another iteration is necessary. Since each θ_i approaches unity, ABSUMT converges arbitrarily close to zero and a tolerance of 0.01-0.03 is usually sufficient.

$$\text{ABSUMT} = \sum_{i=1}^{\text{NCOMPS}} \left| 1 - \theta_i \right| \qquad (6)$$

Even with the simplifying assumptions of Raoult's Law, ideal stages, and constant molal overflow, the student feels a sense of achievement in designing and rating a multicomponent distillation column. For most students this is the first time they have generated a computer program of such complexity. Students see each step as a typical assignment and do not sense the magnitude of the project until one of them procrastinates and attempts to complete the third step without completely debugging the first two. For the normal student, debugging step three (the rating case) without incorporating the debugged form of step two (the design case) was disastrous. Most students solved the problems sequentially and truly enjoyed solving a 'real problem". During the several years in which they have been used, these problems generated enthusiasm which has carried over into the other elements of the course.

STUDENT RESPONSE

Learning to use flow charts while developing the computer algorithms enable students to use with confidence existing library subprograms. For example, after a preliminary hand calculation of a gas absorber design, students are asked to find the optimal operating conditions by using the program[3] developed and kindly supplied by Brockmeier and Himmelblau. Because students had earlier experience in building a complex multicomponent distillation routine from subroutines, they had little difficulty incorporating the Brockmeier and Himmelblau subprogram into a calling routine of their own writing. Overall, incorporating computer methods into the undergraduate chemical engineering program by intergrating this subject into the staged operations course was clearly beneficial and well received by the students. □

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PROGRAM COMMITTEE

Plans For Academic And Industrial Research Interaction

K. D. TIMMERHAUS,
University of Colorado
Boulder, Colorado 80302

OVER THE PAST few years it has become more and more evident that the technical programing of our AIChE meetings has become more diverse. This is because the role of the chemical engineer has been broadened to include contributions to environmental, health, and food and energy production problems of society at large. This broadening of horizons is essential for maintaining the vitality of our professional society and will be encouraged wherever possible. However, there seems to have developed over the years a noticeable division between academia and industry and in the dissemination of research results and in the dialogue which should have followed these disclosures. The tendency in the past few years is to have sessions developed by academic personnel reporting on specific academic research, and presented essentially to other academic research personnel. The situation has evolved with sessions developed by industrial personnel. Such a situation is certainly not in the best interests of either group, particularly when one group is trying to prepare young people to step into roles of responsibility in the other group.

There are certainly many factors which have led to this gradual decrease in dialogue between academia and industry. Many of these are entirely beyond the control of AIChE and the National Program Committee. Nevertheless, the Executive Board of the National Program Com-

mittee has been concerned over this problem and has been formulating plans to try to reverse this trend. In essence, these plans include setting-up new and, hopefully, more effective means of communication.

To encourage improved communications, thought is being given to revamping the structure of the present Free Forum to serve as a sounding board for reporting academic research activities in specific areas of chemical engineering, and then inviting comments and discussion from various industrial counterparts.

To put this idea into motion would require an ad hoc committee of the National Program Committee to carefully list a series of research areas being pursued presently in academic institutions and select one of these areas for emphasis at one of the AIChE meetings in a Research Forum. The research investigators in this area would select two or three representatives to outline the present research activity in this area, including both its purpose and hoped for results in understandable, uncomplicated language. Representatives from industry who would have an interest in this area would be invited to provide both a discussion and critical appraisal of the work as it applies to their present and future industrial work. Questions would be encouraged by the chairman from both academic and industrial participants. The highlights of the discussion would be recorded and made available to all interested in this technical area.

IF THE RESEARCH Forum generated sufficient interest in this specific technical area on the part of both the academic and industrial participants, the next logical step would be to plan and develop a specialist conference on the subject. This conference of several days duration would be located in a pleasant location having few outside distractions. The conference would feature leading contributors in this technical area, from academia and industry, to present a thorough review and discussion of both the current aspects and the future goals of research in this area. The conferences are visualized to be similar in nature to the Gordon Research Conferences and the Engineering Foundation Conferences, but dealing specifically with areas in chemical engineering.

It is visualized that possibly ten or twelve specific areas in chemical engineering might be elected as Research Forum topics by the ad hoc committee. If one Research Forum was held at each AIChE meeting, each specific area would be reviewed approximately once every three years. This would provide a minimum amount of time for the development of new programs as suggested by the last Research Forum on the subject, and permit preliminary evaluation of some of the research results presented at the Research Forum in an industrial situation.

Klaus D. Timmerhaus is Associate Dean of Engineering and Director of the Engineering Research Center, University of Colorado. He was educated at the University of Illinois (B.S. '48, MS '49, PhD '51. His interests are in cryogenics and heat and mass transfer and he has headed the National Cryogenic Engineering Conference annually since 1956. In 1968 Klaus won the ASEE George Westinghouse Award for outstanding professor as well as the Alpha Chi Sigma Award for his work in the science and practice of cryogenics. His other honors include the S.C. Collins award for cryogenic technology, the Faculty Appreciation Award, and his selection as Faculty Mentor.

The success or failure of the Research Forums and the follow-up specialist conferences will be directly proportional to the amount of cooperation that both academic and industrial researchers are willing to give to this communication effort. Both have much to gain in an open and frank discussion of current and future research directions in chemical engineering.

IN ADDITION to the Research Forum and Specialist conference, the National Program Committee has also considered the use of specialized workshops where each participant would become directly involved in the discussions and contribute his expertise to the discussion. To make these types of programs successful would require leadership that is not only highly knowledgeable in a specific area, but would, rather than dominate the discussion, encourage and elicit discussion from every participant involved. Experiments with this type of workshop are now being conducted in our AIChE Continuing Education Committee programs. A somewhat modified form of the specialized workshop would be a program similar to that developed by the AIChE Water Committee, where each participant would be required to make a short presentation of his research activities and how they related to the work of other researchers and to real and relevant problems. □