BOOK SECTION

New Publications

Modern Aspects of Electrochemistry, No. 5, by J. O'M. Bockris and B. E. Conway (Ed.), published by Plenum Publishing Corpn., New York, 1969, 497 pages, $22.50.

Current Titles in Electrochemistry, Vol. 1, No. 1, 1969, SAEST, Karaikudi.

Electroplating and Related Processes, by J. B. Mohler, published by Chemical Publishing Co. Inc., New York, 1969, 320 pages, $ 10.

Welding Processes and Technology, by D. Romans, and E. N. Simons, published by Pitman, 1968, 276 pages, 45sh.

A Concise History of Bronzes, by G. Savage, published by Thames and Hudson, 1969, 264 pages, 21sh.

New Pathways in Inorganic Chemistry, by E. A. V. Ebsworth, A. G. Maddock and A. G. Sharpe (Ed.), published by Cambridge University Press, 1969, 420 pages, 80sh.

Chemical Technology, by F. A. Henglein, published by Pergamon Press Ltd., Oxford, 874 pages, £15.

Electrolyte Theory, by P. M. V. Resibois, published by Harper and Row, New York, 1968, 166 pages, 105sh.

The Application of Plasma to Chemical Processing, by R. F. Baddour and R. S. Timmins (Ed.), published by Pergamon Press, London, 1968, 206 pages, 115sh.

A Dictionary of Alloys, by E. N. Simons, published by Frederick Mull Ltd., London, 1969, 191 pages, 45sh.

Organic Semiconducting Ploymers, by J. E. Keton, published by Edward Arnold (Publishers) Ltd., London, 1968, 315 pages, 170sh.

The Computer and Chemistry, by T. R. Dickson, published by W. H.Freeman & Co., San Francisco-London, 1968, 216 pages, 48sh.

Electron Spectroscopy for Chemical Analysis, by K. Siegbahn, *et. al.*, available from McPherson Instrument Corporation, Acton, Mass., U.S.A., $ 25.20.

Physical Chemistry; A Modern Laboratory Course, by H. W. Salzberg, J. I. Morrow and S. R. Cohen, published by Academic Press, New York, about 450 pages.

Constitution of Binary Alloys, Second Supplement, by F. Q. Shunk, published by McGraw Hill Book Co., New York, 720 pages, $ 37.50.

Electrophoresis, by D. J. Shaw, published by Academic Press, London- New York, 1969, 144 pages, 35sh.

Advances in Physical Organic Chemistry, Volume 7, by V. Gold (Ed.), published by Academic Press, London-New York, 1969, 352 pages, 90sh.

1967 Annual Report of the European Federation of Corrosion, published by the General Secretariat, Frankfurt, DM 70.

Thermometric Titrimetry, by L. S. Bark, and S. M. Bark, International Series of Monographs in Analytical Chemistry, Volume 33, published by Pergamon Press, 126 pages, 45sh.

Desalination—Water for the World's Future, by R. Popkin, published by Frederick A. Praeger Inc., 1968, 235 pages, $ 6.50.

Principles of Solid State Chemistry, by P. P. Budnikov and A. M. Ginstling, published by Mclaren & Sons, 454 pages, 168sh.

Manual of Electroplating, by H. W. Dettner and J. Elze (Ed.), published by Carl Hanser, Munich, Volume 11- 1207 pages, DM 235; Volume 2- 1092 pages, DM 225; Volume 3- 1969.

Principles of Modern Metallurgy, by M. C. Nutt, published by Charles E. Merrill Publishing Co., Columbus, 1968, 512 pages.

Corrosion and Its Prevention in Motor Vehicles, published by the Institution of Mechanical Engineers, London, 200 pages, £6.

Physical Metallurgy of Iron and Steel, by R. Kumar, published by Asia Publishing House, Bombay, 456 pages, Rs. 35.

Steel in the Chemical Industry, A Glossary, by J. A. Bachrach, published by Central Sales Office for European Community Publications, Luxembourg, 1968, 487 pages.

Chemistry and Industry 1969 Buyers' Guide—Chemicals, Chemical Plant and Laboratory Equipment, Supplement to Chemistry and Industry, 7 December, 1968.

Literature of Chemical Technology, by R. F. Gould (Ed.). Advances in Chemistry Series No. 78, published by American Chemical Society, Washington D.C. 1968, 732 pages, $ 17.50.

Guide to Chemical Plant Planning, by R. Lobstein, published by Noyes Development Corpn., Park Ridge, N.J., U.S.A., 1969, 524 pages, $ 24.

