

BOOKS

Water Quality and Treatment, A Handbook of Public Water Supplies, 3rd Ed., McGraw-Hill Book Company, New York. 654 pages. \$19.50.

The subtitle "A Handbook of Public Water Supplies" aptly describes this book's contents. It is a comprehensive and well-arranged coverage of the field of water treatment as we know it today. The information presented is vitally necessary to those directly associated with water treatment and responsible for the safety of our water supplies; aside from this primary benefit, however, the book should be of interest and value to those engineers and scientists only casually involved with our overall ecological problems but whose specific responsibilities deal with the solution of the waste control problems of industry.

Perhaps of far greater importance is the book's potential value to the layman—for it chronicles man's dedication to insuring a safe and pure water supply for a great proportion of the world's population. It vividly shows that this didn't just happen but occurred only as a result of the cooperative searching, experimentation, and labor of diverse disciplines from all over the earth. Man will rest a little more secure knowing that such thoroughness and dedication stand behind his potable water supply and realizing that what has been accomplished by technological expertise there can also be achieved with relation to the current ecological problems facing man.

The technical coverage is excellent. The 28 contributors to the third edition of this auspicious work provide a wealth of theoretical and practical competence concerning the unit operations prevalent in the water treatment area. The information should also be of value to those using these operations in other fields.

The plan of the Handbook is to cover in more or less detail all of the unit operations and other procedures commonly employed in water treatment. The list of chapter headings is diverse—ranging from water quality, aeration, coagulation and flocculation, filtration, corrosion phenomena, chemical treat-

ment, radioactivity, fluorides in water, and plant control to the ultimate disposal of water-treatment plant residues. Each discussion contains numerable descriptions of successful operating plants and extensive bibliographies.

The chapters on coagulation and flocculation, filtration, chemicals and chemical handling, and management of water-treatment plant residues should be of particular interest to those engaged in chemical engineering operations. The broad aspects of coagulation and flocculation are covered with a comprehensive bibliography for further elaboration. However, for those wishing only a broad review or for those interested in refreshing their knowledge of the field, this chapter is excellent. It covers the history of sedimentation, the nature and physical chemistry of particles, the theories of coagulation-flocculation, the factors affecting coagulation, the control of coagulation, and the coagulants commonly used in this operation. From a technical standpoint, this is perhaps the most useful chapter that expounds basic chemical engineering principles.

The discussion of filtration is restricted primarily to single- and dual-media rapid-sand filters which are commonly used in water treatment. Identification and cure of the common malfunctions of sand filter operation is described; this information should be useful to anyone interested in this type of filtration.

The ultimate disposal of treatment plant residues is a severe problem which is disproportionately increasing not only in water-treatment operations but also in the general field of pollution control. While it is encouraging that this problem is being recognized, it is unfortunate that the Third Edition treats this subject rather superficially and does not provide much information of a specific nature.

All in all, however, even if the chemical engineer is not directly engaged in water treatment or pollution control, he will find the Third Edition valuable reading. It will provide him with an excellent appreciation of how so many

familiar techniques are necessary to produce and protect our pure water supply.

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Elements of Polymer Degradation, Leo Reich and Salvatore S. Stivala, McGraw-Hill Book Company, New York (1971) 361 pages. \$18.50.

As stated by the authors, this book is primarily intended for those entering the general field of polymer degradation but should also be of value as a reference for anyone already working in the area. The title is appropriate, since the authors examine thoroughly the fundamentals of various types of degradation, experimental degradation methods, kinetic mechanisms, and factors affecting polymer instability. Although the book was developed for a special topics graduate course, most areas examined are particularly suitable for industry.

The book is divided into the four general areas mentioned above. In the first section, thermal and oxidative degradation are introduced briefly, with a discussion of chemical mechanisms and fundamental kinetic rate derivations. Ample references are cited for each case. The chapter then moves into the various types of radiative degradation, citing specific cases for various types of polymers. Mechanochemical and chemical processes of degradation are discussed in depth, again with a fundamental kinetic treatment and references. A brief discussion of biological degradation concludes the chapter. Considering the current attitude toward environmental problems, this topic is only superficially covered, although references are provided for greater detail.

Most beneficial to both industrial polymer chemists/engineers and students is the discussion of experimental Dynamic Thermogravimetric Analysis (TGA) and Differential Thermal Analysis (DTA). The authors skillfully de-