

activities of the teacher, but by a more efficient use of the students' and lecturer's time; i.e. the internal efficiency of the instructional process has been improved.

The main feature of the new course is the modular system. We developed a teacher-paced modular system which allows the students to study on a full or a 60% pace (a 2 gear-system). Remedial teaching was not applied. This system resulted in a constant study load in transport phenomena during the semester and few students lost the junction in an early phase as they had in the past. We may conclude that it is worthwhile to apply a modular scheme, even under very restricted conditions of faculty time. □

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ChE book reviews

THE HISTORY OF CHEMICAL ENGINEERING AT CARNEGIE-MELLON UNIVERSITY

*By Robert R. Rothfus
Carnegie-Mellon University,
Pittsburgh, PA 15213, 302 pages*

**Reviewed by
Robert B. Beckmann
University of Maryland**

The author, Robert R. Rothfus has been associated with the chemical engineering program at Carnegie-Mellon, as a graduate student and faculty member, for over forty years, a period that covers over half the Chemical Engineering programs total existence and almost the entire period of its existence as a separate department. The book was obviously a labor of love to Professor Rothfus

as evidenced by its attention to statistical detail and anecdotes as well as historical development.

The first part of the book outlines the historical development of the school beginning with Andrew Carnegie's original offer to establish an institution for technical education on 15 November 1900 and traces the development from the "Carnegie Technical Schools" to the transition (1912) to Carnegie Institute of Technology and the final transition (1967) to Carnegie Mellon University. Following the detailed development to University status the book turns to the historical growth and development of the original School of Applied Science . . . one of the four original Schools founded by the Carnegie gift . . . to the current College of Engineering. The first diplomas in Chemical Engineering Practice were awarded in 1908 along with the initial "Diplomas" in the Civil, Electrical, Mechanical and Metallurgical Practice fields. Included are statistical and organizational details relating to the various departments, research laboratories, interdisciplinary programs, the academic calendar, tuition and enrollments.

The development and growth of the Chemical Engineering Department is chronicled in Chapter 4, beginning with the original Chemical Practice program in 1905 and the transition to Chemical Engineering in 1910. The chapter divides the history of the Department into quantum periods depending upon who was the chief administrative officer of the department during that period. The problems, issues and accomplishments of each period are well chronicled. The development is carried through 1980.

Part Two of the book, which comprises over 40 percent of the total pages is devoted to an exhaustive presentation of departmental statistics from its inception through 1980. The various chapters include such topics as enrollment and degrees granted, the faculty over the years, the changing undergraduate curriculum and graduate instruction, research activities and financial support and anecdotal sections devoted to departmental "personalities" and a recalling of the unusual, comical and tragicomical events over the years. The Appendices, about a third of the book, are devoted to a complete delineation of faculty, staff and students (graduate and undergraduate) by name and years of service, or graduation, who have been a part of the Carnegie Story in chemical engineering.

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BOOK REVIEW: Carnegie-Mellon

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Obviously the book is not intended for use in the usual academic sense and its particular audience is the many people . . . faculty, staff and students . . . who have contributed to chemical engineering at Carnegie over the years. It can also serve as a guide to those considering similar undertakings at their own institution in pointing out the monumental effort involved. Admittedly, this reviewer is not wholly unbiased in consideration of this volume inasmuch as he has spent almost half of his academic career at Carnegie, but he can attest to a considerable portion of the accuracy of Professor Rothfus' many details. Its delightful reading!! □

ChE books received

"Resource Recovery Economics," Stuart H. Russell; Marcel Dekker Inc., New York 10016; 312 pages, \$39.75 (1982)

"Specifying Air Pollution Control Equipment," edited by Richard A. Young, Frank L. Cross, Jr.; Marcel Dekker Inc., New York 10016; 296 pages, \$38.50 (1982)

"Introduction to High-Performance Liquid Chromatography," R. J. Hamilton, P. A. Sewell; Chapman & Hall, 733 Third Ave., New York 10017; 183 pages, \$29.95 (1982)

"Nuclear Waste Management Abstracts," Richard A. Heckman, Camille Minichino; Plenum Publishing Corp., New York 10013; 103 pages, \$45.00 (1982)

"Heat Transfer in Nuclear Reactor Safety," S. George Bankoff, N. H. Afgan; Hemisphere Publishing Corp., New York 10036; 964 pages, \$95.00 (1982)

"Essentials of Nuclear Chemistry," H. J. Arnika; John Wiley & Sons, Somerset, NJ 08873; 335 pages, \$17.95 (1982)

"Technology Transfer and Innovation," Louis N. Mogavero, Robert S. Shane; Marcel Dekker Inc., New York, 10016; 168 pages, \$22.50 (1982)

"Solar Heating and Cooling: Active and Passive Design," Second Edition, J. F. Kreider, F. Kreith; Hemisphere Publishing Corp., Washington DC 20005; 479 pages, \$29.95 (1982)

"Liquids and Liquid Mixtures," Third Edition, J.S. Rowlinson, F. L. Swinton; Butterworths, Woburn, MA 01801; 328 pages, \$69.95 (1982)

"Handbook of Multiphase Systems," edited by G. Hetsroni; Hemisphere Publishing Corp., Washington, DC 20005; \$64.50 (1982)

"Liquid Filtration," Nicholas P. Cheremisinoff, David S. Azbel; Butterworth Publishers, Woburn, MA 01801; 520 pages, \$49.95 (1983)