

temperature hydrogen-oxygen cells, and carbonaceous fuels. These topic headings indicate considerable overlap in the material, and some consolidation might have been made in order to save space. However, the division of subjects is logical in terms of the experiences of the authors, and it is easy to skip over the repetitious parts (but one hopes this repetition did not very seriously affect the price of the book).

Each of these chapters includes a discussion of the special features and advantages of a type of fuel cell, a brief treatment of thermodynamic and possibly kinetic considerations, details of one or more cell designs, and performance data in terms of current-cell (or electrode) potential curves. Electrode materials and designs are treated extensively from the point of view of development. Only occasional attention is given to studies of electrode reaction mechanisms and catalysis. The bibliographies are complete, but not extensive, up to 1961, with only a very few references to 1962 publications.

The three remaining chapters are concerned with relatively general consideration of fuel cells: thermodynamics, kinetics, and catalytic aspects as well as research techniques. After the first reading, the usefulness of these chapters is variable and depends upon the individual reader. My opinion is that they will not replace the standard reference works and texts, many of which are cited. This is particularly true with respect to the chapter on kinetics and catalysis, which appears to be pedagogically unsound; the major fault is that many statements are unnecessarily specific and are given in the guise of generalities. In addition, the definitions of terms are not rigorous and often are misleading. Readers should carefully consider any statement within its context before attempting any generalizations. Even then, some parallel reading would be helpful.

Although the glamour of fuel cells has faded as a result of slower than expected development and application, the rate of advance of technology in this area is indeed significant. General interest is widespread and is occasionally stimulated by reports from the popular press. This timely and comprehensive review of the current status of the different types of fuel cells should find a wide reception.

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Care of Museum Objects

Recent Advances in Conservation. A conference held at Rome in 1961. G. Thomson, Ed. Butterworth, Washington, D.C., 1963. xvi + 224 pp. Illus. \$21.

The need to conserve natural resources is widely recognized. It is far less frequently realized that it is also necessary to conserve the materials stored in museums. Yet, ill-considered methods of handling, display, storage, and repair can often ruin museum objects. At the very least, lack of proper attention gradually erodes away their number and quality. In honor of its tenth birthday, the International Institute for the Conservation of Historic and Artistic Works held a conference in Rome in 1961 to consider these matters. Although this professional society has less than 1000 members, it publishes a technical quarterly and a biannual set of abstracts. The field is young and rapidly growing, however, and there are few books that describe, even in a general way, the technical methods of examining and treating museum objects. Hence, this publication of the conference papers is a valuable contribution, for it provides a review of the present state of the art by 46 prominent specialists.

The 47 papers, eight of which are in French, are varied in character. There are reviews of the literature, statements of policy and philosophy, descriptions of methods and techniques, and disclosures concerned with new findings in research. The subjects considered include museum climate, physical and chemical methods of analysis, fungicides and insecticides, new varnishes and problems encountered in removing varnishes, the examination and treatment of metal objects, transferring frescos, the consolidation of fragile objects, the examination and conservation of glass, reinforcing and transferring wood-panel paintings, the treatment and repair of textiles, and the training of conservators and restorers. Understandably, there is little discussion of archaeological problems *per se* and practically nothing about the restoration of architectural monuments. Notably missing are contributions from Belgium and India. The extensive halftone illustrations are not of the highest quality, and they detract from the overall attractiveness of the volume.

This is not a how-to-do-it handbook

of specific treatment and analysis. Rather, it is a survey and statement of fundamental problems. Although the volume is addressed primarily to professional colleagues, the language is simple and direct. It will be a valuable reference, for it introduces the non-specialist to the people, the literature, and the basic problems concerned with the care and examination of museum materials.

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Chemical Engineering

The Thermodynamics of Gasification and Gas-Synthesis Reactions. N. V. Lavrov, V. V. Korovov, and V. I. Filippova. Translated from the Russian edition (Moscow, 1960) by G. H. Kinner. Pergamon, London; Macmillan, New York, 1963. viii + 116 pp. Illus. \$6.50.

Essentially this monograph is composed of two distinct parts; the first is a quite adequate review of the calculation of thermodynamic data by statistical methods and of chemical equilibrium constants from thermodynamic functions. This section also includes tabulations of thermodynamic functions, which are based on data derived in large measure from Western sources. My spot checks show that the data in these tabulations generally agree with American tabulations which use the same sources. However, several of the enthalpies of formation, ΔH_f° , do not agree with those tabulated by Pitzer and Brewer in their revision of Lewis and Randall's *Thermodynamics* (for example, ΔH_f° for SO_3 , SO_2 , H_2S , COCl_2 , CH_3O_2 and HF). As a result, one should check the original sources before using the tabulations of thermodynamic properties given by Lavrov and his co-authors for precise calculations. In general the literature citations are adequate, but occasional references are insufficient (see reference 75 on p. 72).

