

# CURRENT SCIENCE

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EDITORIAL

## Writers and Readers

Writing about science and scientists requires two distinct skills; knowledge and understanding of science and an ability to communicate in a language that readers appreciate. India boasts of very few professional science writers, capable of popularizing and communicating the happenings in the world of science. Some years ago the Ramaseshan fellowships were instituted at *Current Science*, in the hope that support provided for aspiring science writers would result in contributions, that would improve the readability of the News sections of the journal. While the response to the advertisement of the fellowships was encouraging, my colleagues and I quickly discovered that the task of finding science students, with writing skills and a desire for a career in science journalism, was going to be very unrewarding. In attempting to foster a new breed of budding science writers, I have often wondered which attribute is primary; knowledge of science or skills in writing. Most applicants for the fellowships appeared too specialized, rarely able to muster interest in any topic outside their narrow areas of expertise. Many seemed to have little idea of the rich history of the fields they were studying. If a broad interest in science seemed rare in the group of aspiring science writers whom we met, writing skills seemed even rarer. In interviewing candidate after candidate I realized that reading may have become a lost art. While books were almost never 'read' by the group of students we met, surprisingly even popular journals and magazines did not seem to be worthy of even a cursory glance.

Writers must, of necessity, be readers first. In principle a course on science writing or communication must teach budding writers what to read. The attention span of most readers is severely limited and any reading course would be best advised to prescribe material that is restricted in length. In thinking about a suggested reading list I came to the unsurprising conclusion that short essays on science may be the best place to begin. Quite often the most interesting essays are camouflaged as book reviews. For avid readers, who are hard pressed for time, a review may help in deciding whether a book is worth pursuing. The difficulties (and expense) of getting one's hands on some titles in India cannot be underestimated, making well-written reviews invaluable. Reviewers who are knowledgeable about the subject and its history can sometimes provide insights that are lacking in the book itself. I am

addicted to book reviews and it is to these pages that I turn in journals like *Nature* and *Science*, after a quick glance at the contents page reassures me that no spectacular breakthrough has been reported in my areas of interest. A review that is really an essay in disguise, provides the author with a wonderful opportunity to reflect on a field, unconstrained by the precise details of the book being reviewed. Book reviews fall into many categories. There are dull cataloguers who list the chapters and always recommend the volumes to libraries and undiscerning buyers. Then there are the professional critics, who take their jobs rather seriously, working on the assumption that reviewers must find fault with everything they read. Finally, there are the essayists, writers waiting for an opportunity to expand and digress; the book at hand only providing a catalyst for creative expression.

In this genre of reviewers, writing about science and scientists, few can match the rare talent of Max Perutz. An Austrian by birth and an Englishman in every other way, Perutz reviewed a remarkable range of books in his later years. He was one of the dominant figures in the revolution in structural and molecular biology that took place in the 1950s and 1960s. His work paved the way for our present understanding of protein structure and function. He spent the most fruitful years of his career at Cambridge, working till the very end. He was uniquely positioned to view and describe science and scientists. He was a prodigious reviewer of books, sharing his insights and experiences with readers in simple, yet elegant prose. His collection of essays *I Wish I'd Made You Angry Earlier* (Oxford University Press, 1998) must be required reading for every budding science writer. This collection of essays contains several book reviews that featured in *The New York Review of Books*, *London Review of Books* and *Nature*. The book derives its title from an essay in *New Scientist* (23 February 1987), which describes his experimental confirmation of the alpha-helical structure of proteins, proposed by Pauling and Corey in 1951. A few months earlier Lawrence Bragg, John Kendrew and Max Perutz had published a paper in the *Proceedings of the Royal Society, London* (1950, **A203**, 321) on the structure of polypeptides. Bragg had received the Nobel Prize in 1915 and Perutz and Kendrew would receive it in 1962. Hindsight would show that every structure in this paper was probably wrong. Perutz writes that confirma-

tion of the Pauling–Corey insight required one simple but, crucial experiment, which he performed immediately. The result proved Pauling right. When Perutz ‘stormed into Bragg’s office’ to show him his X-ray diffraction picture, Bragg asks him, ‘what made you think of this experiment?’. Perutz replies ‘that the idea was sparked off by my fury over having missed building that beautiful structure myself’. Bragg’s prompt response, ‘I wish I had made you angry earlier!’ is used decades later as the title of Perutz’s fascinating collection of essays.

