# BOOK SECTION

**New Publications:**

Corrosion Data Survey, published by National Association of Corrosion Engineers, Houston, Texas, U.S.A., 4th Ed., 1967, $60.

Electro-Organic Chemical Processing, 1968, by C. L. Mantell, published by Noyes Development Corp., Park Ridge N.J., U.S.A., 1968, 186 pages, $35.

Organic Coatings: Properties, Selection, and Use, by A. G. Roberts, published by U.S. Govt. Printing Office, Washington D.C., 1968, 187 pages, $2.50.

Methods of Materials Selection, by E. D. Verink Jr., (Ed.), published by Gordon and Breach, New York, 1968, 315 pages.

Design of Protective Systems for Surtctural Steelwork, papers presented at a Symposium organized by the Institution of Corrosion Technology at the Leeds University—September 1968; Supplementary issue of British Corrosion Journal, published by the Society of Chemical Industry, London, £1.

Surface Activity—Quarterly Literature Reports, published by Kogan Page Publications Ltd., London.

Comprehensive Chemical Kinetics, Volume 1—The Practice of Kinetics, by C. H. Bamford and C. F. H. Tipper (Ed.), published by Elsevier Publishing Co. Ltd., Barking, Essex, England, 1968, 450 pages, 215 sh.

The Chemistry of Titanium and Vanadium, by R. J. H. Clark, published by Elsevier, Topics in Inorganic and General Chemistry, Monograph 11, 1968, 340 pages approx., £8 sh. 10.

Inorganic Electronic Spectroscopy, by A. B. P. Lever, published by Elsevier, 1968, 440 pages, £11 sh. 10.

The Journal of Chemical Thermodynamics, Vol. 1, 1969, Academic Press (London), Ltd., London.

Annual Review of NMR Spectroscopy-Volume 2, by E. F. Mooney (Ed.), published by Academic Press, London and New York, 1969, 440 pages, 120 sh.

Treatise on Physical Chemistry, Vol. 1—Atmostics and Thermodynamics, Rs. 20; Vol. 2—States of Matter, Rs. 22, by H. S. Taylor and S. Glasstone, East-West Third Ed., published by Van Nostrand/East West Press P. Ltd., New Delhi.

X-Rays in Theory and Experiment, by A. H. Compton and S. K. Allison, published by Van Nostrand/East-West Press P. Ltd., New Delhi, 1969, 392 pages, Rs. 18.

Oxidation of Metals, Quarterly beginning 1969, Plenum Publishing Corpn., New York.

Chemistry of High-Temperature Materials, by N. A. Toropov (Ed.), Proceedings of the Second All-Union Conference on the High-Temperature Chemistry of Oxides—Leningrad, 1965, translated from Russian by C. B. Finch, published by Plenum Publishing Corpn., New York, 1969, 233 pages approx., $25.

Tenth International Conference on Coordination Chemistry, Plenary Lectures—Toyko and Nikko, 1967, published by Butterworths, London, 1969, 192 pages, 50sh.

Modernization and Expansion of Plants in the Copper Industry—Report of First Meeting of an Expert Consulting Group on the Copper Industry, Vienna, November 1967, published by UN Industrial Development Organization, Vienna, 1968, 51 pages.

Metal Corrosion in the Amtosphere, published by American Society of Testing and Materials, Philadelphia, Publication No. STP 435, 392 pages, $30.

Proceedings of the 2nd International Congress on Marine Corrosion and Fouling—Athens, 1968, published by the Technical Chamber of Greece, Athens, $60.

**Publications Received:**

ISI Bulletin, Vol. 21, No. 2-5, 1969, New Delhi.

Metals Engineering Quarterly, Vol. 8, No. 4, 1968, American Society for Metals, Metals Park, Ohio, U.S.A.

Scientific Research, Vol. 3, No. 25, 26, 1968; Vol. 4, No. 1 to 6, 1969, McGraw-Hill, New York.

OSU Research Review, Vol. 5, No. 4, 5, 1968, Ohio, State University, Columbus, Ohio.

American Reporter, Vol. 19, No. 5-12, 1969, U.S. Information Service, New Delhi.

Korrozios Figyelo, Vol. 8, No. 5, 1968 ;Vol. 9, No. 1, 1969, Budapest.

CSIR News, Vol. 19, No. 4, 5-10, 1969, New Delhi.

UN Weekly Newsletter, Vol. 17, No. 10-23, 1969, UN Information Service New, Delhi.

Titanium for Industry, Catalogue No. 7, Revised Ed., published by Titanium Products Corporation, Detroit, Mich., U.S.A., 1967, 48 pages.

