IN MEMORIAM: KEES RIEТЕМА†

On Saturday 12 June 1993, Professor Kees Rietema died at the age of almost 72; the Dutch scientific community thus lost a remarkable character. Kees Rietema may be described as a scientist through and through, and one of the pioneers of physical technology—which he himself preferred to call process science.

Rietema studied physics at the Groningen State University and took his doctorate under Professor Heertjes at the Technical University of Delft in 1952. After joining Shell, he carried out some ground-breaking work on the hydrodynamics of cyclones. He rapidly rose to prominence, partly through his work at Shell, and partly through his involvement in the burgeoning activities of the European Federation of Chemical Engineering (the first symposium on Chemical Reaction Engineering was held in Amsterdam in 1957). Not surprisingly, therefore, he was appointed as the newly established Technical University of Eindhoven's first lecturer in physical technology in June 1959.

The following year, his new laboratories ready, Kees Rietema began teaching. For his students, his lectures were an eye-opening experience. He always asserted that his discipline was essentially very simple and that all you really needed was plenty of common sense even if in practice things seem different. He instilled in his students the idea that they had to learn to think independently about elementary physical mechanisms, quite an experience once the collection of data and information was complete.

Rietema was a master at reducing complex practical problems to the essentials and estimating the rough values of the determining parameters. The style of his approach provided the foundation which underpinned the later thinking of many of his students, both within his own discipline and beyond. This should not, however, be interpreted as meaning that he held himself aloof from mathematics; where necessary, he incorporated large elements of physics and mathematics in his work, even where this involved topics new to him. And he was not easily satisfied, expecting a lot of his undergraduate and postgraduate students.

For Rietema, experimentation was sacred and he was himself a very gifted experimenter, especially when it came to devising creative, simple experiments with which to test the validity of theories he had developed. His greatest pleasure was conducting such experiments himself. Many of his former students will remember all too well the extraordinarily illustrative demonstrations he performed during his lectures. Unorthodox ideas and a critical, creative approach to experimentation always won his enthusiasm.

Rietema was an influential figure in the international scientific community, and remains so, judging by the frequent references to his name in scientific journals. He always concentrated his studies on the fundamental principles, rather than on design issues.

Examples are: mass transfer with chemical reaction in segregated and coalescing systems, mixing and flow in dispersed media, the introduction and use of these principles in 'new' disciplines such as environmental and biotechnology, and, most of all, his own pet

†Editor of Chemical Engineering Science from 1976 to 1983.
subject, fluidization. Kees Rietema performed ground-breaking work in this latter area, based upon the then highly controversial, fundamental notion that a fluidized bed is not a pile of loose particles, but that by its particulate interaction the solid material displays coherent behaviour from which important and useful properties of the system may be derived. Once he was convinced of this, Kees Rietema immediately organized a major international symposium on fluidization in Eindhoven in 1967, attended by over five hundred specialists from all over the world, not because he wanted to place himself on a pedestal—Rietema disliked formal ceremony—but in the interests of scientific progress. Rietema did not, however, avoid discussion, indeed with him discussion often led to long explanations and sometimes polemics, whether at an international congress or in the Chemical Technology Department.

His unorthodox attitude and idealism were also demonstrated by his enthusiasm for and involvement in the democratization of the university in the late 1960s. That his forthright views were a product of his utter integrity was repeatedly illustrated by the way he dealt with the people around him. Kees Rietema was averse to flattery, was never a schemer, and enjoyed nothing more than a party—a fact evident in the laboratory, at home, and most notably when he organized a celebratory boat trip to show his appreciation of his staff after being awarded the KIVI Research Prize in 1977.

The increasing hearing problems which eventually led to deafness must have been a great sadness to him. Acknowledging the implications of this situation, in 1978 he retired from lecturing and limited himself to scientific research with a few close colleagues. His dear wife Ietje did all she could to make his handicap as bearable as possible for him, all the more so when illness became increasingly frequent.

Contact became more and more difficult, but his passion remained. This finally resulted in an eminently readable book in which he drew together the best of his work on fluidization. Following the book's publication in 1991, those who were close to him would say that he had given his all.

On hearing of his death, many of us will have reflected on what an exceptional scientist, what an exceptional man Kees Rietema was, and how much we owe him. Not only academically, but also—perhaps more importantly—for showing us how to conduct ourselves with integrity.

We hope that Ietje and the children are able to come to terms with the loss, and that from time to time we are able to help them do so by remembering his many achievements.

BART DRINKENBURG
SIMON OTTENGRAF
WIM P. M. VAN SWAAIJ

Department of Chemical Engineering
Twente University of Technology
PO Box 217
7500 AE Enschede
The Netherlands