BOOKS

Chemical Process Industries, Third Edition, R. Norris Shreve, McGraw-Hill Book Company, New York (1967). $18.50.

In 1956, when the second edition of this famous book came out, the author stated, "this book represents a lifetime of experience in the chemical industry." Now, eleven years later, and after perhaps a little more than a lifetime of experience, R. Norris Shreve has added a new dimension to the earlier texts, including as well the "many improvements in the various divisions of the rapidly developing chemical engineering."

The number of chapters has changed little, since the number of basic process industries has not grown appreciably we do find two notable additions, however, Nuclear Industries and Petrochemicals, the latter having been just barely mentioned before. It is the the way the chapters have now been treated which adds much to the value of the new edition.

The author has included much more quantitative information on product uses, chemical and utility consumption, and general marketing information. This is what chemical engineers always like to have. However, judging from the material presented on silicon carbide and leather manufacture, for example, there has been little improvement in some of the process industries in the last decade. If this is true, one wonders whether chemical engineers have some blind spots. These areas with no indicated change should be given some attention, either to credit them with advances or to search for the improvements they undoubtedly need.

Nuclear Industries, of course, is brand new, but we can easily see the present greater importance of hydrogen and synthesis gas by the increased coverage given them, along with that on the production of synthetic ammonia and methanol, the latter having been barely mentioned before.

The Pharmaceutical Industry has grown up and been given a place of its own. There we are given some figures dealing with penicillin manufacture and even learn that tranquilizers have resulted in a decrease in the number of resident mental patients in New

(*Continued on page 364*)

(*Continued from page 209*)

COMMUNICATIONS TO THE EDITOR

ERRATUM

INFORMATION RETRIEVAL*

Stability of batch catalytic fluidized beds, Luss, Dan, and Neal R. Amundson, **AIChE Journal, 14,** No. 2, p. 211 (March, 1968).

Key Words: A. Stability-7, 8, Reactor-8, 9, Fluidized Bed-10, Control-4, Steady State-0, Temperature-6, Catalyst-9, Start Up-6, Mathematical Model-10.

Abstract: This work is a study of the stability of a batch fluidized bed with a simple model. It is shown that multiple steady states can occur with all catalyst particles at the same temperature, some of these states being unstable. The analysis demonstrated that the initial temperature of the catalyst particles may be a predominate factor in determining the kind of steady state obtained.

Bubble-driven fluid circulations, de Nevers, Noel, **AIChE Journal, 14,** No. 2, p. 222 (March, 1968).

Key Words: A. Circulation-7, 8, Bubbles-9, Flow-8, Fluids-9, Mass Transfer-8, Bubble Columns-4, Gas Lifts-4, Pool Boiling-4, Baffles-6. B. Circulation-6, Bubbles-9, Holdup-7, Residence Time-7, Vapors-9, Mass Transfer-7, Efficiency-7, Bubble Columns-9.

Abstract: Bubble-driven fluid circulations are present in bubble columns, gas lifts, pool boiling, etc. Their mechanism is shown to be quite similar to the mechanism of natural convection but with much larger driving forces. These circulations are stable in many baffled systems but unstable and rapidly changing in size, shape, and orientation in unbaffled systems. The effect of these circulations in bubble columns is to lower holdup and vapor residence time, thus, decreasing the mass-transfer efficiency of the column.

Measurement of the velocity of gases with variable fluid properties, Wasan, D. T., R. M. Davis, and C. R. Wilke, **AIChE Journal, 14,** No. 2, p. 227 (March, 1968).

Key Words: A. Velocity-7, 8, Gases-9, Mass Transfer-6, Composition-6, Temperature-6, Hot Wire Anemometry-10, Convection-6, Properties-6, Injection-6, Suction-6.

Abstract: This paper describes the experimental measurements of the time-averaged velocities of gases in a field of variable composition and temperature. The conventional theory of hot wire anemometry is extended to include the effects of both natural and forced convection to gases having variable fluid properties.

Mass transfer between immiscible liquid metals, Pasternak, Alan D., and Donald R. Olander, **AIChE Journal, 14,** No. 2, p. 235, (March, 1968).

Key Words: A. Extraction-8, Lanthanum-2, Barium-2, Uranium-1, Chromium-1, Magnesium-5, Mass Transfer-8, Liquid Metals-9, Drops-9, Reprocessing-4, Fuel-9, Reactors-10.

Abstract: The object of this work was to investigate extraction kinetics in a typical uranium-bearing liquid metal-immiscible solvent metal system in order to determine whether the sizeable background on extraction in low temperature, aqueous-organic systems could be applied to liquids with markedly different characteristics. The extraction of lanthanum and barium from single falling drops of the uranium-chromium eutectic into magnesium was studied.

Free tear sheets of the information retrieval entries in this issue may be obtained by writing to the New York office.

* For details on the use of these Key Words and the AIChE Information Retrieval Program, see **Chem. Eng. Progr.,** Vol. 60, No. 8, p. 88 (August, 1964). A free copy of this article may be obtained by sending a post card, with the words "Key Word Article" and your name and address (please print) to Publications Department, AIChE, 345 East 47 St., N. Y., N. Y., 10017. Price quotations for volume quantities on request.

(Continued on page 365)

(Continued from page 210)

York State hospitals since 1955. Chemical processing is made more meaningful with the new approach.

The format has changed, too. The print is smaller but clear; the type has changed. The new flow charts are clearer and easier to follow than those which are repeated, having been taken directly from the earlier edition. The result would, perhaps, have been more even had the latter, as for example that for distilled liquors, been redrawn and given the new look.

Perusal has netted few errors, but a rather bad one may be discovered under the Girbotol aliphatic amine absorption process for gas purification, the quantities for which are referred to as being found in Table 6.5. Unfortunately, Table 6.5, four pages beyond, deals with the breakdown of cycle time on a carbureted water-gas machine, instead of the equivalent of Table 5 on page 113 of the second edition.

Overall, the new edition will continue to maintain its proper place in the Chemical Engineering Series, but this does not necessarily mean that the engineer should discard the book this is supposed to replace. There are still some helpful facts in the 1956 edition which here have been omitted because of their lesser present-day significance, but one never knows when older methods and systems may be encountered.

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An Introduction to Fluid Dynamics, G. K. Batchelor, Cambridge University Press, Massachusetts (1967). 615 pages, $13.50.

Written by the well-known senior editor of the *Journal of Fluid Mechanics,* this treatise presents a unified introduction to the fundamental dynamics of real fluids. Despite its high mathematical level for an introductory book, the analysis is firmly grounded in experimental research results gleaned over the past fifty years. From the viewpoint of the applied mathematician, the order of development departs from the traditional sequence: dynamics (stress) is considered before kinematics; and the classical hydrodynamics of inviscid fluids is considered last, after a thorough treatment of viscous fluid motion. Such an approach will obviously appeal to engineers, for whom viscous effects are of signal importance.

(Continued on page 365)