Perutz ranges far and wide. In reviewing two books on Fritz Haber and his wife Clara Immerwahr, he highlights the dilemma of science, valuable and destructive at the same time. Haber’s work on the synthesis of ammonia and the consequent growth of the fertilizer industry has sometimes been hailed as the harbinger of the first agricultural revolution of the 20th century. But Haber’s work also signalled the beginning of chemical warfare research in a modern context, field tested in the trenches of the First World War and resulting, almost inevitably, in the use of Zyklon B for mass murder in Hitler’s Germany. Perutz has a somber assessment of Haber: ‘By a terrible irony of fate it was his apparently most beneficent invention, the synthesis of ammonia, which has also harmed the world immeasurably’. Perutz can be scathing in a measured way, as in his review of a book that attempts to ‘deconstruct’ Louis Pasteur (Geison, G. L., *The Private Science of Louis Pasteur*, Princeton University Press, 1995). He admonishes the author: ‘Toppling great men from their pedestals, sometimes on the slenderest of evidence, has become a fashionable and lucrative industry, and a safe one, since they cannot sue because they are dead. Geison is in good company, but he, rather than Pasteur seems to me guilty of unethical and unsavoury conduct when he burrows through Pasteur’s notebooks for scraps of supposed wrongdoing and then inflates these out of all proportion, in order to drag Pasteur down’. Perutz proceeds to reach a diametrically opposite conclusion, reflecting the fairness that he always displayed in his writing: ‘Pasteur may have been domineering, intolerant, pugnacious, and, in his later years, a hypochondriac who searched every slice of bread for bacteria before eating it; but he was courageous, compassionate, and honest and his scientific achievements, which have much reduced human suffering, make him one of the greatest benefactors of mankind’ (p. 129). Perutz is often at his best when he reflects on many of science’s best known names. He ends his review of the autobiography of Hans Krebs agreeing with Krebs’ view of research, which echoes ‘Noel Coward’s saying that work is fun, there is no fun like work’. He saw the double helical structure of DNA emerge, even as he struggled with haemoglobin. He ends an essay entitled ‘How the Secret of Life was Discovered’ by noting that ‘like Leonardo, Crick and Watson often achieved the most when they seemed to be working the least. They did an immense amount of hard work,

studying while hidden away, often at night, but when you saw them they were most likely engaged in argument and apparently idle. This was their way of attacking a problem that could be solved only by a tremendous leap of the imagination, supported by profound knowledge. Imagination comes first in both artistic and scientific creations. But in science nature always looks over your shoulder.’ Perutz then paraphrases Churchill in concluding, ‘In science you don’t need to be polite, you only have to be right’. In his writings Perutz turns out to be a man who was both polite and right. There are many gems strewn throughout his essays. In concluding his reflections on Rita Levi-Montalcini’s autobiography *In Praise of Imperfection*, Perutz recalls Paul Ehrlich’s dictum that ‘success in research needs four G’s: Glück, Geduld, Geschick and Geld (luck, patience, skill and money)’. He notes wryly that Levi-Montalcini ‘had the first three in good measure and needed little of the fourth’ (p. 303).

In introducing the Spring Books Supplement of *Nature* many years ago (1981, **290**, 633), John Maddox asks ‘What are book reviews for?’. He goes on to conclude that ‘the scientific community, any intellectual community, has reason to be grateful to reviewers’. The requirements of a book review, according to Maddox, is that they ‘should be essays in sympathetic understanding, marked sometimes with sorrow, rarely with anger’. Book reviews are not always benign and sympathetic and Maddox draws attention to an interesting exception. This is Dorothy Hodgkin’s review of Maurice Goldsmith’s biography of J. D. Bernal, arguably one of the most influential and interesting figures of 20th century science. Hodgkin, a student of Bernal, who in Perutz’s words was ‘a great chemist; a saintly, gentle and tolerant lover of people. . .’, is devastating in her critique of the Bernal biography (Goldsmith, M., *Sage: A Life of J. D. Bernal*, Hutchinson, 1980) (*Nature*, 1981, **289**, 99). Maddox defends Goldsmith noting ‘that there are some occasions on which even bad books are better than no books. . . . And books – or good books – can survive from one decade to another’. I did not find a review of Goldsmith’s book by Perutz, who also learnt the tools of the trade from Bernal. But one might guess that he would have skirted the book itself, but dwelt on the man, whom he said turned the ‘dingy quarters’ of the Crystallographic Laboratory at Cambridge ‘into a fairy castle’ by his brilliance.

In the preface to his collection of essays Perutz says disarmingly, ‘when I read books, I jot down any wise sayings which appeal to me. I keep them in my Commonplace Book, a name that goes back to antiquity. . .’ He reproduces his collection at the end of the book and I cannot resist using one attributed to Groucho Marx: ‘I was so long writing my review that I never got around to reading the book’. In admiring Perutz for his craftsmanship, I came to the inescapable conclusion that writers must read.

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