Abstracts

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Dynamic Programing Control of a Batch Reaction, S. M. Roberts and J. D. Mahoney. The purpose of this paper is to set up and solve the equations for the control of a batch reaction by the methodology of dynamic programming. A numerical example is included. **Continuous Vacuum Crystallization Process: Material Balance for Maximum Crystal Yield,** Gustav Enyedy, Jr. A computer application to a chemical engineering problem in the field of vacuum crystallization (crystallize a double salt continuously from a ternary system) is presented. **Variable Mesh Size in Iteration Methods of Solving Partial Differential Equations and Application to Heat Transfer,** G. F. Round, Robin Newton, and P. J. Redberger. Four types of variable mesh systems have been developed to increase the power of the iterative method of solving partial differential equations. As an illustration of two of these systems computations were carried out for the steady state heat transfer from a buried cylindrical heat source, enabling a comparison to be made with the usual square-mesh system. **Gas Absorber Solution by Digital Computer,** C. R. McNeese. Multicomponent absorption problems can be solved rapidly and accurately by the use of digital computers. The equation development for this problem is based on the concept of thermal and physical equilibrium on each theoretical contact stage. **Generalized Material Balance,** Donald I. Rubin. This paper deals with the determination of the optimum sequence of node calculations and calculations leading to a balance. For each node the output streams are to be described as functions of the input streams. **Simulation and Optimization of Oil Refinery Design,** Emanual Singer. This paper presents the simulation and optimization of the design of a ten-variable oil refinery with the objective of maximizing net profit after amortization costs. This example illustrates the application of new nonlinear optimization techniques. **Analogue Simulation of a Radial-Flow-Moving-Boundary Problem,** H. D. Yoo. This paper presents an analogue simulation method of a radial-flow-moving-boundary problem, formulated in connection with the unsteady state liquid flow through a porous medium to study the dynamics of a growing gas bubble in an underground structure. **A Management Game for the Petroleum Industry,** Max H. Post and William Viavant. The purpose of this study was to develop a mathematical model of an integrated petroleum economy for use as a research tool and as a management game. **Transient Heat Conduction in a Multilayer, Multicomponent System,** Charles E. Huckaba and Bacil F. Dickert. This paper describes the development of a numerical solution procedure for the appropriate partial differential equations describing a two-dimensional, unsteady state heat combustion problem which involved rapid thermal transients in a finite, composite cylinder.

ERRATA

In the article "Axial Solid Distribution in Gas-Solid Fluidized Beds" by Liang-Tseng Fan, Chau Jen Lee, and Richard C. Bailie, which appeared on page 239 in the May, 1962, issue of the *A.I.Ch.E. Journal*, the fourth line of the section Analysis of Data and Correlations, page 240, should read a falling-density zone, not a falling-density zero.

In Equations (3), (12), and (16) of the article "Gas Dynamic Processes Involving Suspended Solids'" by S. L. Soo, which appeared in the September, 1961, issue of the *A.I.Ch.E. Journal*, m_s should be m_p. Equation (19) is thus

$$(u^* - u_p^*)\frac{dT_p^*}{du_p^*} = \frac{B}{E}\left[\frac{c + m_p c_p}{c}(1 - T_p^*) - u^{*2} - m_p u_p^{*2}\right]$$

Equation (26) is then

$$\frac{c_e}{c} = \frac{\frac{B}{a}\left(1 + m_p\frac{c_p}{c}\right) + 2\left(\frac{b}{a}\right)}{\left(1 + m_p\frac{b^2}{a^2}\right)\left(\frac{B}{a} + 2\frac{b}{a}\right)}$$

and Equation (28) becomes

$$\frac{\gamma_e}{\gamma_e^{-1}} = \frac{c}{R}\,\frac{\left(1 + m_p\frac{b}{a}\right)\left(\frac{B}{a}\,\frac{e + m_p c_p}{c} + 2\frac{b}{a}\right)}{\left(1 + m_p\frac{b^2}{a^2}\right)\left(\frac{B}{a} + 2\,\frac{b}{a}\right)}$$

and

$$\frac{a_m^2}{a^2} = \frac{\gamma_e R_e}{\gamma R}$$

Computer Program Abstracts

Readers of the *A.I.Ch.E. Journal* who are interested in programming for machine computation of chemical engineering problems will find in each issue of *Chemical Engineering Progress* abstracts of programs submitted by companies in the chemical process industries. Collected by the Machine Computation Committee of the A.I.Ch.E., these programs will be published as manuals where sufficient interest is indicated. The following abstracts have appeared this year:

CEP (July, 1962) p. 86

Multiple Regression Analysis (095)
Computing Frequency Response from Pulse Testing Data Using Filons Formula for Numerical Evaluation of the Integrals (098)

CEP (August, 1962) no abstracts appeared

CEP (September, 1962) p. 96

Computing Frequency Response from Pulse Testing Data Using the Trapezoidal Rule for Numerical Evaluation of the Integrals (099)

Multicomponent Batch Distillation (100)