American Society for Metals, Metals Park, Ohio, Bibliography Series: (1) Electrocoating, Plasting Coating and Enameling, 1966-1968, No. B84-21, 11 pages, $5; (2) Cleaning, Degreasing, and Deburring, 1966-1968, No. B84-22, 11 pages, $5; (3) Induction Heat Treatment, 1965-1968, No. B84-23, 7 pages, $5; (4) Ultrasonic Testing, 1966-1968, No. B84-20, 10 pages, $5, (5) Anodizing, 1965—June 1967, No. B77-2, 6 pages, $5; (6) Electrical Discharge and Electrochemical Machining, No. B77-9, 9 pages, $5.

Plating Specifications Guide, published by Lea-Ronal, Inc., Freeport, N.Y., U.S.A., 11 pages.

Cobalt, No. 41, 1968, Cobalt Information Centre, Brussels.

Galvanotechnik, Vol. 59, No. 12, 1968: Vol. 60, No. 1, 2, 1969, Eugen G. Leuze Verlag, Saulgau/Wurtt.

Climax Molybdenum Co. Ltd., London (1) Literature on Molybdenum—containing Steels, Irons, and Non-ferrous Alloys, 1968, 8 pages: (2) Refractory Metal Literature, 1968, 4 pages.

Australasian Corrosion Engineering, Vol. 12, No. 12, 1968; Vol. 13, No. 1, 2, 1969, North Sydney, N.S.W.

Chartered Engineer, Vol. 8, No. 12, 1968; Vol. 9, No. 1-3, 1969, ICEI, New Delhi.

Metal Finishing Guidebook Directory 1969, published by Metals and Plastics Publications, Inc., Westwood, N.J., U.S.A. 37th Annual Ed., 870 pages; published as part of annual subscription to "Metal Finishing" monthly, overseas subscription $ 15.

D Van Nostrand Co., Inc/Affiliated East-West Press P. Ltd., New Delhi; (1) A Short Course in Quantitative Analysis, by H.H. Willard, N. H. Furman and E. K. Bacon, 2nd Ed., East-West Student Edition, 1968, 243 pages, Rs. 10.00; (2) Fundamentals of Qualitative Chemical Analysis, by R. K. McAlpine and B. A. Soule, 4th Ed., East-West Student Edition, 1969, 342 pages, Rs. 10.00.

Science and Engineering, Vol. 22, No. 2-4, 1969, ISE, Calcutta.

Cuba, No. 2-4, 1969, Embassy of Cuba, New Delhi.

British Patents, Division H1, Patent Office, London.

Lead Cable Sheathing Bulletin, July 1968, LDA London through Indian Lead Zinc Information Centre, Calcutta.

Platinum Metals Review, Vol. 13, No. 1, 1969, Johnson Matthey and Co. Ltd., London.

Building With Stainless Steel, Data Sheets No. 1-3, 1966; 4-9, 1967; 10-14, 1968, Stainless Steel Development Association, London.

Modern Aspects of Copper in Electrical Engineering—Proceedings of a Conference, London, 1968, published by Copper Development Association, London, 1968. 86 pages; through Indian Copper Information Centre, Calcutta.

Inco Nickel, No. 23, 1969, International Nickel, London through International Nickel (India) P. Ltd., Bombay.

Australian Chemical Engineering, Vol. 9, No. 12, 1968; Vol. 10, No. 1-3, 1969, North Sydney, N.S.W.

Abridgments of Patent Specifications 1,100,001-1,125,000, 1968, H1-Circuit Elements, The Patent Office, London.

Quarterly Bulletin of Steel Statistics for Europe, Vol. 19, No. 3. 1968, Economic Commission for Europe, UN, New York, through UN Information Service, New Delhi.

Statistics of World Trade in Steel 1967, Economic Commission for Europe, UN, New York, 1968, 63 pages, through UN Information Service, New Delhi.

The Handling of Chemical Data, by R. D. Clark, B. R. Craven and R. C. L. Bosworth, published by Pergamon Press Ltd., Oxford, 1968, 379 pages, 105sh.

HTS Digest, Vol .9, No. 1, 2, 1969, HAL Technical Society, Bangalore.

Wiggin Nickel Alloys, No. 92, 1968, Henry Wiggin & Co., Ltd., Hereford, England.

British Steel, No. 3, 1968, British Steel Corporation, London.

Anti-Corrosion Methods and Materials, Vol. 15, No. 12, 1968; Vol. 16, No. 1, 2, 1969, Sawell Publications Ltd., London.

Industrial Finishing, Vol. 1[illegible], No. 246, 1968; Vol. 21, No. 247, 248, 1969, Arrow Press Ltd., London.

