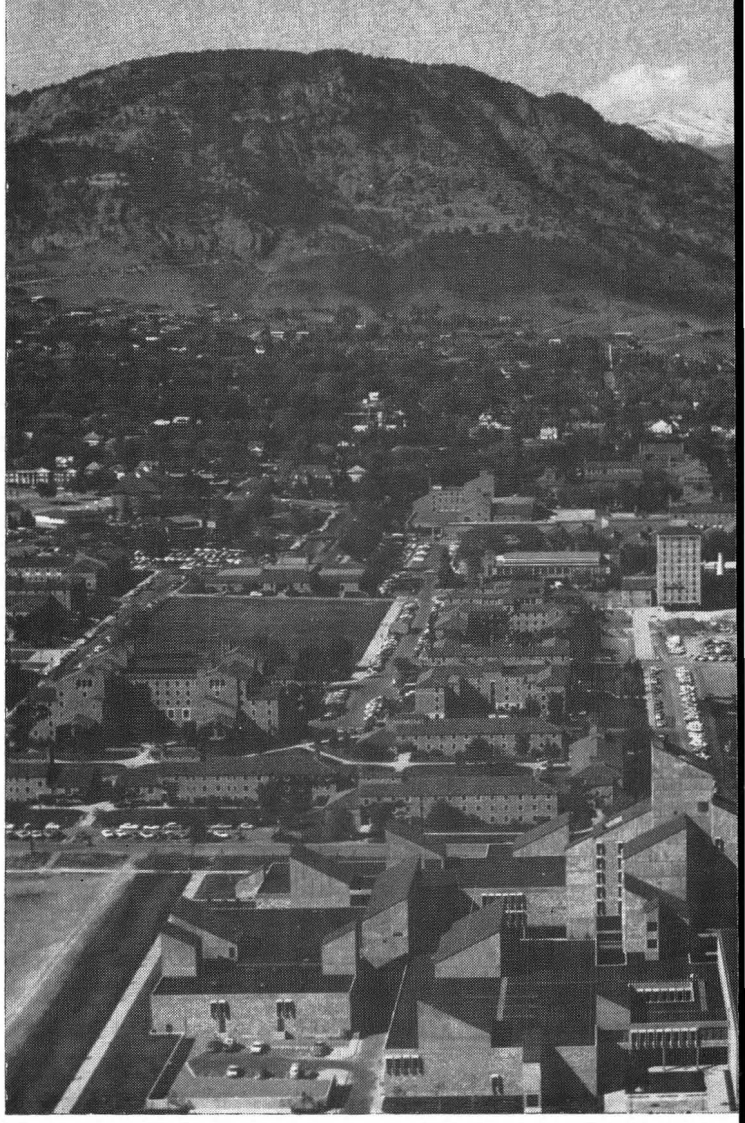

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CHE DIVISION ACTIVITIES

CHE SUMMER SCHOOL IN BOULDER - 1972

The 1972 Summer School for Chemical Engineering Faculty will be held August 13 through 18, 1972 at the University of Colorado in Boulder. Continuing the tradition of Summer Schools sponsored by the ChE Division of ASEE, the 1972 edition will have a new format designed to permit greater individual participation.

Mornings are devoted to five parallel workshops that explore important frontier areas in ChE education in some depth. Several evenings are set aside for colloquia on controversial topics in ChE education. Most afternoons are free for informal discussions, individual study, or relaxation. The Distinguished Lecturer and Annual Business Meeting of the ChE Division are integral parts of the Summer School.

Workshops: Each participant will enroll in one of the five workshops. Although the formats of the workshops differ somewhat, all emphasize individual participation. Enrollment in each workshop is limited to 30. Listed below are the workshop topics, coordinators, and lecturers, together with a brief summary of content.

1. **Chemical Process Design and Engineering**
   C. Judson King, Edward Grens, Alan Foss, and Scott Lynn, University of California at Berkeley; Dale Rudd, University of Wisconsin

   Design courses have been relatively standardized in ChE education, and have received much less attention than has engineering science in past years. There is a resurgence of interest in design and the development of that area of the curriculum. This workshop considers recent developments in design techniques and concepts—both qualitative and quantitative— which lead to significant modifications in the design curriculum at both undergraduate and graduate levels. Topics to be covered include systematic process synthesis, process simulation, process optimization, and the use of short qualitative problems of various sorts to develop skills in the art of engineering.

