

## REVIEWS

**How to Write and Publish a Scientific Paper.** By ROBERT A. DAY, 3rd edn. Cambridge University Press, 1989. 211pp. £20 (hardback), £7.95 (paperback).

This entertaining and useful little book, first published in the USA in 1979 and now revised and extended, is described by its author as a 'how to' book which, like a cookbook, presents recipes collected over the years. The description does not do justice to the book because it makes good cover-to-cover reading as well as being valuable for reference.

In the first 15 short chapters the author describes the many different tasks involved in the preparation of a scientific paper (choosing the title, writing the abstract and introduction, assembling the results, designing tables and illustrations, citing the references, etc.), and gives sensible advice on going about these tasks. He is clearly concerned about the need to improve the effectiveness of communication of scientific results and interested in the techniques of achieving an improvement. The style is refreshingly direct and down to earth: 'I take the position that the preparation of a scientific paper has less to do with literary skill than with *organization*,' and 'In preparing a title for a paper, the author would do well to remember one salient fact: that the title will be read by thousands of people. Perhaps few people, if any, will read the entire paper.' What he says will be obvious to some, but it is said in a way that is likely to stimulate authors of papers to think about the advice and possibly act on it. The author writes from experience of biological publications, but his advice is equally relevant to physical science.

In further chapters the author takes up the later stages of submission of a paper for publication, dealing with editors ('editors are awfully nice people'; '*never* say that the editor is wrong'), responding to reviewers ('if referees misunderstand, readers will'), correcting proofs, and ordering and using offprints. As comfort for those whose paper has been rejected, he advocates appreciation of 'the delicate phrasing that is sometimes used' and reproduces a marvellous rejection letter said to be from a Chinese economics journal: 'We have read your manuscript with boundless delight. If we were to publish your paper, it would be impossible for us to publish any work of a lower standard. And as it is unthinkable that, in the next thousand years, we shall see its equal, we are, to our regret, compelled to return your divine composition, and to beg you a thousand times to overlook our short sight and timidity.'

Finally there are several chapters on how to write a thesis, a survey paper, a conference paper and a book review, how to present a paper orally and by posters, and two excellent short chapters, which might have been better placed near the beginning of the book, on the use and misuse of English. Again the advice is clear, pithy, and never dogmatic.

In the closing chapter the author summarizes his beliefs. 'The writing of an accurate, understandable paper is just as important as the research itself. Therefore, the scientist must know how to use words'. And 'especially, students must learn how to write'. He says that 'Many universities now provide courses in scientific writing', which perhaps refers to the USA, and 'Those that do not should be ashamed of themselves', which applies to all of us. If this reviewer may inject a personal view, the problem is not only the difficulty of acquiring the skills needed for clear, concise

and precise writing but is also that of arousing scientists to consciousness of the *need* to do so. This very practical and readable book can undoubtedly help with both these aspects of the problem, and I recommend all research supervisors to present a copy to their Ph.D. students – after reading it themselves.

G. K. BATCHELOR

#### SHORTER NOTICES

**Heavy Gas Dispersion Trials at Thorney Island.** Edited by J. MCQUAID. Elsevier, 1985. 435pp. \$109.25 or Dfl 295.

On 29 separate occasions between August 1982 and October 1983 up to 24 tonnes of  $\text{CCl}_2\text{F}_2$  were released into the atmosphere at Thorney Island (West Sussex, UK) for experimental purposes. The initial evolution of the dense gas cloud was thoroughly monitored to a distance of 750 m. (Alas, the subsequent evolution up to the ozone layer was not envisaged, despite the involvement of 39 organisations from Canada, Federal Republic of Germany, France, Italy, Netherlands, Norway, Saudia Arabia, Sweden, UK and USA.) A symposium focused upon these experiments was held in Sheffield in April 1984. This beautifully printed book includes 23 papers which analyse the data. The set of papers has also been published as a special issue of *Journal of Hazardous Materials*, vol. 11, issues 1–3. The wealth of field data makes this book essential reading for anyone concerned with dense gas releases. A noteworthy feature is that only after a long time does the cloud even remotely resemble a conventional gravity current. So, it is important to know how a dense gas release takes place. For financial and environmental reasons, such large-scale experiments are unlikely to be undertaken again.

**Direct and Large Eddy Simulation of Turbulence.** Edited by U. SCHUMANN and R. FRIEDRICH. Vieweg, 1986. 340 pp. £37.45.

This volume contains some of the papers presented at the EUROMECH Colloquium no. 199 held in Munich in September 1985. The colloquium was devoted to direct and large-eddy simulation of turbulence. There are 20 papers which have been subject to review and whose length varies from 2 to 30 pages. The topics dealt with are: transition to turbulence, subgrid-scale models and basic concepts, large-eddy simulation of wall-bounded flows, direct and large-eddy simulation of mixed shear and buoyant flows, and convective and stable atmospheric boundary layers. The standard of many of the contributions is high but it is now a while since the colloquium and some of the material has been published in more detail in the open literature. The more general reader will gain an impression of this developing subject and new workers in the field will benefit from the collected background and references.

**Advances in Turbulence: Proceedings of the First European Turbulence Conference.** Edited by G. COMTE-BELLOT and J. MATHIEU. Springer, 1987. 586 pp. DM 145.

These proceedings cover a wide-ranging conference held at Lyon, France, in July 1986 and attended by engineers, physicists and mathematicians. The organisers sought to focus attention on particular topics and the papers are presented under the

headings: Instability and transition, Chaotic behaviour of non-linear systems and turbulent fields, Direct and large-eddy simulation of turbulence, Coupling of Fourier modes, Two-dimensional velocity fields, Coherent structures in turbulent flows, Experimental techniques, and Engineering application of turbulence and the effect of external disturbances. There is a total of 63 papers: most have a length of only 5 to 10 pages but some of the invited reviews are longer. Compared with most conference proceedings the standard of these short papers is high and they address some of the main challenges in turbulence. The book provides stimulating reading and a useful review of current challenges and initiatives.

**Third International Conference on Hydrocyclones.** Edited by P. J. Wood. Elsevier, 1987. 275 pp. £45.

Hydrocyclones are used extensively in industry as separators or classifiers and consequently there is a great deal of interest, firstly in developing an understanding of the fundamental mechanisms of operation of the devices, and secondly in a more extensive application of the equipment. The 3rd Conference aimed at reporting on progress made in these two areas.

The majority of the papers presented were concerned with the more practical aspects of hydrocyclone operation, and experimental investigations to assess the influence of design parameters on separating efficiency in particular applications were reported. In these applications the nature of the fluid flow was extremely varied, ranging from liquids with a low concentration of solids to slurry flows. Also investigated were liquid/liquid systems, where there is the additional complication of droplet size being dependent on the local flow conditions.

Both theoretical and experimental studies of the basic fluid mechanics of these separators were presented. Laser Doppler anemometry was used to study the velocity fields in various cyclones, and turbulence effects, which differ markedly from those associated with non-swirling flows, were also measured. The influence of slurry rheology on the flow was examined experimentally, and the results provide a useful set of data, not only for practical applications, but also for comparison purposes with theoretical models. On the theoretical side, vorticity effects were studied and hydrocode solutions for a complete flow picture were presented.