The Industrial Practice of Chemical Process Engineering, by S. W. Bodman, published by M.I.T. Press, Cambridge, Mass., U.S.A., 1968, 232 pages, $ 8.50.

Designing for Engineering Plastics, A "Plastics" Special Publication, 51 pages.

EM & D. Materials Selector and Convertor, presented with EM & D, March 1969, 104 pages.

The Directory of Scientific Research Institutions in India; 1969, compiled and published by Insdoc, New Delhi, 1120 pages, Rs. 75.

Molecular Processes on Solid Surfaces, by E. Drauglis, R. D. Gretz and R. I. Jaffee (Ed.), published by McGraw-Hill Book Co., New York, 651 pages, $ 37.50.

Introduction to Solution Equilibrium, by J. C., Guyon, published by Allyn and Bacon Inc. Boston, Mass., U.S.A., 1969, 165 pages.

Problems in Physical Chemistry, by L. C. Labowitz and J. S. Arents, published by Academic Press, New York, 1969, 450 pages, $ 6.50 approx.

Copper Alloy Spring Materials Information Sheets, published by CDA, London.

Publications Received

Disposal of Process Wastes—Liquids, Solids, Gases—A Symposium, 1964, published by Chemical Publishing Co. Inc., New York, 1968, 240 pages, $ 12.50; translation from German by M. Wulfinghoff.

Zinc Alloy Die Casting Seminar—Madras, 1968, Edited Proceedings, published by Indian Lead Zinc Information Centre, Calcutta, 246 pages, Rs. 15.

Platinum Metals Review, Vol. 13, No. 2, 1969, Johnson Matthey and Co. Ltd., London.

Anti-Corrosion Methods and Materials, Vol. 16, No. 3-6, 1969, Sawell Publications Ltd., London.

Science and Engineering, Vo. 22, No. 5-7, 1969, ISE, Calcutta.

UN Weekly Newsletter, Vol. 17, No. 24-36, 1969, UN Information Service, New Delhi.

British Patents, Division H1, Patent Office, London.

Cuba, No. 5, 6, 1969, Embassy of Cuba, New Delhi.

Soviet Review, Vol. 6, No. 45, 52, 1969, Information Dept., of the USSR Embassy in India, New Delhi.

American Reporter, Vol. 19, No. 13-18, 1969, US Information Service, New Delhi.

Corrosion Bulletin, Vol. 5, No. 7, 8, 1969, Jamshedpur.

Cobalt, No. 42, 43, 1969, Cobalt Information Centre, Brussels.

Metal Finishing, Vol. 67, No. 4-6, 1969, Metals and Plastics Publications Inc., Westwood, N.J., U.S.A.

Galvanotechnik, Vol. 60, No. 3-5, 1969, Eugen G. Leuze Verlag, Saulgau/Wurtt.

ISI Bulletin, Vol. 21, No. 6-8, 1969, New Delhi.

Automation in the Iron and Steel Industry, published by Economic Commission for Europe, UN, New York, 1969, pages 71 plus Annex, $ 1.30; through UN Information Service, New Delhi.

Industrial Finishing, Vol. 21, No. 249-251, 1969, Arrow Press Ltd., London.

Buletinul Institutului Politechnic Din Iasi, Serie, Noua, Electrical Engineering—Electronics, Vol. 13, No. 1-4, 1967; Vol. 14, No. 1-2, 1968.

British Steel, No. 4, 5, 1969, British Steel Corporation, London.

British Steel Corporation, London—Annual Report and Accounts 1967/68, London, 56 pages.

Chemical Age of India, Vol. 20, No. 6, 7, 1969, Technical Press Publications, Bombay.

Metals Engineering Quarterly, Vol. 9, No. 1, 2, 1969, American Society for Metals, Metals Park, Ohio.

Engineering Progress of the University of Florida, Vol. 22, No. 12, 1968, Florida Engineering and Industrial Experiment Station, Gainseville.

The Lead Accumulator, by K. A. Dasoyan and I. A. Aguf, translated from Russian by S. Sathyanarayana, published by Asia Publishing House, Bombay, 1968, 87 pages, Rs. 10.

Australasian Corrosion Engineering, Vo. 13, No. 3-5, 1969, North Sydney, N.S.W.

N.M.L. Technical Journal, Vol. 11, No. 2, 1969, Jamshedpur.

CSIR News, Vol. 19, No. 12-15, 1969, New Delhi.

Chartered Engineer, Vol. 9, No. 4-7, 1969, ICE, New FDelhi.

