BOOKS

Tellurium, W. Charles Cooper, (ed.), Van Nostrand Reinhold Co., New York (1971). 437 pages. $22.50.

This book is based in part on a tellurium symposium held at Rutgers University in April, 1964. Eleven chapters, each by an authority on the subject, cover the production, properties, chemistry, and uses of this element. Since Kirk Othmer devotes only 16 pages to the subject, an additional reference work is welcome. Copious references are included, many dating from the 1960's, indicating the recent interest in the physics and physical properties of this relatively rare metal. It is unfortunate that the authors quoted so many Chemical Abstract references without apparent critical review.

Every engineer is rightfully curious about elements, such as tellurium, with which he does not come into regular contact, but tellurium's rarity will limit the book's attraction to chemical engineers. The metallurgical applications are interesting but not extensive. It would appear that its thermo-electric properties are undoubtedly the area of greatest future interest. The authors speculate on the potential uses in special heating and cooling devices where cost is not a deterrent.

Although tellurium is recovered almost exclusively as a by-product from copper refining and the recovery is reported to be quite low, the available supplies far exceed current uses. One suspects that both the above mentioned symposium and this book are aimed at stimulating interest in commercial uses for tellurium.

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Analysis of Heat and Mass Transfer, E. R. G. Eckert and R. M. Drake, Jr., McGraw-Hill, New York (1972). 806 pages. $21.50.

This is an expanded and updated version of "Heat and Mass transfer" by the same authors. As was the case with the original, the section on mass transfer is inadequate from the point of view of chemical engineers. It comprises barely 5% of the volume and is too cursory to be of much use.

The bulk of the text is fairly evenly distributed between conduction, convection, and radiation. Here, the contents of the original work have been substantially updated and expanded. Special cases of heat transfer and a significant number of up-to-date numerical techniques are presented—frequently through examples.

The feel of the book is reminiscent of the third edition of *Heat Transmission,* by McAdams. It gives the impression of having been put together by knowledgeable and competent men who are too busy to write with the care and attention to detail required to produce a truly valuable textbook. As a minor example, although differential equations are the mathematical tool of choice, there are brief, irritating lapses into vector notation.

Although it is intended to be a text for seniors and beginning graduate students, this edition suffers from two defects that most potential users may find damaging. First, it lacks an aura of conviction. It tends to present rather than teach. Second, there are very few numerical examples and no assignable problems.

As a reference work, it is a positive contribution. I expect to refer to it frequently and believe many others will do the same.

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Theory of Particulate Processes, Analysis and Techniques of Continuous Crystallization, A. D. Randolph and M. A. Larson, Academic Press, New York (1971). 251 pages. $14.50.

This is primarily a book on crystallization. Randolph and Larson pioneered the application of population balance techniques to continuous crystallizers, and the *Theory of Particulate Processes* is mainly a summary of their own research over the last decade. As such, it will be an indispensable aid to anyone interested in the mathematical characterization of crystal size distributions. The classical case of a mixed-suspension, mixed-product-removal crystallizer with homogeneous nucleation and size independent growth rate is treated in detail. Complicating factors such as secondary nucleation, fines destruction, and classified product removal are discussed more briefly and generally to the extent to which the authors or their students have tackled these problems. Although the selected bibliography is quite comprehensive in the field of continuous crystallization, this outside literature is not always properly integrated with the authors' own work. Selection of topics and depth of presentation thus tends to be uneven. The chapter on crystallization kinetics is only ten pages long while nine pages are devoted to reviewing a recent thesis on crystallizer cascades. A more descriptive subtitle for the book would be Selected Topics in Continuous Crystallization. Despite this criticism, the book remains a worthwhile and welcome contribution to a field largely developed by the authors themselves. It should be acquired by everyone with a serious interest in crystallization.

The book also provides a relatively formal treatment of the generalized population balance. Chapters 2, 3, 4, and 10 give a readable account suitable for a general audience. In this respect, the book is most comparable to Himmelblau and Bischoff's *Process Analysis and Simulation.* The two texts are complementary and either can be recommended as a supplement to the other. Randolph and Larson stress size distributions while Himmelblau and Bischoff emphasize residence time and age distributions. Both approaches are useful and the *Theory of Particulate Processes* can be recommended as a good introduction to one aspect of population balance methods.

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The Principles of Gas Extraction, P. F. M. Paul and W. S. Wise, M&B Monograph CE/5, Mills & Boon, Ltd., London (1971). 72 pages. £1.5.

Gas extraction processes utilize the solvent power of a dense, relatively low temperature gas to effect separations. For example, around ambient conditions (298°K and 1 atm = 0.1013 MN/m^2) the concentration of