Metal Finishing Journal, Vol. 14, No. 168, 1968; Vol. 15, No. 169, 170, 1969, Fuel and Metallurgical Journals Ltd., London.

Stainless Steel Development Association, London: (1) Introducing Stainless Steel, 20 pages; (2) Stainless Steel Containers, 7 pages.

Copper, Vol. 3, No. 1, 2, 1969, CDA, London through Indian Copper Information Centre, Calcutta.

Zinc Abstracts, Vo. 26, No. 12, 1968; Vol. 27, No. 1-3, 1969, ZDA, London through Indian Lead Zinc Information Centre, Calcutta.

Einfuhrung in die Galvanotechnik, by B. Gaida, published by Eugen G. Leuze Verlag, Saulgau-Wurtt, 1969, 272 pages. DM25.

Chemical Age of India, Vol. 20, No. 3-5, 1969, Technical Press Publications, Bombay.

Aluminium Courier, No. 84, 1968, Aluminium Federation, London.

Lead Abstracts, Vo. 8, No. 12, 1968; Vo. 9, No. 1-3, 1969, LDA, London through Indian Lead Zinc Information Centre, Calcutta.

Half-yearly Bulletin of Electric Energy Statistics for Europe, Vol. 13, No. 2, 1968, UN, New York through UN Information Service, New Delhi.

Galvanizers Bulletin, No. 3, 1969, Indian Hot-Dip Galvanizers Association, Calcutta.

Electrode Reactions of Organic Compounds, Discussions of the Faraday Society, published by the Faraday Society, London, 1969, 281 pages, £5; through Butterworth & Co., (Publishers) Ltd., London.

Endeavour, Vol. 28, No. 103, 1969, ICI Ltd., London.

Information News Letter—Industrial Liaison & Extension Services, Vol. 7, No. 4, 1968, CSIR, New Delhi.

The British Iron and Steel Research Association, London: (1) BISRA Annual Report, 1968, 79 pages; (2) BISRA Corrosion Publications, 1963-1968, 11 pages.

Science Library Bibilographical Series No. 794, Science Museum, London.

Electro-Technology, Vol. 12, No. 6, 1968; Vol. 13, No. 1, 1969, Society of Electronic Engineers, Bangalore.

Abstracts of Bulgarian Scientific Literature—Chemistry, No. 1, 1968, Bulgarian Academy of Sciences, Sofia.

Instruments News, Vol. 4, No. 1, 1969, CSIO, Chandigarh.

Compass, Vol. 4, No. 1, 1969, Indian Cements Ltd., and Units of the "Compass" Group, Madras.

Inorganic Chemical and Metallurgical Process Encyclopedia, by M. Sittig, published by Noyes Development Corporation, Park Ridge, N.J., U.S.A., 1968, 882 pages, $ 35.

Corrosion Bulletin, Vol. 5, No. 5, 6, 1968, National Metallurgical Laboratory, Jamshedpur.

Medicines for the Millions — Soviet Land Booklets, 1969, published by Information Dept., of the USSR Embassy in India, New Delhi.

Modern Methods of Chemical Analysis, by R. L. Pecsok and L. D. Shields, published by John Wiley & Sons, Inc., New York-London-Sydney, 1968, 480 pages, $ 9.95.

Products Finishing, 1969, Directory, published by Gardner Publications, Inc., Cincinnati, Ohio, U.S.A., 416 pages.

The Bridge, No. 3, 1969, Embassy of the Federal Republic of Germany, New Delhi.

Metal Finishing, Vol. 66, No. 12, 1968; Vol. 67, No. 1-3, 1969, Metals and Plastics Publications, Inc., Westwood, N.J., U.S.A.

NML Technical Journal, Vol. 11, No. 1, 1969, Jamshedpur.

Journal of the Electrochemical Society of Japan, Vol. 36, No. 4, 1968, Tokyo.

Zinc Alloy Die Casting News, No. 7, 1969, Zinc Alloy Die Casting Society, Calcutta.

Econpmic Commission for Europe, United Nations, New York: (1) Principal Factors affecting Labour Productivity Trends in the Iron and Steel Industry, 1969, 200 pages, $ 2.15; (2) Movements of Energy in Europe and their Prospects, 1969, 44 pages plus Annex III, $ 0.85; (3) Problems in the Design and Operation of Thermal Power Stations, Volume 8, 1968, 70 pages, $ 1.

Introduction to the Thermodynamics of Charged and Polarized Layers, by A. Sanfield, published by John Wiley & Sons, Inc., New York, Monographs in Statistical Physics and Thermodynamics — Volume 10, 1968, 258 pages, $ 11.