The second half of the monograph should be useful to process engineers in the organic chemical industry. In this half, equilibrium constants, equilibrium concentrations, and percentage conversions for several chemical synthesis processes are recorded. Unfortunately, in this respect the Russians have

demonstrated some lack of judgment, for they have calculated equilibrium concentrations for the reactions only in the relatively simple case of parallel and independent chemical reactions—that is, chemical equilibrium compositions were calculated for each reaction without considering the effect of competing reactions. Obviously the case of chemical equilibrium among all the competing reactions is the proper one when one wishes to calculate potential reaction yields. For this reason much of the latter half of this monograph has little value.

The technical editor of the translation should have provided a smoother English version, and the translator should have included a glossary to inform the reader of differences in terminology—for example, Z , in the Russian literature, called the thermodynamic potential, is equivalent to the Gibbs free energy, and ϕ^* , the potential, is equivalent to the free energy function.

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New Books

Economics and the Social Sciences

Actuarial Description of Abnormal Personality. Philip A. Marks and William Seeman. Williams and Wilkins, Baltimore, Md., 1963. 357 pp. Illus. \$7.50.

Adolescent Character and Personality. Robert J. Havighurst and Hilda Taba. Wiley, New York (© 1949), 1963. 325 pp. Illus. Paper, \$1.65.

Aging and the Economy. Harold L. Orbach and Clark Tibbitts, Eds. Univ. of Michigan Press, Ann Arbor, 1963. 249 pp. \$7.50.

An Anatomy of Kinship. Mathematical models for structures of cumulated roles. Harrison C. White. Prentice-Hall, Englewood Cliffs, N.J., 1963. 192 pp. Illus. \$6.95.

Ancient Society. Or researches in the lines of human progress from savagery through barbarism to civilization. Lewis Henry Morgan. Eleanor Burke Leacock, Ed. World Publishing Co., Cleveland, Ohio (reprint of 1877 edition), 1963. 639 pp. Illus. Paper, \$2.95.

Anthropology and Human Nature. Ashley Montagu. McGraw-Hill, New York (© 1957), 1963. 400 pp. Paper, \$2.75.

Bargaining Behavior. Lawrence E. Fouraker and Sidney Siegel. McGraw-Hill, New York, 1963. 319 pp. Illus. \$8.95.

Beyond the Melting Pot. The Negroes, Puerto Ricans, Jews, Italians, and Irish of New York City. Nathan Glazer and Daniel Patrick Moynihan. M.I.T. Press

and Harvard Univ. Press, Cambridge, Mass., 1963. 368 pp. \$5.95.

The Civic Culture. Political attitudes and democracy in five nations. Gabriel A. Almond and Sidney Verba. Princeton Univ. Press, Princeton, N.J., 1963. 574 pp. Illus. \$8.50.

The Clinical Method in Psychology. Robert I. Watson. Wiley, New York (© 1951), 1963. 791 pp. Paper, \$2.45.

Color: A Guide to Basic Facts and Concepts. Robert W. Burnham, Randall M. Hanes, and C. James Bartleson. Wiley, New York, 1963. 261 pp. Illus. \$9.25.

Concepts of Personality. Joseph M. Wepman and Ralph W. Heine, Eds. Aldine, Chicago, Ill., 1963. 544 pp. Illus. \$8.95.

Crestwood Heights. A study of the culture of suburban life. John R. Seeley, R. Alexander Sim, and Elizabeth W. Loosley. Wiley, New York (© 1956), 1963. 523 pp. Illus. Paper, \$2.45.

Cultural Sciences. Their origin and development. Florian Znaniecki. Univ. of Illinois Press, Urbana (© 1952), 1963. 446 pp. Paper, \$2.25.

Culture Against Man. Jules Henry. Random House, New York, 1963. 509 pp. \$7.95.

Empire of the Inca. Burr Cartwright Brundage. Univ. of Oklahoma Press, Norman, 1963. 414 pp. Illus. \$6.95.

Ethnographic Bibliography of South America. Timothy J. O'Leary. Human Relations Area Files Press, New Haven, Conn., 1963. 411 pp. Illus. Paper, \$6.75.

Growth of a New Product. Effects of capacity-acquisition policies. Ole C. Nord. M.I.T. Press, Cambridge, Mass., 1963. 101 pp. Illus. \$5.

Handbook of Mathematical Psychology. vol. 2. R. Duncan Luce, Robert R. Bush, and Eugene Galanter, Eds. Wiley, New York, 1963. 614 pp. Illus. \$11.95.