2. **Integration of Biomedical and Environmental Applications of ChE into Undergraduate Courses**
   Richard Seagrave, Iowa State University; Giles Cokelet, Montana State University

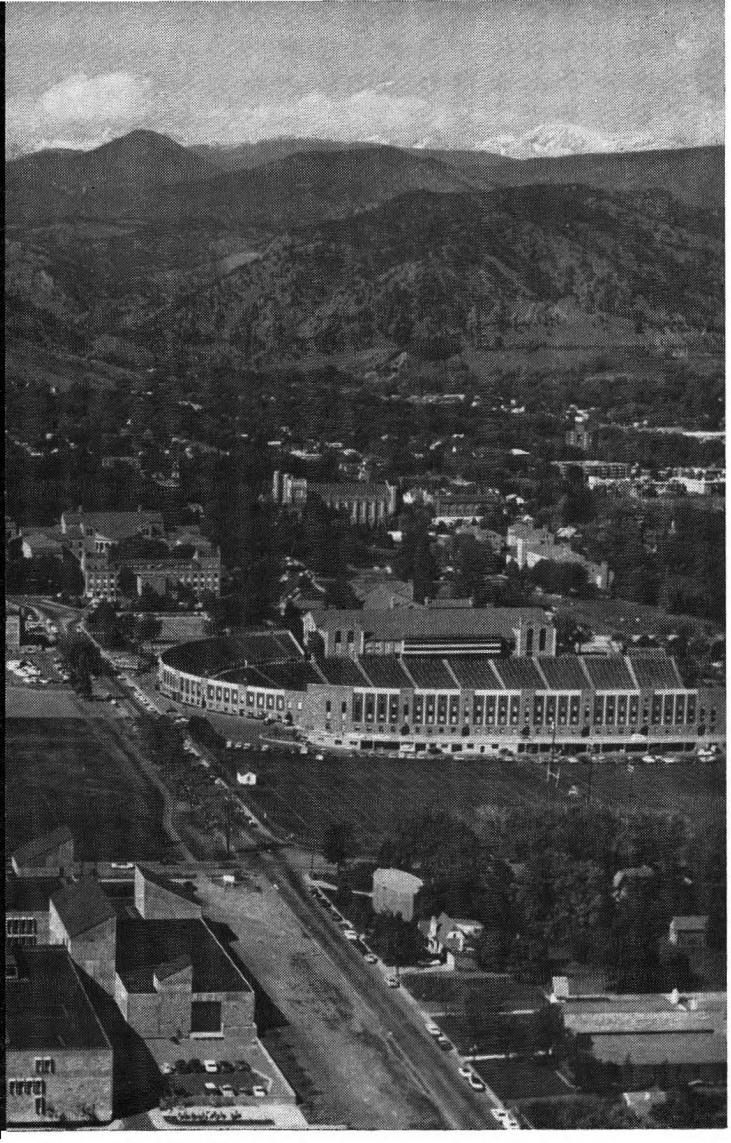
   This workshop demonstrates how examples of the application of ChE in these interdisciplinary fields can be integrated into existing basic undergraduate courses. The introduction of such examples should not only increase the student's basic understanding of ChE principles, but should also serve to increase his social awareness of important new problems in these areas. In addition, such an approach can help to stimulate added interest in the wide applications of ChE. The workshop discusses the introduction of such examples in five separate areas of chemical engineering:

   a) Material and Energy Balances
   b) Thermodynamics and Heat Transfer
   c) Mechanics of Fluids and Solids
   d) Mass Transfer and Reaction Kinetics
   e) Process Control and Optimization

   Examples are selected from the areas of applied physiology, the design and operation of artificial organs and life support systems, and environmental pollution problems.

3. **Application of Molecular Concepts for Predicting Properties Needed for Design**
   John O'Connell and Keith Gubbins, University of Florida; John Prausnitz, University of California at Berkeley

   Discussion centers on how the understanding of intermolecular forces can lead to qualitative and quantitative prediction of physical properties and



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phase behavior of real systems. The theoretical relationships between macroscopic properties and molecular structure and forces are outlined, as are the classification and description of intermolecular interactions including weak chemical interactions such as hydrogen bonding. Applications of corresponding states' theories for correlating thermodynamic and transport properties of pure and mixed fluids are stressed, particularly those based on molecular parameters. Another emphasis is on methods for describing fluid-phase equilibria. In addition to methods applicable to simple fluids, theories are developed to describe complex systems such as alcohol mixtures, polymer solutions, and organic solutes in water.

In all cases examples are chosen to develop physical insight as well as to illustrate practical ways of calculating quantities needed for design. Teaching methods are based on experiences of the leaders at both undergraduate and graduate levels and draw upon their recent books, literature, and specially developed notes.

4. **Numerical Methods for Chemical Engineering Problems**
   James O. Wilkes and Brice Carnahan, University of Michigan

   The workshop presents typical ChE problems that lend themselves to numerical solution, and is largely based on material contained in **Applied Numerical Methods**, by Carnahan, Luther, and Wilkes.

   The techniques to be discussed involve ordinary and partial differential equations, integration, simultaneous nonlinear equations, spline polynomials and other methods of approximation. Emphasis is placed on the variety of practical problems that can be solved numerically, including: piping networks, radiant interchange between surfaces, simultaneous chemical equilibria, physical-property correlations, tubular reactors, free convection, and natural gas storage.

   The opportunity will be available for participants to write computer programs related to material studied in the workshop.