Scientific Research, Vol. 4, No. 7-13, 1969, McGraw-Hill Inc., New York.

Annual Report—Council of Scientific and Indusitial Research: 1967, 133 pages; 1968, 135, pages, CSIR, New Delhi.

Journal of the Indian Institute of Science, Vol. 51, No. 2, 1969, I.I.Sc., Bangalore.

The Penguin Library of Physical Series: (1) Physics/Chemistry—Gases, Liquids and Solids, by D. Tabor, 290 pages, 21sh;, (2) Physics—Basic Electricity, by W. M. Gibson, 192 pages, 16sh; (3) Chemistry—Modern Physical Chemistry; An Introduction, by M.F.C. Ladd and W. H. Lee, 304 pages, 24sh; published by Penguin Books Ltd., Harmondsworth, Middx., England, 1969.

Technical Metallurgy, by D. R. Cliffe, published by Edward Arnold (Publishers) Ltd., London, 414 pages, 45sh.

Aluminium Courier, No. 85, 1969, Aluminium Federation, London.

Metal Finishing Journal, Vol. 15, No. 171-173, 1969, Fuel and Metallurgical Journals Ltd. London.

Instruments News, Vol. 4, No. 2, 1969, CSIO, Chandigarh.

OSU Research Review, Vol. 5, No. 7-9, 1969, Office of Research and the Research Foundation, Ohio State University, Columbus.

Stainless Steel, No. 10, 1969, Stainless Steel Development Association, London.

Inco Nickel, No. 24, 1969, International Nickel, London through International Nickel (India) P. Ltd., Bombay.

Zinc Abstracts, Vol. 27, No. 4, 5, 1969, ZDA London, through Indian Lead Zinc Information Centre, Calcutta.

Endeavour, Vol. 28, No. 104, 1969, ICI Ltd., London.

Abridgements of Patent Specifications Series 1,150,001—1,175,000; 1,125,001-1,150,000, Part A, Division H1, Patent Office, London.

British Steel Corporation, London: (1) BISRA Open Report, Chemistry Department, C/41/68 15 pages; C/46/68, 10 pages; (2) Reprints; (3) Finance for Steel, May 1969, 20 pages.

Lead Abstracts, Vol. 9, No. 4, 1969, LDA London through Indian Lead Zinc Information Centre, Calcutta.

Australian Chemical Engineering, Vol. 10, No. 4-6, 1969, North Sydney, N.S.W.

Accumulator, Vol. 4, No. 2, 1969, Standard Batteries, Bombay.

Korrozios Figyelo, Vol. 9, No. 2, 1969.

Electro Technology, Vol. 13, No. 2, 1969, Society of Electronic Engineers, Bangalore.

Galvanizers Bulletin, No. 4, 1969, indian Hot Dip Galvanizers. Association, Calcutta.

Classification Key for Patent Specifications, 1,150,001-1,120,000, Division H1, Circuit Elements, Patent Office, London.

Wiggin Nickel Alloys, No. 93, 1969, Henry Wiggin & Co. Ltd., Hereford, England.

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

Finish, Vol. 16, No. 5, 1969, Eugen G. Leuze Verlag, Saulugau/Wurtt, Germany.

Young Scientists' Town, by I. Fonyakov, published by Novosti Press Agency Publishing House, 95 pages, through Information Dept., of the USSR Embassy in India, New Delhi.

Compass, Vol. 4, No. 2, 1969, Madras.

BOOK REVIEWS

Inorganic Chemical and Metallurgical Process Encyclopedia, *by* M. Sitting, published by Noyes Development Corporation, Park Ridge, N.J., U.S.A., 1968, 883 pages, $ 35.

This handbook has compiled information covering a very large number of industrial inorganic (including metallurgical) processes. In each case there is a flowsheet, detailed description of the process and reference to the U.S. Patent. The publishers and the author are to be congratulated in bringing out such a comprehensive volume. It is indeed a very valuable reference source to the chemical technologist, metallurgist and executives in the industry. The price is moderate. The publication is strongly recommended as a "must" for all those concerned with chemical and metallurgical industries.

—T.L.R.

Technical Metallurgy, *by* D. R. Cliffe, published by Edward Arnold (Publishers) Ltd., London, 1968, 414 pages, 45sh.

So many types of metals, alloys, non-metallic substances and composite materiels are available in the market, and it has become necessary for a practising metallurgist or materials scientist to have a working knowledge of the service of metals and materials. The author has done a good job of blending fundamental theory with technical information. Although mainly concerned with metals and metal processes, other types of materials have also been given due place.