## BOOK REVIEWS

Lead 65—Edited Proceedings, Second International Conference on Lead, Arnhem, organised by Lead Development Association, London,

1965, published by Pergamon Press Ltd., Oxford, 1967, 337 pages, 110 sh.

This publication contains the edited proceedings of 34 papers presented at the Second International Conference on Lead held in Arnhem during October 4-7, 1965. It was organised by the Lead Development Association, U.K. on behalf of the European Lead Development Committee. The first paper discusses 'Trends in World Lead Consumption.' The papers have been grouped under four sections. First section consists of three papers dealing with dispersion strengthened lead. The structure, properties and potentialities of strengthened metallic lead are discussed. In the second section there are eleven papers on Lead Cable Sheathing—extrusion, fatigue, tests and service performance. The third group of nine papers is on lead acid batteries. The papers cover subjects like lead acid batteries for traction, maintenance, development, additives for low temperature batteries, quality control. In section four, ten papers on the chemical and other applications of lead are included. The subjects include new approaches to the use of lead—lead as a sound deadening material, as anti-vibration pads; new development in organo-lead chemistry, etc. The publication includes a number of figures, charts and tables and list of delegates. The attractively produced volme contains valuable information on lead, and will be useful to metallurgists and design engineers.

— S. K.

**Cavitation Corrosion and its Prevention in Diesel Engines**—Symposium, 1965, by i. Dugdale and R. Wall (Ed.), published by British Railways Board, London, 47 pages, 30sh.

This publication covers the proceedings of a Symposium held by the British Railways Research Department and the Corrosion and Protection Association, U.K. during November 1965. There are 5 papers: (1) Introduction to cavitation corrosion, (2) The control of cavitation damage in diesel engines, (3) The effort of oil cushioning on piston operation, (4) The effect of vibration on aqueous corrosion and (5) Examples of cavitation corrosion in engines and design considerations. There is an appendix with contributions from the railways of the Netherlands, France, Belgium and Germany.

Cavitation corrosion on the water side of the cylinder liners of diesel engines is a problem affecting their performance and service. The contributors to the Symposium have discussed the nature of cavitation and suggested methods for the prevention of the damage, including design and use of corrosion inhibitors: The paper on the effect of vibration on the corrosion is quite interesting. The mechanism of cavitation damage is not quite clear at the present time, and publications like this do provide information of use in encouraging further work in the field. Although the price is rather high, this volume will no doubt be of interest to the engineer, metallurgist and electrochemist.

—T. L. R.

**Modern Aspects of Copper in Electrical Engineering**—Proceedings of a Conference—London, 1968, published by Copper Development Association, London, 1968, 86 pages; through Indian Copper Information Centre, Calcutta.

This volume covers the proceedings of a Conference held by the CDA in London during April 1968. There are 8 papers with discussions: (1) Recent developments in the use of copper and copper alloys in electrical engineering, (2) Standardisation of conductors, (3) Value analysis—copper and cost, (4) New forming methods applied to copper, (5) Improvements in the machining of copper, (6) Soft-solders and soldering in the electrical industry, (7) Processes for copper welding—recent developments and their applications and (8) Jointing of electrical conductors.

The uses of copper and its alloys in electrical engineering have increased enormously in recent years, and the CDA is to be congratulated for holding this Conference. The conference serves admirably the purpose"... to bring to the attention of engineers and designers the latest information on copper of particular interest in the electrical industry". This is indeed a valuable publication, adding to the well known CDA series.

—T. L. R.

**Fundamentals of Qualitative Chemical Analysis**, by Roy K. McAlpine, and Byron A. Soule, Fourth Edition, originally published by D. Van Nostrand Company Inc.,, New York, published in India by Affiliated East-West Press Pvt. Ltd., New Delhi, an East-West Edition, 1969, 352 pages, Rs. 10.00 or $ 1.50.

This is the reprint of the original 1956 edition published by D. Van Nostrand Company. The purpose of this book is "to give the student direct contact with the chemical behaviour of common metallic and acidic radicals and to emphasise the necessity of working under controlled conditions in order to carry out reactions

successfully". The procedures have been written to the semi-micro scale.

There are fifteen chapters. First three chapters are introductory in nature dealing with formulae and chemical calculations. Semi-micro technique is described in the next chapter in laboratory work. Seven chapters deal with the various groups of basic radicals starting with lead, silver, etc. to magnesium, sodium, etc. Analysis of common acid radicals and qualitative examination of simple and complex dry unknowns are given. In the appendix questions and problems, test solutions, tables, etc., are added. The use of thioacetamide in the precipitating of second and fourth group metals is described. Logarithms and an index are included. This volume serves as an excellent text book on qualitative analysis and will be valuable to students in chemistry as well as analytical chemists in industry.

