

Dangling infinitives

Writing Scientific Papers in English: An ELSE-Ciba Foundation Guide for Authors. By M. O'Connor and F. P. Woodford. Pp. 108. (Elsevier Scientific: Amsterdam, 1975.)

A PHYSICS student at my University attends about 1,500 hours of lectures, tutorials and laboratory classes on physics and mathematics during his undergraduate career. On completing his research a postgraduate must write a 30,000 word thesis, and may publish several articles in scientific journals. In spite of this, there is no formal tuition at all on how to write papers and submit them for publication. As far as I know the situation is similar in other universities and in other scientific disciplines. It is therefore not surprising that the scientific 'literature' is frequently turgid, dull, ungrammatical and sometimes incomprehensible. A recent review article—written by experienced scientists—contained the following: "... these spectra will be discussed at length, shortly ...", "... the fluorescence spectra does not ...". The word "only" was consistently misplaced: "... such a symmetry is only provided by the interstitial site ...".

These errors are relatively minor, and one knows what the authors are trying to say. But if the natives write like this, what hope is there for foreign scientists, who are compelled to use English to reach the international scientific community?

This is where *Writing Scientific Papers in English* comes in. Its title is a bit misleading, in that the book covers the whole process of publishing a research paper. The chapters are headed Planning, Preparing, Writing the First Draft, Revising, Refining, Typing, Submitting the Final Version, Responding to the Editor, and Correcting Proofs, the first Appendix summarises the book (*Steps in Writing a Paper*), Appendices Two to Four deal with Units and Abbreviations, and Appendix Five with Expressions to Avoid. Over the next two years a series of supplementary booklets will be published, dealing with the problems of particular language groups, and with the various disciplines of science.

The best piece of advice O'Connor and Woodford give is, "Begin at the end. Write down your conclusions as clearly, precisely and economically as you can, and relate them to the question or hypothesis you have been examining". Furthermore, "A scientific paper should not be the history of an enquiry, but its outcome". And "Never ... submit for publication a paper that has already been published or accepted for publication elsewhere".

In our writing we are told to avoid dangling participles and infinitives, to use active rather than passive voice, and verbs rather than abstract nouns. We should write, "we believe" rather than "it is thought" when referring to our own ideas: this type of circumlocution has been called the "passive of modesty". And it is misleading, because readers do not know whether the opinion belongs only to the authors, or is generally held.

I thoroughly approve of this book. It is packed with good advice, and written in an enviably lucid and readable style. Every library should have a copy. And every scientist, from Professor to student, whatever his nationality, should read it. The best compliment I can pay the book is that I will follow all its recommendations when I write my next paper.

J. Walker

Ice book



Growth of ice from liquid phase

Ice Physics. By Peter V. Hobbs. Pp. xvii+837. (Clarendon: Oxford; Oxford University: London, February 1975.) £29.

IN recent years there has been a great advance in our understanding of the physical processes going on in ice. Although ice has been studied for many decades, there were many aspects of its behaviour that were not understood—in particular, why it has the structure that it does, what the high pressure phases of ice are, and why ice has the electrical and mechanical properties that it does. Not all of these problems have been completely solved, but the great advances made are worth bringing together so that workers in the field can assess the current state of knowledge and can see how work in the different areas may shed light on each other. In this book Hobbs has tried to do this, and the result is a very

large book which surveys the whole field, including virtually all the important work and summarising our present state of knowledge.

This book will therefore become an essential reference for anyone working seriously on the physics of ice. It has no competitor for this place. The only other book in this area, N. H. Fletcher, *The Chemical Physics of Ice* (Cambridge, 1970), is a much shorter book with a different purpose. Fletcher introduces ice physics as an example of chemical physics. He selects from ice physics certain areas of interest, and shows how we have learnt to understand them. It is a book suitable for a course, or as an introduction to some important areas of ice physics. Hobbs's book is much more inclusive. It would not be suitable for a course, although certain individual chapters might. It is in the tradition of the monograph summarising knowledge, and it seems to have achieved this to a remarkable degree.

The first of ten chapters deals with the solid phases of the water substance—bonding of water molecules, structure of ice Ih and hydrogen disorder, other phases of ice and amorphous ice and clathrate hydrates. The second chapter concerns electrical properties, including the theory of electrical point defects in ice developed to explain them. The third chapter considers optical properties including luminescence, infrared and Raman spectra and some of the practical consequences. The fourth chapter is devoted to mechanical properties—elastic, plastic and fracture—including the difference between single crystals and polycrystalline ice. The fifth chapter deals with thermal properties and diffusion, including the problem of the heat capacity and zero-point entropy of ice and the diffusion of vacancies in ice. A chapter on surface properties leads on to a chapter on nucleation of ice and two others on growth of ice from the vapour phase and from the liquid phase. The final chapter is on ice in the atmosphere.

The book is remarkably up to date, and even has an appendix which includes results of the International Symposium on the Physics and Chemistry of Ice (Ottawa, August 1972), the results of which were only published about a year before the present book.

The bibliography is arranged so that it can be used as an author index, in that after each reference (which is given in full with the title of each cited paper) the page numbers on which it is cited are given. The conventional subject index and an index to tabulated and graphic experimental data add to the usefulness of the book. It is strongly recommended to anyone who has reason to enquire what we now know about any of the physical properties of ice.

John W. Glen