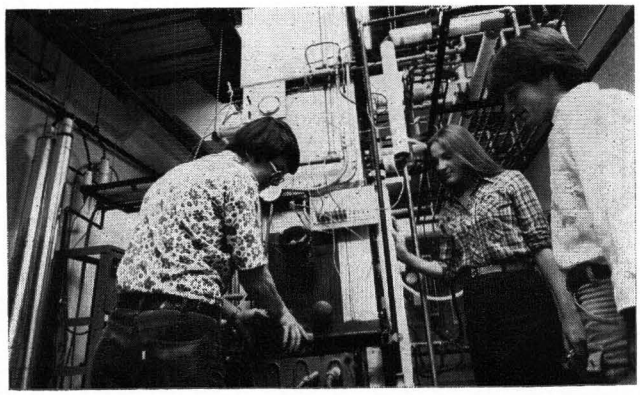
ed as a bonus. Most (if not all) single-author publications by the faculty have not been designed to present new research findings, but rather have been intended to be either pedagogical, critical, or entertaining.



A furnace used in research on air pollutant formation.

The line of research of greatest longevity in the department has dealt with the rheology of non-Newtonian fluids, both the characterization of detailed fluid motion and its use in describing bulk flow. Related but independent projects have dealt with two-phase flow, with liquids and solids distributed in gases, with solids and gases distributed in liquids, and with fluid mechanics and heat transfer for flow in curved tubes with and without chemical reaction. In addition, a study of the fluctuating boundary layer in nominally "steady-state flow" was made.

The research having the longest period of continuous sponsorship, and consequently generating the largest number of advanced degrees, has studied the combustion of condensed fuels. The chief interest has been in the transients of ignition, oscillating combustion, and extinguishment. Much of the effort has involved the burning of solid composite rocket fuels, and some, the burning of the polymers and oxidants separately, with clear relevance to fires. This work qualified the University of Utah to host the *Thirteenth Symposium (International) on Combustion* on our campus in 1970.

The combustion research activity just mentioned has diminished in intensity. Meanwhile, another class of combustion projects has become the most active. This research involves coupled experimental and theoretical work on the control of acid rain pollutants (primarily NO, NO_2, SO_2, and SO_3) under conditions typical of those found in coal-fired industrial furnaces, boilers, and kilns; the direct combustion of biomass fuels; and the incineration of hazardous industrial wastes in rotary kilns.

As one would expect in a university so situated, there is active research, though with a lesser sense of urgency than expressed a few years ago, on coals, oil shales, and tar sands. They are characterized and variously processed to produce liquid fuels.

A recent subject of research which has been advanced notably in this department is computer-aided process synthesis and design. Methods have been developed for synthesizing multicomponent separation systems based on considerations of second-law analysis. Most recently, robust computational procedures based on homotopy continuation have successfully been applied to interlinked separation systems, with the surprising discovery of multiple solutions. □

POSTSCRIPT

If the reader has residual questions about chemical engineering at the University of Utah, he is invited to correspond with the chairman of the department, Professor A. Lamont Tyler.

ChE book reviews

APPLIED COST ENGINEERING, 2nd Edition
by F. D. Clark and A. B. Lorenzoni
Marcel Dekker, Inc., 368 pages, $32.50 (1985)

Reviewed by
James H. Black
University of Alabama

This book is a revised, updated, and expanded version of a very successful (six printings) predecessor. It is of particular use in explaining how to develop and use cost estimating tools, how to manage and use estimating data, how to avoid estimating pitfalls, and how to solve estimating problems. It also covers such topics as the use of estimates for cost control functions during the conceptual engineering, the detailed engineering, and the construction stages of project development. With the techniques described in this book, one can find out how to measure and forecast productivity and to control, rather than just report, costs. The book emphasizes cost estimating and

Continued, next page.

CHEMICAL ENGINEERING DIVISION ACTIVITIES

TWENTY-THIRD ANNUAL LECTURESHIP AWARD TO DAN LUSS

The 1985 ASEE Chemical Engineering Division Lecturer was Dan Luss of the University of Houston. The purpose of this award lecture is to recognize and encourage outstanding achievement in an important field of fundamental chemical engineering theory or practice. The 3M Company provides the financial support for this annual lecture award.

Bestowed annually upon a distinguished engineering educator who delivers the Annual Lecture of the Chemical Engineering Division, the award consists of $1,000 and an engraved certificate. These were presented to this year's Lecturer at the Annual Chemical Engineering Division Banquet, held at the Georgia Institute of Technology.

ChE's RECEIVE HONORS

A number of chemical engineering professors have been recognized for their outstanding achievements. **Max Peters** was the recipient of the Fred Merryfield Design Award, given annually to an engineering educator who exhibits excellence in teaching engineering design, and the Senior Research Award was presented to **Robert Brodkey** in recognition of his significant contributions to engineering research. **Friedrich G. Hefferich, Richard D. Noble,** and **Richard M. Felder** all received AT&T Foundation Awards, honoring them as outstanding engineering teachers, while the Dow Outstanding Young Faculty Award was presented to **Marc Donohue, James M. Peterson,** and **Mark E. Davis.** The grade of ASEE Fellow Member was conferred on **Ray W. Fahien** in recognition of his outstanding achievements and important contributions.