—S. K.

**Metal Finishing Guidebook Directory, 1969,** published by Metals and Plastics Publications, Inc., Westwood, N.J., U.S.A., 37th Annual Edition, 870 pages, published as part of an annual subscription to "Metal Finishing", $ 5 per year in the U.S.A. and $ 1.25 in other countries.

The Directory issued every year by the publishers of the familiar monthly journal "Metal Finishing" is well known. It consists of the following sections: (1) government finishing specifications, (2) mechanical surface preparation, (3) chemical surface preparation, (4) plating solutions, (5) control-analysis-testing, (6) special plating procedures, (7) special surface treatment, (8) organic finishing, (9) finishing plant engineering, (10) tables and data sheets, (11) director and (12) comprehensive index.

There is a good coverage of the section dealing with the plating of metals and alloys, including precious metals. It is good to find a separate section for electroless plating, anodizing and other surface treatments. Electrocoating, a new and valuable process, has been briefly described under organic finishing. The information under finishing plant engineering will be particularly useful to the technologist and engineer. As with the earlier editions, the present directory will no doubt be quite informative and popular in the field of metal finishing.

—T. L. R.

**High-Temperature Materials and Technology.** by I. E. Campbell and E. M. Sherwood (Ed.) published by John Wiley and Sons, Inc., New York, Electrochemical Society Series, 1967, 1022 pages, $ 27.50.

This book is a revision of an earlier edition entitled High Temperature Technology (Wiley 1956), and it brings together information covering various aspects of high temperature work written by experts in their respective fields.

It is divided into five parts, the first being an introduction dealing with the present and future demands of high temperature technology. The second part is devoted to the chemistry of high temperature processes and gives adequate coverage to high temperature thermodynamics, high temperature vapour species and high temperature reactions. The third part is on materials and begins with a useful chapter on selection of materials for high temperature work. Included in this part are review articles on the high temperature properties and applications of refractory metals, oxides, carbides, borides, nitrides, silicides, sulphides, intermetallic compounds, cermets, refractory coatings and plastic composites. The fourth part deals with high temperature techniques and includes chapters on attainment of high temperature, special methods for fabrication of metals and refractories, containment of hot matter and thermal insulation. The fifth part is on measurements and begins with an exhaustive review article on temperature measurement. Other topics treated are determination of thermophysical properties, mechanical properties at high temperatures and heat transfer. A notable omission in this section is perhaps the measurement of chemical equilibria at high temperatures.

Besides covering the major investigative techniques used in high temperature work, the book provides a general survey of information useful in solving problems arising in the applications of high temperature materials. It is well printed with excellent illustrations and has a good index. The publication will be of great use to materials scientists and to all those involved in high temperature research and development work.

—K. P. A.

**The Hydro-Electric Potential of Europe's Water Resources,** Volume 1: Methods of Analysis and Their Application, published by Economic Commission for Europe, United Nations, New York, 1968, 51 pages plus Annex, $ 3.50.

This report is based on a study covering certain basic aspects of water resources considered

as a means for the production of primary energy. There are 4 chapters: (1) Factors influencing the appraisal of hydro-electric resources, (2) Analytical principles for the comparative study of river basins as sources of primary energy, (3) Water resources snd hydro-electric potential in Europe and (4) Specifications and mode of use of the international map of surface hydro-electric potential. The matter is supplemented with 6 annexes, 8 tables and 32 sheets of the international map. Although the information pertains to Europe, it will be of great interest to a developing country like India with a vast hydro-electric potential.

—T. L. R.

**Copper Data Sheets** (second set), published by CIDEC Data Sheets Committee, Milan, 1968; through Indian Copper Information Centre, Calcutta.

This is the second set of useful data sheets on Low-alloyed coppers: phosphorus-deoxidised arsenical copper, silver-bearing tough-pitch copper, silver-bearing oxygen-free copper and copper-tellurium. The presentation is on the same lines as the previous set (This Journal, Vol. 17, 150, 1963).

—T. L. R.

**The Electrochemistry of Oxygen,** by James P. Hoare, published by Interscience Publishers, New York, 1968, 423 pages, $ 19.50.