5. **New Developments in Undergraduate Laboratories**
   Angelo Perna, Newark College of Engineering; Scott Fogler, University of Michigan; Frederick Shair, California Institute of Technology

   As the undergraduate curriculum has evolved, the ChE laboratory has been a subject of continuing debate and controversy. The workshop provides a forum for exchange of ideas on recent developments in undergraduate laboratories. A survey of new laboratory developments has been made, and a number of persons active in the field will be invited to present their ideas. General topics to be covered include:

   a) The philosophy and purpose of the undergraduate laboratory.
   b) Full-size or small scale equipment?
   c) Integration of theory and practice in experimental analysis.
   d) Use of analog and digital computers in the laboratory.
   e) Novel experiments.
   f) New laboratory instructional techniques.
   g) Demonstrations in lecture courses as a substitute for laboratories.

Colloquia: Three evenings are devoted to general topics of current interest to chemical engineering faculty. The Colloquium coordinator, Thomas Daubert of Pennsylvania State University, has scheduled two of the colloquia:

Effectiveness of Graduate Chemical Engineering Education—Industrial versus Academic Viewpoint
Sheldon Isakoff, DuPont; Robert Long, Esso; Cornelius Pings, Caltech; J. E. Vivien, MIT

Training of Foreign Graduate Students—Problem and Solution.
Harold Hoelscher, University of Pittsburgh; Darsh Wasan, IIT; Curtis Johnson, University of Colorado; Dee Barker, Brigham Young University.

The third session will be selected from topics of controversy as the time of the Summer School approaches.

Division Activities: The Distinguished Lecturer and the Annual Business Meeting will be held Wednesday afternoon. Although the Distin-

guished Lecturer for 1972 has not yet been selected, previous experience suggests that the Lecture will be one of the high points of the week. Dinner Wednesday evening will be a cook-out in the mountains.

Arrangements: Participants and their families will be housed in modern University residence halls. There will be an inclusive charge for room and meals. There is also a variety of motels near the campus. Climate in Boulder in August is warm and dry during the day and cool at night.

Although no special program is planned for families, the recreational resources of the University and the nearby mountains offer incomparable opportunities.

An NSF grant is being sought to support the Summer School. Final information and applications will be distributed to Chemical Engineering Departments in January 1972. Questions should be directed to the Director of the Summer School, L. Bryce Andersen, Newark College of Engineering.

Participants may wish to combine the Summer School with Minneapolis Meeting of AIChE (August 27-30).

NOMINATIONS FOR LECTURESHIP AWARD

The Chemical Engineering Division Lectureship Award has been bestowed annually upon a distinguished engineering educator since 1963 to recognize and encourage outstanding achievement in an important field of fundamental chemical engineering theory or practice. The recipient delivers the Annual Lecture of the Chemical Division at ASEE's Annual Conference. The award of $1,000 and an engraved certificate is sponsored by the Minnesota Mining and Manufacturing Company. Qualifications for the award include:

- Achievement, through formulation or creative application of fundamental theory and principles of important advances which have been accepted by his colleagues and by others in his field of specialization; promise of making further significant contributions.
- Improvements of lasting influence to chemical engineering education through books, technical articles, or laboratory or other teaching equipment; demonstration of success as a teacher; as well as ability to inspire students to high level accomplishment.
- Evidence of ability to do original, sound, and productive research personally or through those under his direction and to evaluate and report the significant results obtained.
- Interest in furthering technical progress in chemical engineering through participation in professional and educational societies.

Nominations should be submitted by January 1, 1972 to Professor M. H. Chetrick, Chairman, ChE Division Lectureship Award, Department of Chemical Engineering, Michigan State University, East Lansing, Michigan 48823

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(Continued from page 158)

about five percent of our gross national product. The battle lines to establish who is to foot the bill are now forming.

Two powerful tools are available for solving the pollution-conservation problem. One is our trillion dollar economy and the other our great technological capability. To this must be added the will to pay the necessary price. The worst approach would be to try to solve the difficulties by a purely emotional approach and to start by destroying the means available to do the job.

One other memory comes to mind. In the middle thirties I attended a meeting of the A.I.Ch.E. in Pittsburgh. The principle speaker was a famous editorial writer and commentator. His opening remark was how pleased he was, on passing a steel mill on his way to the banquet, to see smoke issuing from the stacks. He stated how wonderful it was to see the evidence that men at last were going back to work. Such a statement now sounds queer; but at that time it was understandable and everyone there agreed with it. People who had not seen a pay check for three years were eager to trade off absolute air purity for food for their families. Ten years later, during World II, when Pittsburgh was a great engine for producing war material, a small suburban mill town nearly had to be completely evacuated to prevent mass deaths from steel mill pollution. So it is. The triumphs of one period are the menaces of the next.

These are the problems that you, as budding chemical engineers, must face at the outset of your life work. I say outset because of another teaching of history. While current problems are being solved, new and more difficult ones are generated, and often become acute before people have completely met the old challenges. There is no evidence that this effect won't appear, perhaps more than one, during the half-century of your active lives. Then, maybe you will be in my position today; pontificating to your successors on just what they should do with the messes that you probably will be leaving them to clean up.