The book is divided into three parts: Theoretical Metallurgy, Experimental Metallurgy, and The Effect of Environment and Constitution on the Properties of Materials, followed by useful Appendices contributed by other authors. The development of the subject matter is gradual, and there is coherency in the treatment. But for a few minor errors, the book is excellent in printing, and would be a useful addition to technical libraries, and a guide to teachers and students at the graduate level who want a general picture of physical, mechanical and industrial metallurgy.

—K.I.V.

The Lead Accumulator, *by* K. A. Dasoyan and I. A. Aguf, translated from the Russian by S. Satyanarayana, published by Asia Publishing House, Bombay, 1968, 87 pages, Rs. 10.

In the author's view review articles containing modern views on service and life of accumulator are not available. This monograph is devoted basically to a study of the reasons that limit the service and life of the accumulator in the last decade. It discusses concisely recent improvements in the construction of the lead accumulator, especially the technology of its production. The monograph provides information on corrosion and deformation of the grid of the positive electrode, deterioration of the active mass of the positive electrode, self-discharge of the positive electrode, sulphation of the plates, action of addition agents (expanders) on the negative plate, electrolytic transference of the alloying elements of the anode to the negative electrode, and self-discharge of the negative electrode. Thermodynamic data has been used in calculation. Bibliography and an index are included.

This book will be of considerable interest to electrochemists and production engineers, engaged in the production of lead accumulators.

—S. K.

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

This Directory is issued by the publishers of the well known finishing monthly "Products Finishing". It is divided into the following sections: product index, product source listings, product literature, product trade names, product review, supplier addresses and advertisers' index. As with the previous editions, the present volume will be a useful guide to products and processes used in the finishing industry, with special reference to the U.S.A.

—T.L.R.

British Steel Corporation—Annual Report and Accounts 1967-68, published by the Corporation, London, 56 pages.

This report covers: aims and progress, finance, marketing and commercial, investment and corporate planning, operations, research and technical progress, diversified and overseas activities, personnel and social policy, external relations and common services. The technical advances are briefly reviewed with reference to ironmaking, steelmaking and product development.

—T.L.R.

Disposal of Process Wastes—Liquids, Solids, Gases—a Symposium 1964, papers presented at the ACHEMA meeting, Germany, translated from the German by Max Wulfinghoff, P. E., published by Chemical Publishing Company, Inc., New York, 1968, 240 pages, $ 12.50.

This monograph is the record of papers presented at ACHEMA symposium, Frankfurt/Main, Germany, in 1964 and was published as DECHEMA MONOGRAPH SERIES, 1964. The original papers, in the German language, have been translated into English by Max Wulfinghoff and now published as a monograph. It contains seventeen papers on the pollution of waters and the atmosphere in the industrialised and heavily populated regions. Two papers deal with the popllution of atmosphere by liquid and gaseous waste products. Other papers describe chemical effluents, oil contamination, biochemical contaminants, and radio-active wastes with methods of reducing the toxic agents to an acceptable minimum. Catalytic combustion, ion-exchange purification, etc., are suggested by various authors.

The authors are experts in their field, and the problem of pollution and removal by various methods has been handled well. Each paper is

summarised at the end of the paper. To bring the monograph up to date the translator has added a progress report upto 1966. A bibliography of books and papers, glossary of technical terms and an index are included. The publication will be useful to the chemical engineer, chemists and those interested in the treatment of industrial wastes.

—S.K.

Economic Commission for Europe, United Nations, New York: (1) Problems in the Design and Operation of Thermal Power Stations, Volume VIII, 1968, 70 pages, $ 1; (.) Principal Factors Affecting Labour Productivity Trends in the Iron and Steel Industry, 1969, 200 pages, $ 2.15; (3) Movements of Energy in Europe and Their Prospects, 1969, 44 pages plus Annex I-III, $ 0.85; (4) Automation in the Iron and Steel Industry, 1969, 71 pages plus Annex I-II, $ 1.30; through UN Information Service, New Delhi.

The 4 publications by the UN are of great interest in the respective fields. The first one deals with: Mechanization and automation of methods of construction and assembly work in the building of thermal power stations. The second publication is divided into 2 parts; general analysis, and country monographs. The topics covered in the third are: slope, main and international movements, and future role of energy movements. The last one is cocerned with the economic aspects of computer control of the oxygen steelmaking process. All of them contain comprehensive statistics. As with other UN publications the present numbers no doubt contain information of value to scientists, technologists and industrialists in the developed as well as developing countries.

—T.L.R.