This is a compilation of the findings of the past 100 years of research in this area. The first half of the book is concerned with the electrochemical processes occurring when oxygen is evolved or reduced at an inert electrode. The oxygen electrode at rest has been viewed from the view point of the (*a*) oxide theory, (*b*) phoxide theory, (*c*) mixed potential theory, (*d*) constant current charging curves, (*e*) potential sweep techniques and (*f*) optical methods. The rest potential on other noble metals, *viz.*, gold, palladium, rhodium, iridium, ruthenium, and osmium has been discussed. The anodic evolution and the cathodic reduction of oxygen at platinum, covers the steady-state polarization curves, mechanisms and effects of pH, adsorbed ions. The anodic evolution and cathodic reduction of oxygen on noble metals and noble metal alloys have been dealt with in detail.

After this basic presentation, the book deals with the applications of the oxygen electrode in various fields. The role of the oxygen electrode in electroanalytical chemistry and more especifically the dropping mercury electrode, the noble metal indication electrode, and fuel cells has been presented. Some interesting applications of oxygen electrode to biological systems *viz.*, determination of oxygen in (*a*) natural waters, (*b*) blood, (*c*) cells, and tissues, (*d*) photosynthesis studies, (*e*) biological cultures and (*f*) other media have been explored. There are two separate chapters which enumerate the significance of oxygen electrode for battery and corrosion mechanism.

This review of oxygen electrode serves as a source of information to those interested in many aspects of electrochemistry of oxygen and also acts as a stimulant to carry out their research.

—R. P. D.

**Problems in the Design and Operation of Thermal Power Stations,** Volume VII, published by Economic Commission for Europe, United Nations, New York, 1968, 45 pages, $ 0.75; through UN Information Service, New Delhi.

This volume contains the following reports; (1) Advantages and disadvantages of outdoor thermal power stations and (2) Problems of fuel transport to high-capacity thermal power stations. As with similar UN publications, there is a fund of information of value to developed and developing countries.

—T. L. R.

**Titanium for Industry,** published by Titanium Products Corporation, Detroit, U.S.A., 1967, 48 pages.

First published in 1965 and revised in 1966, this booklet is the second revision. There is a comprehensive chart on the corrosion rates of titanium, tantalum and zirconium in various media. This is very valuable since all the 3 metals find increasing applications in several industries. The types of mill products available in stock are then detailed.

—T. L. R.

**BISRA Literature** (1) BISRA Annual Report, 1968, 79 pages; (2) BISRA Corrosion Publications, 1963-1968, 11 pages, (3) Papers; published by the British Iron and Steel Research Association, London.

The report describes in detail the activities in the various departments of the Association. The list of publications on corrosion for the five-year period acts as a ready source of reference. There are two interesting reprints of papers on prevention of corrosion: design aspects and corrosion of ferrous metals.

—T. L. R.

**Metallurgy for Engineers**, by E. C. Rollason, published by Edward Arnold (Puboishers) Ltd., London, 392 pages, 25 sh.

A definitely improved version of a basically self-contained book, is the third edition, of 'Metallurgy for Engineers'. Besides being a book which can introduce anybody to Metallurgy—its principles and applications, the treatment is sufficient to enable practice in the micro- and macro-examination of metals, and understanding of the processes of manufacture of various metals and alloys. After an introduction to the various principles and phenomena in the first eight chapters, the book deals with individual metals and alloys of commercial importance and modern applicability. The chapters on steels, and that on titanium and nuclear energy metals, are noteworthy in this report. The book more than justifies the title, as it really gives enough background to pursue the modern specialised literature in various aspects of metallurgy.

—R. S.

**Bibliography Series:** (1) Electrical Discharge and Electrochemical Machining, 1965-67, B77-9, 9 pages; (2) Anodizing, 1965-67, B77-2, 6 pages; (3) Ultrasonic Testing, 1966-68, B84-20, 10 pages; (4) Electrocoating, Plastic Coating and Enameling, 1966-68, B84-21, 11 pages; (5) Cleaning, Degreasing, and Deburring, 1966-68, B84-22, 11 pages; (6) Induction Heat Treatment, 1965-68, B84-23, 7 pages; published by American Society for Metals, Metals Park, Ohio, U.S.A., $ 10 each.

This is an extremely useful compilation of recent literature on the topics mentioned. The title and complete reference are given in each case. The price is, however, quite high for Indian readers.

—T. L. R.

**Molybdenum Information:** (1) Literature on Molybednum-containing Steels, irons and nonferrous alloys, 1968, 8 pages; (2) Refractory Metal Literature, 1968, 4 pages, published by Climax Molybdenum Co. Ltd., London.

The first bulletin covers high-termperature and corrosion-resisting alloys, cast products and abrasion—resistant materials, high-strength steels and other topics, and product specifications. The second one gives equally useful information on product specifications, data sheets and general surveys, tool and die applications, corrosion resistance, fabrication and surface treatments, joining, refractory metal compounds, other publications, and newsletters.

