

ments each topic covered. However, in keeping with the trend of approaching chemical engineering as a science, this book generally places more emphasis on the theoretical aspect than did its predecessor.

JOHN A. TALLMADGE

High Pressure Technology. E. W. Comings. McGraw-Hill Book Company, Inc., New York (1956). 572 pages. \$11.50.

An excellent collection of the reliable information available on high pressure, this volume is a comprehensive reference on the field, as it contains both theoretical aspects and practical know-how. Mr. Comings is quick to point out that much of the present-day information concerning high pressure has been the result of experience, that is, art or craft in contrast with science. A good reference list is available for the reader who is looking for background material and more complete current information on the variety of individual subjects treated.

Chapter two, "Chemical Processes," by N. R. Shreve, and Chapter three, "Metals," by H. C. Van Ness, deal with some of the practical applications as well as the limitations that exist in the use of high pressure. Shreve, of course, points out many of the present commercial processes that employ high pressure, and Van Ness notes some of the limitations of high-pressure application due to the deleterious effects on metals. Chapters entitled "Safety," "Equipment," and "Experimental Techniques" also deal with the purely practical aspects and are useful to the researcher in the field.

The remainder of the book deals primarily with the mathematical and theoretical treatment. Excellent chapters covering such topics as pressure cylinders, thermodynamics of liquids and gases, chemical equilibria, unit operations, and reactor design as specifically related to high pressure are presented. Realizing the inherent limitations on the theoretical treatment, not only of complex systems but also of systems under the extreme conditions imposed by high pressures, the author includes much information on empirical and generalized relations.

What at first may appear to the reader as broad, unrelated subject matter is tied together in the final chapter by a thorough study of ammonia synthesis, which serves as the classic example of the successful application of high pressure in modern industry. This chapter not only relates the subject matter from the previous chapters, but it also serves to reemphasize Mr. Comings's original premise, that high-pressure application is a combination of art and science.

The book also contains several appendices, including such items as pVT data, constants for various equations, glossary of terms used in high pressure, and a section on units and dimensions.

Because of the broad scope of the subject matter, many important points are not given complete, detailed treatment. The reader is therefore expected to have a fair understanding of chemical engineering principles.

RICHARD J. SCHOOF