Electrode Reactions of Organic Compounds, Discussions of the Faraday Society, published by the Faraday Society, London, 1969, 282 pages, £5; through Butterworth & Co. (Publishers) Ltd., London.

The proceedings of a general discussion on electrode reactions of organic compounds held in the School of Chemistry, University of Newcastle-upon-Tyne on the 2nd, 3rd and 4th of April 1968 has been published by the Faraday Society, London, on 4th February 1969. The book has 282 pages with an author index in the end.

In the general introduction by Marcus, an attempt has been made to classify the papers into the following categories—primarily theoretical, absorption, carbonyl reduction, other reductions, stereochemistry in electrochemistry and anodic oxidation. In his paper on electroluminescence of aromatic hydrocarbons Hoytink deals with energetics of reactions of aromatic ions leading to excited states and applications of electron transfer theory. Mehl and Hale in their paper on charge transfer processes with electronically excited anthracene molecules deal with the applications of the same electron transfer theory. Hush and Segal deal with the stability of CH_4F^- relative to CH_4F and possible implications for electron transfer with bond fission in their paper. In his paper on effect of electrode material on the product of a branched electrochemical reaction, Roger Parsons discusseses the role of adsorption on reactions schemes and current-potential plots.

Brunner and Cahill deal with the interaction of H atoms with adsorbed species in their paper. Anodic oxidation of methanpl is presented in his paper by Breiter. Conway *et al*, in their paper on reaction order and adsorption in the kinetics of organic electrode reactions, consider reaction order, -i-V plots and kinetic isotope effect for acetophenone reduction. The reaction order in acetone reduction is dealt with in the paper of Brown and Lister followed by a paper by Hickling and Wilkins, on inhibition of oxygen evolution by adsorbed species for Kolbe and other reactions. Conway's paper mentioned above also deals with steady-state studies of carbonyl group, and Brown and Lister's paper talks of hydrocoupling with acrylonitrile and study of intermediates *via* potential switching. Zuman *et al* consider polarography of unsaturated ketones and of aliphatic aldehydes in their paper.

Reduction of heterocyclics is dealt with, in the paper of Lund. Polarographic and controlled potential electrolysis of haemo-protein models is considered in the paper of Gygax and Jordan. Littlehailes and Woodhall, in their paper, consider the study of electrochemically and chemically prepared quaternary ammonium-sodium amalgams used in reductions. Grabowski *et al* discuss the least structural change rule and electrode reactions including inversion or retention of configuration in RCl reduction in their paper. Whereas the paper of Dietz and Peover considers the effect of planarity on reduction rates of cis and trans substituted stilbenes and on related systems. The paper of Bard *et al* concentrates on comparison of polarographic reduction potentials, spin resonance data and m.o. calculations for sterically hindered substituted

anthracenes. Under the category of anodic oxidation, the paper of Kuwana and Strojik deals on spectral study (with optically transparent electrodes) cyclic voltammetry and constant potential electrolysis for the oxidation of O-toluidine. Eberson and Nilsson consider anodic cyanation and similarities to data in homogeneous electrophilic substitutions in their paper. The paper of Tsutsumi and Koyama is concerned with the differences in anodic cyanation and anodic methylation and relation to homogeneous relative reaction rates. Fleishman and Goodridge's paper is on effect of square wave pulses in Kolbe and Hoffer-Moest synthesis, and the paper of Hickling and Wilkins is on square wave pulse and potential-switching studies in Brown-Walker and Kolbe synthesis. General discussions on all the categories of papers are included in the text.

Considerable renewed interest in the use of electrochemical methods in organic synthesis is seen in recent years. The physical chemistry of the electrode-electrolyte interface is now properly understood and it is but natural that the concepts and the methods of modern electrochemistry be well adopted for problems of synthesis. The electrode reactions of organic materials have been well understood, thanks mainly to organic electroanalysis. After the discussions on electrode processes in 1947, Faraday Society has now come out with the second discussions which is timely and most. welcome at a time of recent interest in this field The book is certainly of great use for those interested in a study of recent trends in electroorganic chemistry and to those engaged in research in this field as well.

—H.V.K.U.

British Steel Corporation, London: (1) BISRA Open Report, Chemistry Dept., E/41/68, 15 pages; C/46,/68, 10 pages; (2) Reprints; (3) Finance for Steel, May 1969, 20 pages

The two reports deal with the prediction of coating performance on steel, and the best way to paint structural steel: a re-appraisal. The reprints discuss: design in relation to corrosion prevention—a very important topic; corrosion during processing and storage; painting of steelwork—conditions after 5 years exposure. Financial structure of the Corporation is covered in the last brochure, and includes items like planning and technological trends. The literature is of interest in relation to the production and application of steel.

