A.I.Ch.E. JOURNAL MARCH, 1966 · VOL. 12, NO. 2

The A.I.Ch.E. Journal, an official publication of the American Institute of Chemical Engineers, is devoted in the main to theoretical developments and research in chemical engineering and allied branches of engineering and science.

PUBLISHER

F. J. Van Antwerpen

EDITOR

Harding Bliss

MANAGING EDITOR

Sylvia Fourdrinier

ADVERTISING MANAGER William Chenoweth

ADVISORY BOARD

C. M. Cooper R. H. Newton
O. E. Dwyer R. L. Pigford
W. C. Edmister E. L. Piret

E. R. Gilliland J. M. Smith

A. N. Hixson Theodore Vermeulen

W. R. Marshall, Jr. R. R. White R. H. Wilhelm

Publication Office, 215 Canal Street, Manchester, New Hampshire. Published in January, March, May, July, September, and November by the American Institute of Chemical Engineers, 345 East 47 Street, New York, New York, 10017. Correspondence with the editor may be addressed to him at Yale University, 225 Prospect Street, New Haven 11, Connecticut. Statements and opinions in the A.I.Ch.E. Journal are those of the contributors, and the American Institute of Chemical Engineers assumes no responsibility for them. Subscription: one year, member \$5.00; non-member \$25.00; additional yearly postage, Canada 75 cents, Pan American Union \$1.50, other foreign \$2.00 (foreign subscriptions payable in advance). Single copies: \$6.00. Second-class mail. Postage paid at Manchester, New Hampshire. Copyright 1966 by the American Institute of Chemical Engineers. National headquarters of A.I.Ch.E. is concerned about nondelivery of copies of the A.I.Ch.E. Journal and urgently requests subscribers to give prompt notification of any change of address. Sixty days must be allowed for changes to be made in the records.

Postmaster: Please send form 3579 to A.I.Ch.E. Journal, 345 East 47 Street, New York, N. Y. 10017.

Books	210
Toward a More Beautiful America	211
Heat Transfer and Reaction in Laminar Tube Flow R. I. Rothenberg and J. M. Smith	213
Heat Transfer to Non-Newtonian Fluids in Transitional and Turbulent Flow A. W. Petersen and E. B. Christiansen	221
Dynamic Characteristics of Perforated Distillation Plates Operating at Low Loads B. K. C. Chan and R. G. H. Prince	232
Effects of Interfacial Instability on Film Boiling of Saturated Liquid Helium I Above a Horizontal Surface T. H. K. Frederking, Y. C. Wu, and B. W. Clement	238
Why Thermodynamics Is a Logical Consequence of Information Theory Myron Tribus, Paul T. Shannon, and Robert B. Evans	244
Surface Motion and Gas Absorption Kurt Muenz and J. M. Marchello	249
Bubble Motion and Mass Transfer in Non-Newtonian Fluids Stanley M. Barnett, Arthur E. Humphrey, and Mitchell Litt	253
Rates of Hydrogen Chloride Oxidation Alva M. Jones, Harding Bliss, and Charles A. Walker	260
Free and Forced Convection in Conduits with Asymmetric Mass Transfer William N. Gill, Eduardo del Casal, and Dale W. Zeh	266
Simultaneous Axial Dispersion and Adsorption in a Packed Bed Raul Chao and H. E. Hoelscher	271
An Analytical Study of Laminar Counterflow Double-Pipe Heat Exchangers *Richard J. Nunge and William N. Gill*	279
Height of a Liquid Film in a Horizontal Concurrent Gas-Liquid Flow Leonard S. Cohen and Thomas J. Hanratty	290
Transmethylation Reactions of Monomethyl and Dimethylamine over Montmorillonite in a Flow System Edward F. Restelli, Jr., and James Coull	292
Direct Contact Heat Transfer with Change of Phase: Spray-Column Studies of a Three-Phase Heat Exchanger Samuel Sideman and Yehuda Gat	296
The Kinetics of Sorption by Ion Exchange Resin Beds Charles J. Colwell and Joshua S. Dranoff	304
Heat Transfer to Molten Flowing Polymers Richard G. Griskey and Irwin A. Wiehe	308

(Continued on page 210)