BOOKS

Computers & Chemical Engineering, Pergamon Press, first issued in June 1977; published quarterly, annual subscription $64 (with a reduced price of $30 for individuals whose institutional library already subscribes).

C&CE is the latest of many Pergamon Press journals with similar titles (*Computers & Mathematics, Computers & Fluids,* etc.), and in view of the chemical engineer's early interest in computing it is a little surprising that it has not appeared several years ago. *C&CE* is a welcome vehicle for a concentration of those articles that bespeak its title. The editors are to be congratulated on assembling a wide and interesting variety of papers for the first two issues which appeared in 1977; these totalled 160 pages and, in authorship, represented nine countries. Although there is some concentration in process design and simulation, there is enough breadth to interest everybody; however, real-time computing and process control are yet to be represented.

C&CE records "new developments in the application of computers to chemical engineering problems." Four types of contributions are accepted: articles, notes, journal reviews, algorithms and programs. This last category was arranged with the collaboration of the Machine Computation Committee of the AIChE, and should fulfill a long-standing need for the regular dissemination of fully documented general-purpose computer programs for chemical engineers.

C&CE carries a fair share of typographical errors, and readers will doubtless be interested in the new and valuable technique of "dymanic" simulation noted on page 100. Presumably, Pergamon Press has already diversified into the production of magnifying and reading glasses, as these are valuable adjuncts to *C&CE*; page 57, for example, would make a good optometrist's chart.

Overall, this new international journal is highly recommended for chemical engineering libraries.

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Vapor-Liquid Equilibrium Data Collection: Aqueous-Organic Systems, by J. Gmehling and U. Onken, Dechema Chemistry Data Series Vol. I, Part 1, 749 pages. DM 120.

Thermodynamic properties of liquid mixtures constitute one of the oldest fields of research in physical chemistry. The first issues of the "Zeitschrift für physikalische Chemie," about 90 years ago, devoted a large fraction of their pages to experimental and theoretical studies on the equilibrium properties of liquid solutions. This subject has fascinated numerous outstanding scientists and the number of published articles dealing with it has reached many thousands.

Despite the tremendous effort which has been expended toward gaining a truly fundamental understanding of liquid mixtures, our present state of knowledge is far from satisfactory. We are still in the early stages of formulating an adequate theory of the pure liquid state and in a very early stage of extending that theory to mixtures. Our inadequate knowledge is unfortunate not only from a scientific point of view but even more from the viewpoint of technology. Liquid mixtures are commonly found in numerous chemical and related industries including those concerned with polymers, pharmaceuticals, coal, gas, petroleum and other natural resources. Efficient processing of such mixtures requires a quantitative understanding of their equilibrium properties. Physically meaningful correlation of these properties is the task of molecular thermodynamics.

To make progress in efficient engineering and in the practical applications of molecular thermodynamics, it is necessary that those properties which have been studied experimentally be made readily available to scientists and engineers in industry and research Since the literature reporting experimental results is both large and widely dispersed, it is a formidable effort to collect it in one convenient place. A magnificent start in this effort has now beei made by Professor U. Onken and Dr. J Gmehling. Not only have they collected a large body of phase-equilibrium data but, in addition, they have reduced these data such that their representation in suitable mathematical form is directly useful to the chemical design engineer. Through mathematica-representation, the experimental data can be systematically interpolated and with caution, extrapolated to new conditions of temperature, pressure and composition. Mathematical representation of binary systems, therefore, not only extends the range of the experimental work but, using suitable models and aided by electronic computers, enables the chemical engineer to predict multicomponent phase equilibria, as required in typical industrial operations.

It is evident that Professor Onken and Dr. Gmehling have provided an extremely valuable service to those chemists and chemical engineers who are in academic research or in industrial practice. The chemical profession heartily welcomes this first volume in a series of useful publications. It is a pleasure to congratulate the authors on completing the first part of their important mission and to thank them for their patience, diligence and devotion.

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