—T.L.R.

World Mining—Catalog, Survey and Directory Number, Volume 22, No. 7, June 25, 1969, published by Miller Freeman Publications, San Fransisco, Calif., U.S.A., 248 pages.

This Special Number is issued every year by the publishers of the well known Journal "World Mining". It consists of the following sections: technology advances mineral production in 1968, major production tables, production equipment review, world wide mining developments covering 79 countries, national mineral production statistics—60 tables, US mining in 1968, and catalog index of equipment and machinery. The directory will be very useful to keep in touch with the recent trends in world mining.

—T.L.R.

Introduction to the Thermodynamics of Charged and Polarized Layers, *by* A. Sanfeld, published by Wiley-Interscience Publication, Monographs in Statistical Physics and Thermodynamics—Volume 10, New York, 1969, 258 pages, $ 11.00

The present book is an impressive addition to the series of monographs in Statistical Physics and Thermodynamics, edited by Prof. I. Prigogine. In it, a detailed discussion of the applications and limitations of a generalised thermodynamic treatment of charged systems is given for the first time. The author is quite successful in his purpose to see "what a purely thermodynamic study could produce implicating the lowest number of hypothesis and by making a direct comparison between the calculated and observed phenomena."

A brief introductory chapter defines the terms and subject of the book and these are developed in the later chapters. In the following two chapters, the concept of global and local formulation of thermodynamics is introduced briefly. In chapter 4, the basic conservation laws are reformulated to explain an important application of the 'local character' of the theory. The next chapter describes how the thermodynamic relations extend to systems for which the permittivity depends on the macroscopic field and this method is compared to Helmholtz's concept of reversible processes. In Chapters 7 and 8, methods of integration for the mechanical equilibrium are given and are applied to gas mixtures and electrostriction effects. In the next two chapters, the problem of dielectric constant and molar volume is discussed and the order of magnitude of some parameters is given. In chapters 11, 12 and 13, various properties (distribution of potential,

Young Scientists' Town, *by* I. Fonyakov, published by Novosti Press Agency Publishing House, 95 pages; through Information Dept. of the USSR Embassy in India, New Delhi.

This brochure gives a detailed description of the city of science in Novosibirsk, Siberia, U.S.S.R. The developments of and achievements in various fields like chemistry, mathematics, computers, cybernetics, electronics, cyto logy and genetics, hydrodynamics, physics and economics have been outlined with a large number of illustrations. It is interesting to know that the birth-rate in the Academy town is the highest in that country, and that 70 per cent of the inhabitants are below 30 years. The publication will no doubt come in handly, particularly in underdeveloped countries, while planning advanced scientific centres.

—T.L.R.

Rural Electrification, Volume II, published by Economic Commission for Europe, United Nations, New York, 1969. 47 pages, $0.65; through UN Information Service, New Delhi.

This report covers a study of rural electrification problems ro make available to the less industrialized countries the results obtained in other countries. It deals with (a) technical methods of ensuring automatic voltage control in rural low—and medium-voltage, supply networks, their efficiency, field of application and long-term prospects of utilization and (b) electricity in horticulture.

—T.L.R.

Gases, Liquids and Solids, *by* D. Tabor, published by the Penguin Library of Physical Sciences: Physics/Chemistry, Penguin Books Ltd., Harmondsworth, Middlesex, England, 1969, 290 pages, 21sh.

In the last two or three decades there has been a discernible trend towards regrouping the subjects of Physics to allow for the new knowledge and the new methods of approach. The new approach is to emphasize the atomic structure of matter and to show that by assuming the existence of attractive and repulsive forces between atoms and molecules and the presence of thermal energy, it is possible to explain nearly all the bulk properties of gases, liquids and solids in terms of relatively simple models.

The present book attempts to do this in the course of 14 chapters, the first chapter being an introductory one. Chapter 2 deals with the nature of atoms, molecules and the forces between them, while chapter 3 deals with temperature and the concept of heat. The next 3 chapters describe the properties of gases starting from the simple kinetic theory of ideal gases, going through the more sophisticated treatment including the Boltzmann distribution, equipartition of energy and the behaviour of imperfect gases. Chapters 7, 8, 9 and 10 deal with the different properties of solids. Chapter 7 shows how the inter-atomic forces in solids help us to explain the heat of sublimation, thermal expansion, elastic properties, and the existence of the surface energy of solids. Chapters 8, 9 and 10 deal respectively with the elastic, plastic and brittle, and the thermal and electrical properties of solids. Chapters 11 and 12 deal with the liquid state. The molecular theory of vapour pressure and surface tension together with the recent descriptive ideals of Bernal and Alder are included in chapter 11, while the following chapter discusses the flow of liquids and using the Eyring's theory shows that viscosity may be understood in terms of intermolecular forces. The last two chapters deal with the dielectric and magnetic properties of matter and show that these properties arise from the polarization of atoms and molecules produced by the applied electrostatic or magnetic field.