—T. L. R.

**Stainless Steel Literature:** (1) Building with Stainless Steel, Data Sheets 10-14, 1968; (2) Stainless Steel Containers, 7 pages; (3) Introducing Stainless steel, 20 pages; published by Stainless Steel Development Association, London.

The data sheets are a continuation of the earlier set, 1-9 and cover door furniture, staircases and handrails, tiles, sanitary ware and cladding. The second brochure deals briefly with the advantages of stainless steel containers in service, and stainless steels for container construction. The last one is an excellent introduction to stainless steel and its applications. These are informative and useful, as with other publications of the Association.

—T. L. R.

**Plating Specifications Guide,** published by Lea-Ronal, Inc., Freeport, N.Y., U.S.A., 11 pages.

This brief guide contains information of interest on the plating specifications—military and industrial, for gold, copper, silver, zinc, nickel, tin and rhodium.

—T. L. R.

**A Short Course in Quantitative Analysis,** by H. H. Willard, N. H. Furman and E. K. Bacon, published by D. Van Nostrand Co. Inc., 2nd ed., Affiliated East-West Press P. Ltd., New Delhi, 1968, 243 pages, Rs. 10.

This is an introductory book on the subject which would provide enough insight and confidence to the practice of the methods dealt with therein. The various types of simple calculations involved in titrimetry, gravimetry etc., are dealt with in an easy manner, and the problems added at the end of each chapter would give ample exercise to the beginners in chemistry. A very useful book to the students who are in the first stage of Analytical Chemistry, to get conversant with the conventional methods of analysis.

—R. S.

**Fuel Cells and Fuel Batteries—A Guide to their Research and Development,** by H. A. Liebhafsky and E. J. Cairns, published by John Wiley & Sons, Inc., New York, 1968, 692 pages, $ 27.50.

The subject of fuel cells and fuel batteries has come into prominence during recent years as a possible power source. Literature available is enormous and many beautiful books have been written. The present book is one more addition to this list, and it is intended to serve as a guide to research and development of fuel

cells and batteries. This comprehensive volume after dealing with the fundamentals underlying fuel cells, discusses in detail the various type of fuel cells.

The chapters dealt in this book are: (1) Fuel cells and fuel batteries—an introduction, (2) An eclelic history of the fuel cell, (3) The thermodynamics of the complete fuel cell, (4) The irreversible fuel cells, (5) Electrochemical kinetics and the fuel cell, (6) Transport processes, (7) The problem of electrode structures, (8) Experimental methods for fuel cells and fuel batteries, (9) The cathode of the fuel cell—the oxygen electrode, (10) Cells with compromise and converted fuels, (11) The direct hydrocarbon fuel cell with aqueous electrolyte, (12) Fuel cells with molten carbonate electrolytes, (13) Fuel cells with oxide—ion electrolytes, (14) Fuel cells, batteries and systems with ion exchange membranes as electrolytes, and (15) Fuel batteries—problems, status, outlook.

In addition to the above chapters, an appendix is given which contains: (A) Irreversibility and changing composition—calculations, (B) Carbon deposition boundaries at various pressures, (C) Isoparametric lines on the CHO diagram, (D) CHO diagrams and fuel cells with molten carbonates. References are given at the end of each chapter, and also a general bibliography of the field at the end of the book. Numerous figures and tables and a subject index at the end enhance the usefulness of the book. The presentation is very simple and lucid. It also contains a complete history and description of the Gemini fuel battery in the 14th chapter. This publication will be very useful to beginners in research working on fuel cells, and is of great interest to electrochemists, organic chemists and general readers.

— (Miss) M. S.

**The Handling of Chemical Data,** by P. D. Lark, B. R. Craven and R. C. L. Bosworth, published by Pergamon Press, London-Oxford etc., 1968, 379 pages, 105sh.

This publication deals in a comprehensive manner with the handling of data obtained in chemical experimentation by various methods. The matter is covered in 7 chapters; (1) Origin and presentation of chemical data, (2) Measurements of a single variable, (3) Errors, probability and tests of a significance, (4-5) Relationship between two or more variables, (6) Smoothing, interpolation, differentiation and integration and (7) Dimensional analysis. There is an appendix with 13 tables of statistical functions. In the end there are exercises, references, general bibliography and index. The presentation is excellent, with an adequate number of tables and figures for illustration. The volume will certainly be useful to research workers and technologists concerned with the handling of chemical data. The price is rather high from Indian standards.

—T. L. R.

