

BOOKS

Wave Mechanics and Valency, J. W. Linnett, Methuen and Company, Ltd., London, England; John Wiley and Sons, New York (1960). 184 pages + xii. \$3.00.

The person who has studied quantum mechanics in school but has not kept up with the subject will find reading Dr. Linnett's book a pleasant and profitable experience. The presentations are in many places quite novel, and the illustrative examples are frequently different from those given in the standard text books, for example, the use of the "particle-on-a-ring" problem to discuss the quantization of angular momentum as well as variational and perturbation procedures.

The person who has never studied any quantum mechanics will find this book a useful introduction to the subject. As for mathematical background, a knowledge of calculus and ordinary differential equations will suffice. Dr. Linnett uses the complete mathematical solution of several elementary problems as the basis for his entire subsequent discussion. In this respect his treatment is different from that given in other elementary text book discussions on chemical bonds, where intuitive and pictorial approaches are used.

It is refreshing to see a book so cleverly conceived and originally presented. Chemical engineers who are working in such areas as physical properties, reaction kinetics, and applied statistical mechanics would profit from reading this book.

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Experimental Cryophysics, F. E. Hoare, L. C. Jackson, and N. Kurti, editors, Butterworth and Company, Ltd., London, England (1961). 404 pages. \$14.00.

This book with nineteen contributors deals with the techniques of laboratory experimentation at low temperatures. The first nine chapters were written by six authors, and the tenth and last chapter is the work of thirteen authors. The scope of the book is indicated by the list of chapter titles: Low Temperature Laboratories, The Mathematics of Gas Liquefaction and Liquefier Design, Liquid Air Production, The Production of Liquid Hydrogen and Helium, Ancillary Equipment for the Production of Liquid Hydrogen and Liquid Helium, Materials and Methods for the Construction of Low Temperature Apparatus, Storage and Transfer of Liquefied Gases, Magnetic Cooling, Low Temperature Thermometry, and Cryogenic Techniques and Miscellaneous Applications.

In addition there is an appendix with twenty-four tables of useful information dealing with properties such as thermal data, density, thermal conductivity, vapor

(Continued on page 431)

(Continued from page 289)

Coalescence and Entrainment: Phenomena on Sieve Trays A. J. Teller and R. E. Rood	369
Transport Characteristics of Suspensions: Part VI. Minimum Transport Velocity for Large Particle Size Suspensions in Round Horizontal Pipes David G. Thomas	373
Steady Flow of an Oldroyd Viscoelastic Fluid in Tubes, Slits, and Narrow Annuli Michael C. Williams and R. Byron Bird	378
Thermal and Material Transfer in Turbulent Gas Streams: One-Inch Spheres Emilio Venezian, Manuel J. Crespo, and B. H. Sage	383
Absorption of Ammonia by Acetic Acid Solutions Sharanjit S. Dhillon and R. H. Perry	389
Nonequilibrium Thermodynamic Theory for Concentration Profiles in Liquid Extraction Alphonse Hennico and Theodore Vermeulen	394
Adsorption of Normal Paraffins and Sulfur Compounds on Activated Carbon R. J. Grant, Milton Manes, and S. B. Smith	403
Experimental Transient Response of a Pilot-Plant Distillation Column: Part II. Response to Liquid and Vapor Rate Perturbations M. F. Baber and J. A. Gerster	407
Books	290
Communications to the Editor	
Countercurrent Heat or Mass Transfer Between a Turbulent and a Laminar-Stream: I. Flat Velocity Profiles and Short Contact Times ... E. N. Lightfoot	416
A Test of the Assumption of Interfacial Equilibrium in Measurements of the Gas Film Mass Transfer Coefficient ... L. J. Delaney and L. C. Eagleton	418
Mass Transfer in Laminar-Boundary-Layer Flows with Finite Interfacial Velocities ... Warren E. Stewart	421
The Effect of Mass Transfer on Horizontal Boundary-Layer Flows with Combined Free and Forced Convection ... William N. Gill and Eduardo Del Casal	423
Application of Reciprocal Variational Principles to Laminar Flow in Uniform Ducts ... Warren E. Stewart	425
Immiscibility of Hydrocarbons and Liquid Methane A. J. Davenport, P. I. Freeman, and J. S. Rowlinson	428
Abstracts	
Symposium Series	429
Computer Program Interchange	432
Information Retrieval	423

(Continued from page 290)

pressures, viscosity, etc. of hydrogen, helium, nitrogen, and oxygen and with other miscellaneous data.

Many of the techniques are well illustrated with drawings, and the theory necessary for the design of equipment is adequately treated by equations. There is a good collection of references to literature at the end of each chapter.

All serious workers in the field of cryogenics will find this a very useful book which they will wish to add to their libraries.

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Photochemistry in the Liquid and Solid States, L. J. Heidt, R. S. Livingston, E. Rabinowitch, and Farrington Daniels, editors, John Wiley and Sons, New York, New York. 174 pages.

The twenty-four papers in this volume were presented at a symposium held in September, 1957, arranged by the Subcommittee of the National Academy of Science—National Research Council on the photochemical storage of energy. From a reading of the papers and introductory and concluding remarks by members of the subcommittee there emerges an excellent overall view of present thought and research in this area.

Criteria for suitable photochemical reactions and possible techniques for photochemical storage of energy are reviewed first by members of the subcommittee. The papers, many of them as progress

reports rather than more definitive results, point up the factors discussed in the introduction. The concluding remarks emphasize the difficulties involved in finding a feasible solution to some of the problems. It is recognized that these difficulties are formidable and that there appear to be no easy answers to many of them.

Present knowledge is inadequate to predict the extent to which the energy supplies of the future will depend on photochemical storage of energy or the methods which are most likely to prove practicable for such storage. The search for answers and ideas is nonetheless exciting and challenging, an attitude which this short volume conveys very well.

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Fluids Mechanics, Richard H. F. Pao, John Wiley and Sons, New York, New York. 502 pages.

This textbook is a successful attempt to present to the engineering student (normally in his third or fourth year) an introduction to several portions of the subject of fluid mechanics. The book is of broad scope, embracing as it does the behavior of ideal fluids and viscous fluids, incompressible and compressible fluids, flow in closed conduits and open conduits, and flow about immersed bodies. The attempt to introduce so many topics without the use of mathematics beyond ordinary differential equations and some slight knowledge of partial differential equations poses difficulties. The author succeeds in