatures, published by the International Nickel Co. (Mond) Ltd, London, 1963, 73 pages.

Quarterly Bulletin of Steel Statistics for Europe, Vol. 13, No. 4, 1963, Economic Commission for Europe, United Nations, New York.

Inco-Mond Nickel, No. 5, 1963, The International Nickel Co. (Mond) Ltd, London.

BOOK REVIEWS

Advances in Electrochemistry and Electrochemical Engineering, Volume 2—Electrochemical Engineering, *by* C. W. TOBIAS (Ed), published by Interscience Publishers, a division of John Wiley and Sons, New York and London, 1962, 300 pages, $ 12.

The volume in the series maintains the excellent standards of the first volume on electrochemistry. There are five contributions by experts in the field: (1) the scope of electrochemical engineering, (2) conduction in heterogeneous systems, (3 and 4) applications of mass transfer theory—the formation of powdered metal deposits, and electrodeposition on small-scale profiles, and (5) design and scale-up considerations for electrochemical fuel cells.

The treatment of the matter leaves little to be desired and the mathematical approach to the problem has been kept in view throughout. There are exhaustive references. The contents page comes in quite handy at the beginning of each chapter. This concise monograph on electrochemical engineering is strongly recommended as a valuable reference book to chemists, electrochemists and chemical engineers.

— T. L. R.

Advances in Electrochemistry and Electrochemical Engineering, Volume 3—Electrochemistry, *by* P. DELAHAY (Ed), published by Interscience Publishers, a division of John Wiley and Sons, New York and London, 1963, 397 pages, $ 15.

This is the third volume in the series on advances in electrochemistry and electrochemical engineering and covers 5 modern topics on electrochemistry: (1) the, interface between aqueous electrolyte solutions and the gas phase, (2) thermogalvanic cells, (3) metal deposition and electrocrystallization, (4) anodic films, and (5) hydrogen over-voltage and adsorption phenomena. The last chapter is a continuation from volume 1.

The general get-up and presentation of the matter is on the same lines as in the previous 2 volumes: contents page, mathematical treatment and bibliography. The modern concepts in each subject have been very well brought out by experts. There is a general index as well as a

cumulative index for the 3 volumes. This excellent treatise is a 'must' in the reference library of electrochemists, physical chemists and others interested in recent advances in the field of electrochemistry.

— T. L. R.

Electroplaters' Process Control Hand Book, *edited by* D. Gardner Foulke and Francis D. Crane, published, by Reinhold Publishing Corporation, New York, 1963, 445 pages, $14.75.

The subject of this hand book has been recommended by the American Electroplaters' Society, as the control of process of electroplating and product quality have not been given due importance in the books on electroplating processes. Quality control in plating has assumed importance in recent years. Hence the need for a single book emphasizing on the process of electroplating and product control.

This hand book is the result of the combined efforts of numerous authorities in the field of metal finishing, and the editors have drawn largely on their wide and varied experience in the field. Much of the practical information on the subject of control of electrodeposition processes, already availabe in general publications and in industrial literature, has been centralized.

The hand book consists of three parts—general process control, analytical control (solutions) and product control. First part contains seven chapters. Starting from good house keeping in the plating room, physico-chemical methods of analysis, sampling, electrical control, time-temperature control, and SQC are dealt with in detail. Physico-chemical methods have been treated fairly exhaustively, and almost all the methods applicable to electroplating processes have been incorporated. In the last chapter on SQC, suggestions are given to plot various charts for controlling the process with fair amount of certainty. In the second part, analytical control (solutions) is described in great detail. In fact this aspect forms the major part of the subject matter of this book. Plating tests and pH of solutions are covered. Analytical procedures of all plating and allied solutions are given. Precious metal analysis, especially acid gold solution, is presented quite exhaustively. Chapters on trace analysis of electroplating solutions and trace constituent analysis in effluents are useful. Periodicity of the analyses of various constituents in bath is also indicated.

In the third part on product control, various tests on thickness, corrosion, surface finish, stress, adhesion, etc., are described in detail. General inspection methods are given. Specifications on plating are included. In the appendices, reagents and standard solutions and tabulated data are given. At the end of each chapter of all the parts, exhaustive references are given. As useful index is included.

The volume is attractively produced with clear printing and has dealt with the subject in a lucid manner to enable the electroplater to understand the process of control and product control of electroplating. The outstanding feature of this hand book is the practical presentation of control methods, and can be recommended to chemists, metallurgists and engineers as book of reference.