**Technique of Inorganic Chemistry, Vol. VII,** edited by Hans B. Jonassen and Arnold Weissberger published by Interscience Publishers, a division of John Wiley & Sons, New York-London—Sydney, 1968, 327 pages, $ 16.

In the last two decades there has been an enormous increase in the amount of research in the field of inorganic chemistry, and numerous synthetic and structural problems encountered have led to many instrumental techniques. An inorganic chemist should, therefore, be familiar with these different methods and techniques in order to effectively pursue his research projects.

With this aim in view the present series of 'Technique of Inorganic Chemistry' is being written up, and it aims at acquainting the chemists mainly with the techniques used in inorganic and radiochemistry. Volume VII of this series consists of 5 chapters. Crystal growth techniques; Mossbauer spectroscopy; an expedient method for preparative procedures in an inert atmosphere; electron paramagnetic resonance, and manipulation of fluorides and other corrosive compounds, form the subject matter of these. Each one of them deals exhaustively with the fundamentals, theoretical background, various aspects of the technique, and a critical evaluation of the merits and limitations of the technique. An exhaustive and up to date list of references is included at the end of each chapter. The present series is a must for an inorganic chemist dealing with one technique or the other, and so also for the physicist and other scientists working on one of these problems.

— (Miss) V. K.

**Introduction to Thermodynamics of Irreversible Processes,** by I. Prigogine, published by Interscience Publishers—John Wiley & Sons, New York-London-Sydney, 3rd ed., 1967, 147 pages, $ 5.95.

This is the third edition of the well-known book by Professor I. Prigogine first published in 1955. The author is well known for his contri-

butions to the study of irreversible thermodynamics. The methods of classical thermodynamics are based on such concepts as reversible processes and true equilibrium states, whereas the majority of the phenomena studied in subjects like biology, meteorology and astrophysics are irreversible processes. The author has made out a case for the extension of methods of thermodynamics so as to include irreversible processes, and has given in this book a simple account of the recent developments in the thermodynamics of irreversible processes. The treatment of the subject is such that for its use, the reader is not required to have full acquaintance with classical thermodynamics.

Out of the eight chapters in the book, the first six deal with non-equilibrium thermodynamics in the linear region and according to the author this field is already a classical subject. In this edition no alterations have been made in these six chapters, because no substantially new developments have taken place in the linear region, since the publication of the second edition in 1961. There have been developments in the field of non-linear thermodynamics of irreversible processes, and these are described in chapter seven. In chapter eight some examples are given illustrating the most characteristic phenomena which may occur in the non-linear region far from equilibrium. Any treatment of the thermodynamics of irreversible processes must ultimately be justified by methods of statistical mechanics of irreversible processes. Moreover the statistical treatment of non-equilibrium processes has made much progress in recent years, and it should be pointed out that these statistical aspects are not discussed in this book.

The book is well printed, has a good subject index and provides nearly ninety references to original papers. The book is recommended for all those who are interested in keeping abreast with the advances made in the field of irreversible thermodynamics. — K. P. A.

**Seventh International Metal Finishing Conference "Interfinish 68"**, Proceedings of the Conference held in Hannover, 5-9, May 1968, published by the Deutsche Gesellschaft fu Galvanotechnik, Dusseldorf. 1968, 351 pages, DM 66.60.

This publication contains 54 papers presented at the conference and dealing with various aspects of Metal Finishing with regard to theory as well as practice. The main topics for the conference are: (1) Special electrodeposition process: vapour deposition, alloy deposition from fused salt bath; (2) Electroplating: bright plating, addition agents; (3) Properties of electrodeposits: internal stresses, corrosion resistance; (4) Alloy deposition: platinum alloy, tin-lead lloy: (5) Engineering plating; electroforming, electrochemical machining, metal spraying; (6) Precious metal coatings: gold, silver, palladium, characteristics of the plating baths; (7) Strip coatings: chromium plating and tinning on steel strips, coil plating; (8) Plating on plastics; (9) The basis metal; cleaning, surface preparation prior to plating, hydrogen absorption by steel; (10) Phosphating and chromating: recent advances; (11) Anodic oxidation: aluminium, zinc; (12) Paint, plastic and enamel coatings: surface preparation for electrophoretic coatings, electrodipping, hot dip painting, enamelling, accelerated tests; (13) Waste water treatment; (14) Plant technology: automatic transport carriers, deburring and polishing.

The papers are given in full with discussions, and are profusely illustrated. The get up is excellent. The usefulness of this publication would have enhanced by giving the author index and subject index. This volume is strongly recommended to all those who are interested in surface coatings. —(Miss) M. S.