NOMINATIONS FOR 1985 AWARD SOLICITED

The award is made on an annual basis with nominations being received through February 1, 1986. The full details for the award preparation are contained in the Awards Brochure published by ASEE. Your nominations for the 1985 lectureship are invited. They should be sent to Professor Angelo J. Perna, New Jersey Institute of Technology, Newark, NJ 07102 (201-596-3616).

NEW DIVISION OFFICERS

The ChE Division officers are: Dendy Sloan, Chairman; Deran Hanesian, Past Chairman; Phillip C. Wankat, Chairman Elect; Bill Beckwith, Secretary-Treasurer; and A. Lamont Tyler, Gary Poehlein, and Carol Dedrick, Directors.

NEW AWARDS

Two new Divisional awards have been established and will be presented at the annual meeting each year. One, the William H. Corcoran Award, will honor an author for the most outstanding paper published in *Chemical Engineering Education* during the preceding year. The second, the Joseph J. Martin Award, has been created to recognize authorship of the best paper published in the proceedings from the prior year.

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cost control, two of the more important aspects of the field of cost engineering.

This book would find application as an advanced undergraduate-graduate level text in such courses as Process Design and Economics, Cost Engineering, Cost Estimating, Project Management, Project Control, and Construction Management. The first edition has found application this way since its appearance seven years ago, and this revised edition will continue that tradition. Practicing engineers, entering cost estimating for the first time, would find this book an indispensable aid.

For convenience, the book has been divided into three parts; namely, cost estimating, cost control, and case studies. Part III, the case studies, is a collection of ten examples to illustrate the principles of cost engineering. These case studies are designed to provide understanding of the underlying principles discussed in the first two parts of the book.

The new features of this book include, in addition to the case studies and the latest developments and improvements in cost estimating and cost control, several new aspects of cost engineering so that the book reflects recent advancements in the field. A new chapter on control of subcontracts has been added because of the increased importance of this topic today. There are

Continued on page 161.

LETTER TO THE EDITOR

Continued from page 135.

Another important refinement is to modify the impeller in the "mixer" which is a small centrifugal pump that blends together the reactant streams entering the reactor tube. In our particular reactor geometry, the impeller of the pump sent rapid pressure pulses back to the dye rotameter causing violent fluctuations of the bead in the dye rotameter. Our solution was to replace the impeller blade with a flat disc. The rotation of the disc generates sufficient shear to blend the streams.

R. R. Hudgins
University of Waterloo

PACKAGED SOFTWARE

Continued from page 147.

these packages. To this end an increased student awareness and familiarity with these facilities can only be beneficial. □

ACKNOWLEDGMENTS

The author wishes to acknowledge assistance and co-operation from the following members of staff: A. M. Gerrard, J. Notman (Department of Chemical Engineering), P. R. Bunn (Department of Electrical, Instrumentation and Control Engineering), and research students J. C. Cheow, S. Acey, and C. K. Goh.

REFERENCES

1. "Control of a Gas Absorption Column using the Self Tuning Regulator," C. K. Goh, J. C. Cheow, P. R. Bunn, and B. Buxton. Paper presented at Institute of Measurement and Control Symposium "Application of Multivariable System Techniques", 31 October to 2 November 1984, Plymouth, UK.
2. Annual Research Meeting, Bath, 4 April 1984. Heat Transfer, Catalysis and Catalytic Reactors, 247. Heavy Oil Cracking. S. Acey, J. C. K. Lee, J. R. Walls.

PROCESS LAB

Continued from page 155.

to bad habits as soon as they stop writing regularly.

The feedback from the students has been extremely positive. They fully enjoy the opportunity to work on what they regard as their own problems. We have not come across a course which puts so much demand on the students but receives so few complaints. (The actual lab work extends well over the regular six hours per week scheduled in addition to the time required for report writing and preparing oral reports.)

The support from industry has also been encouraging. We continually receive financial aid and equipment donations as well as new ideas for experiments. In the next year we expect to receive an industrial scale CVD reactor, a spin coating apparatus and an experiment to perform membrane separation of gasses. Our lab course would not have been so successful without this continued support. □

ACKNOWLEDGMENTS

We would like to thank our industrial supporters—Chevron, Kelco, Eastman Kodak, and Komax—for their donations of equipment, materials, information, and money. Finally, we are indebted to the AMES department technical support staff—Joe Robison, Paul Engstrom, Ray Hummer, and Jon Haugdahl—for their continued help and understanding (both with students and instructors!).

REVIEW: Cost Engineering

Continued from page 119.

other new topics added to the first edition such as an analysis of overtime costs, information on rework costs, and the handling of back charges. These topics are illustrated by actual industrial examples. Additional new information on bulk material control, monitoring construction field labor overhead, labor productivity, and forecasting direct labor are illustrated with other industrial examples. The chapter on contingency estimating and its application to cost control has been rewritten to reflect recent developments. The treatment of estimate types and accuracies likewise has been updated. Because of the omnipresent computer, an introduction to computerized estimating has been added since the first edition. Advice is provided on how to go about computerizing routine estimating tasks.

This edition is the first book in a planned series of about 20 which concern cost engineering and related topics. Of the twenty, six have already been published. This series will cover the whole gamut of cost engineering topics for the student and for the practicing cost engineer. □