

# EDITORIAL

Editorializing, philosophizing, polemicizing, exorcizing, "exhortizing," proselytizing, prophe-sizing, and all similar conventional activities of an editor must wait for future issues. In this issue, nothing is more important than saying "Thank You" to the many people who have con-tributed time and money to the publication of **CHEMICAL ENGINEERING EDUCATION**. These are:

Professor William Corcoran of California In-stitute of Technology, for his leadership as Chairman of the Publications Board and his diligence in obtaining financial support from numerous companies.

The other members of the Publications Board for their support and for serving as our geo-graphical advertising representatives in se-curing donations and ads from industry. Their names are listed on the first page.

Dean Bryce Andersen, for his support as Chairman of the Chemical Engineering Divi-sion of the American Society for Engineering Education.

The companies that have generously con-tributed to our support (see acknowledg-ments).

The Chemical Engineering Departments that have donated \$25.00 each to the journal (see acknowledgments).

The former editorial staff at the University of Rochester who have helped make the tran-sition smooth and have offered their advice and support, and especially Professor Shelby Miller for his dedicated efforts in publishing Volume 1.

The Publications Staff at the University of Florida, College of Engineering: Rachel Al-bertson, Sandra McFarlan, Ginger Ashley.

The former publishers at the University of Cincinnati of the **Journal of Chemical Engi-neering Education** who have offered their support of our publication.

The staff at the University of Florida, and especially Professor Mack Tyner and Profes-sor R. B. Bennett.

The authors of articles who have cooperated by supplying us with material requested of them.

Our many "well wishers" throughout the country.

**CHEMICAL ENGINEERING EDUCATION** will continue to need the support of all these people and of others if it is to thrive or even to survive. The editors would especially like to urge all of you to submit material to us for our recurring departments:

Course outlines (no discussion needed)

Home problems, exam problems, and questions of interest.

Views and opinions of general interest, in-cluding guest editorials

Course descriptions and discussion

Book reviews (both before and **after** use)

News of conferences, new appointments, changes in programs, etc.

New laboratory techniques

Your department of chemical engineering (see "On Wisconsin")

An outstanding chemical engineering educator (see "Joe and his Jewels")

As a requirement of NSF sponsorship, we have agreed to publish the proceedings of the

Continued on page 39.

2. What we have said above sufficiently answers the second objection, but it may further be pointed out that a proper mathematical analysis can evaluate the effect of the errors that there will be in the estimation of constants. It can also suggest ways in which these constants may be determined more accurately and prescribe confidence limits for them.

3. Nowhere is the need for rigorous mathematical theory better seen than in the present day use of the computer. Without an existence theorem there is no assurance that the numbers ground out by the numerical solution of an equation have any meaning. There may be some intuitive presumption of their meaningfulness but let this be honestly recognized. The particular virtues of the digital computer are its speed, "careful attention" and "indefatigable assiduity"<sup>7</sup>. These may be exploited, but they need also to be controlled by a rationality which is too easily sacrificed in a culture which appreciates it so superficially. It is seldom wise and never desirable to start computing before obtaining a good qualitative feel for the form of a solution; the ability to do this is one of the fruits of mathematical training.

We therefore conclude that there is a valid place for theoretical and mathematical studies in chemical engineering research, provided that their virtues and limitations are properly understood and held in balance. When unwarranted

claims or unnecessary derogations are made from either direction, then the whole temper and spirit of natural philosophy is vitiated. Better soap may be made, but better living is not attained if cleanliness has become the first rather than the second virtue.

## REFERENCES

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Dr. Rutherford Aris was born in England in 1929, studied mathematics in the University of Edinburgh and taught it to engineers there. He has degrees from the University of London (B.Sc. (Math); Ph.D. (Math. and Chem. E.); D.Sc.). He worked a total of seven years in industry, but since 1958 he has been in the Chemical Engineering Department at the University of Minnesota enjoying the liveliness of its interests, both technical and cultural, and endeavouring to contribute to this vitality and communicate it to his students.

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**Summer School for Teachers of Chemical Engineering** which was held at Michigan State University last June. For that reason, we have on hand a certain amount of material that will be published during the year. But we would also like to include in each issue one or two articles on chemical engineering education that have been submitted to us by people in the universities and in industry. Accordingly, your contributions are definitely solicited.

**CHEMICAL ENGINEERING EDUCATION** wishes to provide something of interest to the entire profession: educators in the university and engineers in industry; the large graduate-oriented departments and those with small undergraduate programs; the theoretically-inclined and the practice-oriented; chemical engineering professors and chemical engineering students. But while we

serve all, we do not intend to avoid controversy nor will we shirk our responsibility to speak out editorially on matters we feel are of importance to the profession. We hope our readers will do us the favor of writing when they do not agree or also when they **do** agree with something they have read in **CHEMICAL ENGINEERING EDUCATION**. In later issues we intend to publish letters as well as articles that set forth differing views on important topics. We are always interested in your ideas as to how we can make **CHEMICAL ENGINEERING EDUCATION** a better journal. With your continued help and support we can provide an important and needed service to both the teaching and the engineering professions, to our students, and to our society as a whole.

Ray Fahien