The treatment of this book is simple and contains very little quantum physics or wave mechanics. As the author has rightly put it, it is an excellent book for the teachers teaching physics, at the first-degree level and for these students. In addition, it will be a useful book for the students and teachers of materials science where the trend is to correlate the different properties of matter with the atomic and molecular structure.

—(Miss) V. K.

Basic Electricity, by W. M. Gibson, published by The Penguin Library of Physical Sciences: Physics, Penguin Books Ltd., Harmondsworth, Middlesex, England, 1969, pages 192, 16sh.

This book consists of two parts. Part one has ten chapters and deals with the fundamentals in which the nature of the electric and magnetic fields are discussed and the forces between the electric currents, electromagnetic induction and electrostatics are dealt with in detail. Chapter 10 deals with the capacity and the calculation of capacities. There are six chapter in part two. Chapters 11, 12 and 13 deal with the simple theory of alternating currents with impedance treated as a complex quantity, while chapters 14, 15, and 16 deal respectively with the various reasonant circuits,

field and charge density; association and dissociation) of electrochemical diffuse double layer are described. In chapters 14 and 15, Gibb's surface model is extended and used to study a monolayer spread out on an acid support. Nernst law is derived in the final chapter. The conclusions from all the chapters are nicely summarized at the end.

The book is lucidly written, contains the author and subject index, with an ample dose of references at the end of each chapter, for further reading. The treatment of various topics is well balanced. The book is easy to read and contains sufficient matter to catch the interest of people in thermodynamics and Electrochemistry.

—S.K.N.

Copper Alloy Spring Materials Information Sheets, published by Copper Development Association, London, 1969; through Indian Copper Information Centre, Calcutta.

The CDA has indeed rendered a useful service in preparing these information sheets in order to provide the essential data on copper alloys used, for springs. Beginning with an introduction, the information sheets cover 5 and 7 per cent phosphor bronze (copper-tin-phosphorus), as well as 12 and 18 per cent nickel silver (copper-nickel-zinc). In each case the British Standard Specification, composition and properties—mechanical and physical, and references, are given. This publication will be of interest to the metallurgist and the design engineer.

—T.L.R.

Modern Physical Chemistry: An Introduction, *by* M. F. C. Ladd and W. H. Lee, published by Penguin Books Ltd., Harmondsworth, Middlesex, England, 1969, 304 pages, 24sh.

This volume is the first of a series of degree texts in chemistry which are being produced by Penguin Education. This deals with the topics basic to a first course in physical chemistry in eight chapters plus appendix from A to F. In the first two chapters *viz.*, (i) Introduction to modern chemistry and (ii) Chemical structure and valency, the fundamental concepts for e.g., Bohr's atomic theory, atomic orbitals, interatomic bonds etc., have been dealt with clarity. Chapter 3 covers a concise account of the thermochemistry and thermodynamics with illustrations. Chapter 4 contains the exhaustive information about the states of matter, and discussions are subdivided into the three main states—gaseous, liquid and solid. Chapter 5 enumerates chemical equilibrium, in particular, the law of mass action, criterion for equilibrium, ionic equilibria, acid-base equilibria, buffer solutions and indicators. Physical properties of systems *viz.*, additive, constitutive and colligative properties have been explained in the sixth chapter. Chapter 7 explores on electrochemistry in an extremely nice style. Faraday's laws of electrolysis have been combined into one equation. The last chapter throws light on kinetics of chemical reactions with special reference to the kinetics of reaction, catalysis, chain reactions etc. The book finds its place in a side rack for ready reference to chemists, and is a good one for degree students of chemistry.

—R.P.D.

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

The above publication fulfills the long-felt need for modern methods of chemical analysis in chemistry. All the techniques have been discussed in an elaborate way, in the light of principles, kinds of information obtained and the interpreptation of the results, and immediate applications to organic chemistry as well as biochemistry, rather than the detailed operation of commercial instruments. The authors should be congratulated for their achievement of a new blend of topics, all of an analytical flavour but geared to every branch of chemistry.