— S.K.

The Mechanical Properties of Nickel Alloy Steels at Sub-Zero Temperatures, published *by* The International Nickel, Co. (Mond) Ltd., London, 1963, 73 pages.

This monograph is the result of a survey conducted by the Development and Research Department Laboratory of The International Nickel Co. (Mond) Ltd., covering the determination of the tensile and impact properties of nickel-containing steels in the temperature range 20 to—196°C. Data on the mechanical properties of standard steels, at these temperatures are important since the alloy steels used in the engineering, aircraft and chemical industries are often subjected to stresses.

The results presented in tables and figures have been reviewed in the beginning under effect of low temperature on mechanical properties; metallurgical factors affecting the mechanical properties of steels at low temperatures; the influence of various factors; materials tested and procedure; sub-zero mechanical properties of various types of steels. The mechanical property data have then been given in the next 47 pages for: (1) direct-hardening steels, containing molybdenum and vanadium, (2) case-hardening steels, containing molybdenum, (3) special steel for low temperatures, (4) martensitic rust-resisting steel, and (5) austenitic, rust, acid-and heat-resisting steels, containing titanium, niobium and molybdenum. There are 38 references at the end.

This concise publication will no doubt provide valuable information to metallurgists, engineers and designers handling nickel alloy steels at very low temperatures.

T.L.R.

Electronic Processes in Materials, *by* L. V. Azaroff J. J. Brophy, published by McGraw-Hill Book Co. Inc., New York — San Francisco — Toronto —London, 1963, 462 pages, $ 10 10.75.

(*Continued on Page 87*)

tween crystals. The fact that anti-corrosion technology is still very empirical means either that much scientific study is still required or that there is great need for translation of research work conclusions into practical language.—Corrosion Technology, Vol. 10, 189, 1963.

Tarnish-Free Copper

The International Copper Research Association, New York, has devised a four-layer silicone-acrylic coating system which is claimed to protect copper-base metals from tarnishing for at least 5 years in interior use even under conditions involving abrasion from hard contact and contact with common tools and detergents. Applications envisaged for copper so protected include hardware, car interior trim, furniture and costume jewellery. The coatings are transparent and uncoloured and are based on two layers of a silicone primer and two layers of an acrylic topcoat.—Electroplating and Metal Finishing, Vol. 16, 275, 1963.

Corrosion and Passivity Symposium

The Second International Symposium on "Problems of Electrochemical Corrosion and Passivity" will be held at Dresden, East Germany during December 1963. It is being sponsored by the Institut fur Elektrochemie und physikalische Chemie and the Chemical Society of DDR.

Automation and Technological Change

The July-August 1963 issue of Battelle Technical Review discusses in 4 papers automation and technological change and their implications for education, labour, industry and government. Seven tables list the areas of advance and typical means, and the results obtained.

—T. L. R.

(*Concluded from Page 94*)

The study of materials science as a single subject is receiving prominent attention with the growing need of materials with specific purposes. The present book, which deals with the role of electrons in different processes in materials, is one of the two volumes proposed to present materials science in a unified way. The sister volume under preparation is expected to deal with properties dependent on thermodynamic processes.

The first two chapters deal with crystal structures and x-ray diffraction. The concepts of quantum mechanics and statistical mechanics with their applications to x-ray spectra, atomic bonding and other phenomena are presented in the succeeding chapters. A considerable portion of the book is devoted to the theory of semiconductors, semiconducting materials and devices, and electron emission processes. Chapters on dielectric, magnetic and optical processes in solids are also included. Each chapter is presented in a scholarly way and contains in not too detail the theory and often its applications. The chapters are also provided with suggestions for supplementary reading and for advanced treatment of the subjects. To test the grasp of the subject matter by a reader, each chapter is supplied with typical exercises, for some of which answers are given. The book is not free from rare typographical errors.

The book is provided with three helpful appendices. Symbols recently adopted for various physical quantities by the International Union of Pure and Applied Physics are given in the appendix. In the second and third appendices, units in different systems and atomic radii under different conditions of bonding are given.

This volume can be easily followed with the acquaintance of fundamentals of chemistry, physics and calculus. It will certainly be helpful at graduate and post-graduate levels in metallurgy, physics and electrical and electrical communication engineering curricula.

—C.C.P.