Handbook of Medical Sociology. Howard E. Freeman, Sol Levine, and Leo G. Reeder, Eds. Prentice-Hall, Englewood Cliffs, N.J., 1963. 620 pp. Illus. \$11.

History, Psychology, and Science. Selected papers of Edwin G. Boring. Robert I. Watson and Donald T. Campbell, Eds. Wiley, New York, 1963. 384 pp. \$8.95.

The Human Species. An introduction to physical anthropology. Frederick S. Hulse. Random House, New York, 1963. 526 pp. Illus. \$7.95.

Innovation: The Basis of Cultural Change. H. G. Barnett. McGraw-Hill, New York (© 1953), 1963. 474 pp. Illus. Paper, \$3.45.

The Javanese of Surinam. Segment of a plural society. Annemarie de Waal Malefijt. Humanities Press, New York, 1963. 217 pp. Illus. \$5.50.

The Kapauku Papuans of West New Guinea. Leopold Pospisil. Holt, Rinehart, and Winston, New York, 1963. 114 pp. Illus. Paper, \$1.50.

Life Stress and Mental Health. The midtown Manhattan study. Thomas S. Langner and Stanley T. Michael. Free Press (Macmillan), New York, 1963. 541 pp. Illus. \$9.75.

Mental Mechanisms. Henry P. Laughlin. Butterworth, Washington, D.C., 1963. 270 pp. \$7.50.

Mirror for Man. Clyde Kluckhohn. McGraw-Hill, New York (© 1949), 1963. 331 pp. Paper, \$1.95.

Modern Perspectives in Child Development. In honor of Milton J. E. Senn. Albert J. Solnit and Sally A. Provence, Eds. International Univ. Press, New York, 1963. 688 pp. \$12.50.

The Mothers. Robert Briffault. Edited and abridged by Gordon Rattray Taylor. Grosset and Dunlap, New York, 1963. 451 pp. Illus. Paper, \$2.65.

Motivation, Nebraska Symposium, 1963. Marshall R. Jones, Ed. Univ. of Nebraska Press, Lincoln, 1963. 214 pp. Illus. Paper, \$2.50; cloth, \$5.50.

The Neolithic Revolution. Sonia Cole. British Museum (Natural History), London, ed. 3, 1963. 72 pp. Illus. Plates. Paper, 5s.

New Estimates of Fertility and Population in the United States. A study of annual white births from 1855 to 1960 and of completeness of enumeration in the censuses from 1880 to 1960. Ansley J. Coale and Melvin Zelnik. Princeton Univ. Press, Princeton, N.J., 1963. 204 pp. Illus. \$4.

On the Accuracy of Economic Observations. Oskar Morgenstern. Princeton Univ. Press, Princeton, N.J., ed. 2, 1963. 336 pp. Illus. \$6.50.

Pacific Port Towns and Cities. A symposium of the 10th Pacific Science Congress (Honolulu), August–September 1961. Alexander Spoehr, Ed. Bishop Museum Press, Honolulu, 1963. 99 pp. Illus. Paper, \$3.50.

Peoples of Central Asia. Lawrence Krader. Indiana Univ. Press, Bloomington, 1963. 333 pp. Paper.

Personality and Psychotherapy. An analysis in terms of learning, thinking, and culture. John Dollard and Neal E. Miller. McGraw-Hill, New York (© 1950), 1963. 504 pp. Illus. Paper, \$3.25.

Personality Development and Psychopathology. A dynamic approach. Norman Cameron. Houghton Mifflin, Boston, 1963. 815 pp. \$8.75.

Problem-Solving Discussions and Conferences. Leadership methods and skills. Norman R. F. Maier. McGraw-Hill, New York, 1963. 269 pp. Illus. \$6.95.

Psychology and the Measure of Man. A phenomenological approach. Joseph Lyons. Free Press (Macmillan), New York, 1963. 320 pp. \$5.50.

Psychological Counseling in a Small College. Eugenia Hanfmann, Richard M. Jones, Elliot Baker, and Leo Kovar. Schenkman, Cambridge, Mass., 1963. 143 pp. \$3.95.

Social Evolution. Gordon Childe. World Publishing Co., Cleveland, Ohio (© 1951), 1963. 191 pp. Paper, \$1.65.

Social Learning and Personality Development. Albert Bandura and Richard H. Walters. Holt, Rinehart, and Winston, New York, 1963. 343 pp. Illus. \$7.

Social Research Consultation. An experiment in health and welfare planning. Roland L. Warren. Russell Sage Foundation, New York, 1963. 163 pp. Illus. \$3.

The Social Uses of Social Science. The papers of Robert Redfield. vol. 2. Margaret Park Redfield, Ed. Univ. of Chicago Press, Chicago, Ill., 1963. 301 pp. \$10.