BOOKS

Computer Aided Data Book of Vapor-Liquid Equilibria, M. Hirata, S. Ohe, and K. Nagahama. Copublished by Kodansha Limited, Tokyo, and Elsevier Scientific Publishing Company, Amsterdam, Oxford, and New York, 1975, 933 pages + index, $64.75

A most impressive and useful compilation of binary vapor-liquid equilibrium data! For each of 800 systems, one finds the following information: x-y-T-P data with cited reference, Antoine constants for each component, Wilson parameters with expected correlation errors, and an x-y plot of data and the curve predicted by Wilson's correlation. For each of another 133 binary systems, besides literature data, parameters are given for using a modified Redlich-Kwong equation of state to calculate vapor-liquid equilibria. For most of the latter systems, pressures exceed one atmosphere.

A well-written introduction to vapor-liquid equilibria is presented at the front of the book, and the vexing problem of obtaining optimum Wilson parameters is given especial consideration. The index has been carefully prepared and is easy to use.

My review copy was missing Table 3-1, but this is the only fault I can identify in what is otherwise a well-prepared and very useful book.

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The Existential Pleasures of Engineering, Samuel C. Florman, $7.95, 160 pages, St. Martin's Press, New York.

In the face of countercultural and anti-technological critics of modern society like Charles Reich, Lewis Mumford, and Theodore Roszak, Samuel Florman has bridged C.P. Snow's two cultures, and provided an eminently readable and thought-provoking defense of engineers and the beauties and triumphs of modern engineering.

Beginning with a chapter depicting "the Golden Age of engineering" (1850-1950), Florman paints a rosy picture of the enthusiasm, confidence, and pride engendered by progress. The engineering profession saw itself as an elite overcoming the barriers provided by nature to the full development of society. Whether bridge-building or rationalizing human labor through efficiency engineering, engineers were at the forefront of the struggle for a better world. Equations, laws, and correlations buttressed their advances; they believed wholeheartedly in the Seabees' credo: "Can do"—except, possibly, those involved in catalysis!

Florman discerns a distinct change in society's evaluation of engineering during the last quarter century. He aptly pinpoints the turnabout with the commencement of work on the first hydrogen bomb in 1950. Society came to understand that progress has a dialectical component. Every action produces an opposite reaction. Some began to ask whether man's taming of nature should be better described as man's tinkering with nature. And, as the current discussion of nuclear power illustrates, the consequences of the splitting of the atom remain a central focus of this controversy. Books like Rachel Carson's *Silent Spring,* Ralph Nader's *Unsafe at any Speed,* and Barry Commoner's *The Closing Circle* directed public attention to other crises fostered by technology. In the late sixties, America came to see technology in terms of the unconscionable napalming of Vietnamese peasants as well as the triumphal landing of men on the moon.

These developments suggest an investigation of engineering ethics. As Florman notes, engineers practice "the art or science of making practical applications of the knowledge of pure sciences." Serving as the link between theoretical science and society, their work has a strong ethical component. Energy shortages, environmental desecration, and starvation present both political and engineering problems. Society increasingly finds itself asking when progress is defensible and how compromises involving the application of technology can be evaluated. Society's use of the accomplishments of science has become the critical issue. Florman's investigation undermines the ideals of the Golden Age engineers who felt that their work could transcend politics in the construction of a better world. Florman writes, "But long ago engineers discovered that fine sentiments. . .were ineffective in curbing excesses of technological development. Entrepreneurs were not easily dissuaded from seeking profit. . . ." And later, "The engineering profession is not on trial. It is our own democracy that is on trial." A profit-oriented capitalist society may encourage a political system which is inefficient in implementing recommendations made by engineers to curb possible technological abuses.

Having concluded that engineering should be absolved "for things done at the behest of society," Florman is ready to take on the countercultural critics. He employs Samuel Johnson's refutation of Berkeley as his emblem: Florman *accepts* contemporary man; he *accepts* the modern industrial culture built around consumer tastes for that second T.V. Society would not desire engineering's offerings if some facet of human nature were not gratified in the process.

On the other hand, countercultural critics generally consider man as he *could be,* not as he *now is,* arguing that man has potentials for development which are stifled in contemporary post-industrial society—in altering the external environment, man has warped his internal nature. Florman is cogent