

tions. While this book is the practical manual it was intended to be, all those involved in filtration should be able to benefit from a better understanding of associated unit operations.

Although this book is not intended as a highly research oriented treatise, it would provide an excellent background for anyone starting fundamental work in filtration. It is well organized, although it is conceded that some newcomers to the field may find the organization a little awkward at first. I learned a lot from reading the book and expect it to become a frequently used reference.

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Handbook on Vapor Pressure and Heats of Vaporization of Hydrocarbons and Related Compounds, R. C. Wilhort and B. J. Zwolinski, Texas A&M Research Foundation, College Station, Texas (1971). 329 pages. \$10.00.

The data sheets from API Research Project 44 are well known. However, only few individuals could own the entire compilation and keep it up to date.

A decision was reached recently to publish many of the API data in a series of small handbooks at reasonable prices. The first of these handbooks covers primarily vapor pressures and heats of vaporization for some 680 hydrocarbons and 95 related sulfur compounds.

The vapor pressure tables are direct reprints of the k and k E tables of the API 44 loose-leaf data sheets. Heats of vaporization are based on the m tables of the same reference and are derived primarily from vapor pressure data fitted to the Antoine equation and with second virial corrections for vapor non-ideality.

Ready access to data of this type is invaluable to those who are concerned with hydrocarbon properties. Perhaps the only criticism that could be tendered is the continued use of English units in most of the tables even though a brief discussion on the S.I. system and some conversion factors are still presented. Nevertheless, the metric trend is manifested in the heat of vaporization tables where BTU/lb, kcal/mol, cal/g, and kJ/mol are employed.

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Biotechnology of Industrial Water Conservation, B. E. Purkiss, Mills & Boon, Ltd., London (1972). 56 pages. £1.50.

This book is written to provide a general background in bacteriology for the chemical engineer who has had little or no experience in this area.

The author brings his many years of experience in water treatment in this brief survey of some of the ways bacteria, and to a lesser degree fungi and algae, can disrupt industrial processes. He shows how, in just a few days, bacteria can completely plug troughs in a cooling tower, reduce heat transfer in a heat exchanger, corrode tubes and shells, and turn good water into badly polluted water. Examples are also given from the paper industry as to the destructive effects of microorganisms. A general description of the mode of bacterial reproduction and growth is presented in an easily read and understood manner.

The two chapters devoted to water recovery and use of biocides do, however, seem unnecessarily pessimistic. The only method of waste water treatment presented is the slow sand filter. Many others are in common use and I feel that additional techniques could have been described. Unlike the earlier portions of the book which dealt with specific examples from real industries, the chapter on biocides is too general and covers the whole field in only four pages. It would have been more interesting to have had more specific examples of successful or even unsuccessful control programs rather than a brief, general coverage.

I enjoyed the book and feel that Mr. Purkiss has done a good job of recording some of his experiences in a readable manner. This book should be of interest to those involved with water and responsible for its usage in a plant or process. The coverage is elementary and chemical engineers would be able to read it and learn a good deal about microbiology.

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Whiskers, C. C. Evans, M & B Monograph ME/8, Mills and Boon, Ltd., London (1972). 72 pages. £1.5.

This book starts with a very brief but concise and interesting historical introduction to the subject of whiskers, the hairlike single crystals of extremely small (usually in the range 1 to 100 μm^2) and near uniform cross-sections. In the three chapters which follow, the monograph answers in the same brief

manner the three questions about: "Why and how a crystal grows as a whisker," "How to grow whiskers," and "What their properties (mainly mechanical) are."

If you are a person working in, or familiar with, the area, this book will not help you much. It will not answer questions which arose in your mind during your work or clarify the disturbing aspects of some of the theories. It will not even help you in terms of reference to other published works. Only a list of 17 rather standard publications in the field are supplied in an appendix as sources of further information in general.

However, if you are unfamiliar with the area and want to get an overall view of the field of whiskers, this is the book to start with. It will tell you everything you always wanted to know about whiskers (but you were very hesitant to find by searching through the details of the numerous papers reporting particular aspects of whisker crystals). You may have only one disappointment. The book may open your appetite for but be unable to help you in further reading or work. For instance, one of the tables presents examples of materials grown as whiskers by the various methods without citing any reference. Also, no reference is cited in statements like "there is some experimental evidence that whiskers do nucleate repeatedly at the same site." If you want now to grow some whiskers or to read further about the nucleating sites of whiskers, you will have to return and search through the original literature without, unfortunately, any clue from the book.

Despite the above criticisms, the book is interesting and provides an easy and worthwhile evening of reading.

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Polymer Structure, Properties & Applications, Rudolph D. Deanin, Cahnners Books, Boston (1972). 496 pages. \$27.50.

The stated purpose of this latest addition to the Cahnners Practical Plastics Series is to "collect and organize our present understanding of the important relationships between structure, properties and applications" of polymers. The author has achieved partial success in this very ambitious undertaking.

Beginning with a very basic review of elemental properties and polymer formulae, the author proceeds to dis-