

Explanation and definition

Alan Isaacs

The Harper Dictionary of Science in Everyday Language. By Herman Schneider and Leo Schneider. Harper & Row: 1988. Pp. 309. \$25.

The American Heritage Dictionary of Science. Edited by Robert K. Barnhart. Houghton Mifflin: 1988. Pp. 740. \$19.95.

THESE TWO books, both called dictionaries of science, are about as dissimilar as any two books claiming to be dictionaries of anything could be. The essential difference is one of the intended audiences.

The title of the Harper book is plain enough, and the blurb tells us that here is "a book that explains scientific terms and techniques with wit and charm and, most of all, in plain English". Although one may find it hard to imagine anyone being either witty or charming in scientific explanation, the Schneiders have been fairly successful in making fairly difficult concepts fairly lucid to fairly intelligent non-scientists. Interferometry, for example, is quite ingeniously explained, so too are computerized axial tomography and boolean algebra. Indeed, there are some extremely good explanations throughout the book, which one could well imagine being helpful to any layman willing to put up with the wit and charm that go with them.

The authors say (in the preface) that their dictionary came into being because a neighbour was confused by standard definitions of entropy — that the only people capable of understanding these definitions would be scientists. So their own entry begins wittily with T.S. Eliot's "This is the way the world ends..." and launches off charmingly into a piece about "the majestic rotation of galaxies". They do not record how their neighbour reacted; one cannot help wondering if he was much the wiser. At least it is clear from the entry — explanation without definition — at whom it is aimed.

Who, though, will use the American Heritage dictionary? On the inside flap of the jacket it is asserted that the book "bridges the gap between the oversimplified and the highly technical reference", while in his preface the editor notes that it is designed to "support" the student. One hopes he means that the biological entries are designed to help the physical scientist, and vice versa? If that is the case, the book could well serve a useful purpose. But a glance at the entry for entropy is not very reassuring if he doesn't mean this. The definition eschews explanation: "a measure of the unavailability of thermal energy for doing mechanical work", a not

very helpful quotation from L.K. Runnels, and that is all. Surely, the student of physical science would want something more than that. Some attempt at explanation on the lines of $\Delta S = \Delta Q/T$, at the very least.

Another surprising aspect of Barnhart's book is the treatment of chemistry, which is both inconsistent and out of date. For example, there is no entry for ethanal and that for acetaldehyde does not even refer to this systematic name. There is, however, an entry for ethanol, which is given as an "also called" under ethyl alcohol. Ethene has an entry cross-referring it to ethylene, but the entry at ethylene makes no mention of ethene. In view of the international change from trivial to systematic names, it should be one of the

prime tasks for a dictionary at this level to deal correctly with the relationship between the two systems, especially if it is for school and college libraries.

That neither dictionary has solved the problem of either explaining or defining entropy for the layman, the life scientist or the physical scientist, may not be a total condemnation of either. It is a hard concept to get across in any depth without mathematics. Moreover, both books contain plenty of other useful explanations (Harper) and definitions (American Heritage). □

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Cycling essays

Edward Rybicki

Portraits of Viruses: A History of Virology. Edited by F. Fenner and A. Gibbs. Karger: 1988. Pp.344. SwFr. 147, £66.90, \$98.

SINCE I began teaching virology in 1981, I have come across only one book that purported to be a history of the subject — and that is now sadly out of date. It was pleasing, therefore, to hear that Karger were to bring out the volume under review. My enthusiasm dwindled somewhat when I realized that the book consisted of the 15 "Portraits of Viruses" that have been published in *Intervirology* over the years since 1979, and that I had already read most of them. The essays were written by distinguished and long-serving virologists, and are often as much personal scientific biographies (especially those by Heinz Fraenkel-Conrat on tobacco mosaic virus, and Richard Lister on tobacco rattle virus) as they are contributions to the history of research on a particular group of viruses.

In the preface, the editors say that "this collection of essays has some notable gaps". This is very true: there are no reoviruses here, nor any polyoma- or adenoviruses, and there is only one retrovirus. Worse, the portraits have not been updated or expanded; all of them have been reproduced directly from the journal. The editors say that "for contributions written several years ago, we asked the authors to provide a brief addendum . . .". In fact, only the portraits of the poxviruses (F. Fenner, 1979) and the picornaviruses (J. Melnick, 1983) have such an addendum. The failure to bring the articles up to date is more excusable when their authors have since died — as have Macfarlane Burnet (influenza virus A), Peter Wildy (herpesviruses) and Basil Kassanis (tobacco necrosis virus and its

satellite virus) — but it was remiss of the editors not to have insisted that contributors still living should do so.

The most recent essays were published in *Intervirology* in 1986; seven of the others appeared between 1979 and 1981. Thus it is that William Hayes does not include the exciting developments of the past few years, such as the sequencing of lambda and its development as a powerful tool in the recombinant-DNA armoury; Fraenkel-Conrat neglects the sequencing of the tobacco-mosaic-virus genome; in Burnet's essay there is no mention of the cDNA cloning and sequencing of many influenza virus HA and NA genes, nor of the synthetic peptide and monoclonal antibody work on the unveiling of antigen drift; and T. O. Diener does not tell of the elucidation of the replication and self-cleavage mechanisms of viroids. The essays themselves vary from the very personal and relatively sketchy, to the more formal and comprehensive review-type treatments given to poxviruses, picornaviruses and especially to Rous sarcoma virus (J. Svoboda): these have already proved helpful in my teaching, and remain as valuable references; I shall not be referring much to the other chapters.

These points apart, I have no complaints about the "Portraits of Viruses" series. But I do question whether it was necessary to put together this collection, or whether it will be worthwhile (the editors' hopes notwithstanding) to do so again in the future. The series of portraits always was, and remains, at best fragmentary and anecdotal. Publication of the essays in *Intervirology* is sufficient, in my view, to safeguard their authors' contributions to the body of background material which, one hopes, will be used by others for the writing of fuller accounts of the history of virology. □

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