Modern methods of chemical analysis deals with (1) Introduction, (2) Separations based on phase changes, (3) Extraction, (4) Chromatogtaphy, (5) Gas chromatography, (6) Liquid column chromatography, (7) Plane chromatography, (8) Electromagnetic radiation and its interaction with matter, (9) Quantitative analysis by adsorption of electromagnetic radiation, (10) Instrumentation and techniques for spectrophotometry, (11) Interpretation of adsorption spectra, (12) Nuclear magnetic resonance spectroscopy, (13) Mass spectrometry, (14) Electrochemical measurements, (15) Acid-based equilibrium calculations in water, (16) The role of the solvent in acid base chemistry, (17) Effects of molecular structure on acidity (18) Kinetics and (19) Radiochemical methods. The book suits the requirements of all *viz.*, the research worker, teacher and chemist, engaged in routine chemical analysis.

—R.P.D.

the transformer, and the A.C. measurements. There are three appendix dealing with the electrostatic and electromagnetic units, the vector methods, and the force between two moving charges, in special relativity. The treatment of the book is simple and would serve as a good text for the students and teachers of the first degree level.

—(Miss) V.K.

Zinc Alloy Die Casting Seminar—Madras, 1968, Edited Proceedings, published by Indian Lead Zinc Information Centre, Calcutta, 246 pages, Rs. 15.

The die casting process has made great impact on modern technology on account of its versality and potentialities. Aircraft, precision instruments, hardware, industrial machinery and thousands of other items depend upon the production of die cast components. Aluminium and zinc alloys are by far the most widely used die casting alloys, although the latter is more popular of the two because of its excellent physical and mechanical properties, high production rate, low materials cost, dimensional accuracy and better casting characteristics. Die casting industry in India is still in its formative years and hence has a great potential for growth. A seminar on zinc alloy diecasting was organized-ed by Indian Lead Zinc Information Centre at Madras during February 1968 in order to bring together all die casters and to discuss various aspects of die casting.

This volume contains 15 papers presented at the seminar including discussions. The titles of the papers are: (1) Why Zinc for die casting, (2) Die casting industries in India—present position and future prospects, (3) Zinc alloy die casting industry in Japan, (4) Zinc die casting alloys and their manufacture, (5) A new gravity casting zinc alloy, (6) General aspects of design for die casting, (7) The role of the die designer in pressure die casting, (8) Certified zinc alloy die castings in the U.K.—applications in hardware and engineering, (9) Application of zinc alloy die castings in armament manufacture, (10) Design and production of zinc alloy die castings at the Standard Motor Products of India Ltd., (11) ILZRO research on zinc die casting, (12) The control of quality in the production of zinc alloy die castings, (13) Inspection of zinc alloy die castings for use in armaments, (14) Electroplating of zinc alloy die castings and (15) Nickel-chromium plating zinc alloy die castings.

The papers are profusely illustrated with photographs and tables and contain a wealth of information. A list of delegates, and the photographs of the wide range of die cast components displayed at the exhibition which was organized along with the seminar are given at the end. The Seminar has admirably served the purpose of focussing attention on the importance of zinc die casting, into scope and applications, and its place in industry. This publication will be of great value to all concerned with the die casting industry.

—(Miss) M.S.

Einfuhrung in die Galvanotechnik (Introduction to Electroplating), by Bernhard Gaida, published by Eugen G. Leuze Verlag, Saulgau (Wurtt), 1969, 272 pages, DM 25.

Being one among the new textbook series, this volume deals with the basic chemical, physical, electrochemical and electrical engineering ideas which are essential for understanding of electroplating processes. The fundamental concepts have been well covered prior to the electrolysis process. The book has been divided in 21 chapters as follows: (1) Basic physical and chemical ideas, (2) Periodic table of the elements and atomic structure, (3) Gas laws, (4) Metals (nickel, chromium, copper, zinc, cadmium, tin, gold, silver, aluminium, iron), (5) Non-metals, (6) Alloys, (7) Solutions, (8) Acids, (9) Bases, (10) Salts, (1) Thermochemistry, (12) Oxidation-Reduction. (13) Water, (14) Electrolytic dissociation, (15) Hydrolysis, (16) pH value, (17) Potential formation of metals, (18) Electrolysis (soluble, insoluble anodes), (19) Potential-current relation in electrolysis, (20) Faraday's laws and (21) Basic concepts of electrical engineering. This book is useful not only for trade schools and engineering colleges but also for self-study for practical workers who wish to extend their theoretical knowledge.

—R.P.D.