

Science as she is wrote

Walter Gratzer

How to Write & Publish a Scientific Paper, 3rd edn. By Robert A. Day. Oryx Press, 2214 N. Central at Encanto, Phoenix, Arizona 85004/Cambridge University Press, UK: 1989. Pp.244. Hbk \$23.50, £20; pbk \$16.95, £7.95.

The Technical Writer's Handbook: Writing with Style and Clarity. By Matt Young. University Science Books, 20 Edgehill Road, Mill Valley, California 94941: 1989. Pp.256. \$22.50. To be published in Britain by Oxford University Press, £14.95.

TECHNICAL literature may be short on charm, but the discriminating reader will often find in it examples of writing so bad that it glows with a kind of grandeur all its own. Let me offer you a humble specimen, culled from the letter page of the *Times*. A puzzled customer, inquiring of a biscuit manufacturer why the tin containing his products was not quite square, was rewarded by the following reply:

The existing sizes were developed because prior to the war, a much larger range of sizes was offered.

Small tins were then available which were known as no 1 and no 2 size tins, and for stacking purposes four no 1 size tins equalled in size the half square biscuit tin. Eight no 1 tins were equal in size to a square tin and, similarly, four number 2 tins were equal in size to a square tin.

These very conveniently fitted both racks and storage spaces and we are afraid that any alteration of the size would now cause considerable inconvenience to the trade.

Does this not have a certain majesty? Or consider the ringing tones in which a circular letter from the Monsanto Company apostrophizes its reader: "Dear Friend of Maleic Anhydride".

Small wonder then that technical writing has become identified as a distinct literary genre, which attracts its own apologists and indeed scholars, who profess it as an academic discipline. One such is Robert A. Day, whose book, now in its third edition, is evidently the outcome (jokes and all) of a series of lectures at the University of Delaware. Professor Day is an enthusiast for his subject and he is generous, if not profligate, with information and advice, down to the exhortation that when your paper is at last written you must "make sure that you apply sufficient postage and that you send the package by first-class mail". And mark that before you speed it on its way you would do well to have it scrutinized not merely by the other authors but by a small team of scholars, to include "(a) a scientist working in your field, (b) a scientist working in an unrelated field, and (c) a competent grammarian [eh?]. Careful management of this presubmission process is likely to improve the chances of acceptance by the journal".

There, I fear, speaks the whilom managing editor of the *Journal of Bacteriology*, viewing the tribulations of the

laboratory scientist with detachment. The medium has become the message.

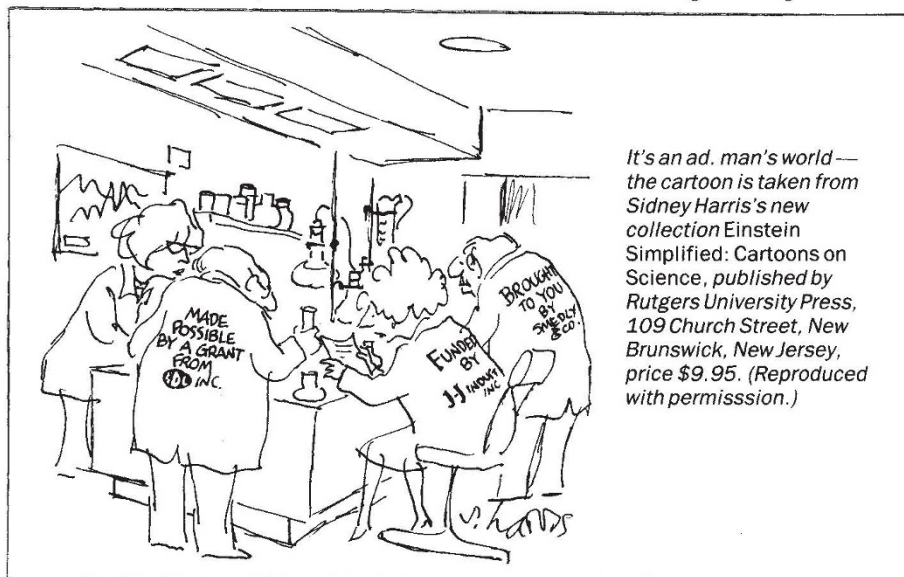
There is still another recurring theme in Professor Day's discourse, which made me sometimes wonder whose side he is really on. He seems to me to be altogether too concerned that we should give no displeasure to members of the bossy professions — to copy-editors for instance, who deny us the correct use of hyphen or gerund; especially must we obey those exigent lice in the armpits of science, the nomenclature commissions, when they forbid us to utter words such as calorie or molecular weight.

But then perhaps Professor Day is right to insist that if you heed his admonitions you will improve your chances of getting your papers into the journals in which the best people disport themselves. 'Prestigious' is a word much favoured in this context. ("Prestigious, *a.* Now rare. Practising juggling or legerdemain . . . cheating, deluding, deceitful; deceptive, illusory" — *OED*.) When you have identified these journals, which you do by looking up the outstanding papers in your field, you will know where to direct your offering. But, please sir, what if my research is tedious, trivial and derivative (like most other people's)? Will the same advice then serve for me as for the Nobel laureate down the corridor? Surely my problem will be less a matter of placating the copy-editor with my faultless use of

units and abbreviations than how best to gloss over the frailty of my logic, disarm the referees and construct the figures so as to flatter the data.

Perhaps I have cavilled too much, because after all Professor Day's main principles are sound. Besides extolling brevity and preferring statistics to be meaningful, he is (as I judge) consistently on the right side on such matters as declamatory titles (hostages to fortune, if nothing else; think for instance of "Space Travel is Utter Bilge" from the Astronomer Royal a year or two before Sputnik I), and much more. Both Day and Matt Young — whose handbook begins with a mere dozen pages of cogent general advice on style in technical writing — work themselves into a fine lather on hanging participles (striding into the laboratory he saw a white rabbit), which they would clearly run a mile in tight shoes to escape; each delivers more than one philippic about the superiority of the active over the passive voice, and the first over the third person. For my part, I am irked by the too frequent intrusion of the author (we weighed the sample and then we dissolved it in water); and you will find in an earlier volume of *Nature* an illustration of the over-zealous application of such canons. A book-reviewer's flattering observation, "the author is of course the world's foremost authority on the genetics of . . ." was transformed by creative copy-editing into "I am of course the world's foremost authority . . .". This shows that a man must always retain the capacity to rise above principle (or that copy-editors too are responsible for the sense of the copy).

Of the two books, Matt Young's is the more ambitious. Where Day is concerned largely with the mechanics of assembling publications and getting them into print, Young has compiled a dictionary of technical English usage, rather on the lines of Fowler's *Modern English Usage*. He has a



It's an ad. man's world — the cartoon is taken from Sidney Harris's new collection *Einstein Simplified: Cartoons on Science*, published by Rutgers University Press, 109 Church Street, New Brunswick, New Jersey, price \$9.95. (Reproduced with permission.)

lively and informed interest in the language and its development, and a sharp eye for the manifold abuses that are heaped on it in the technical prose of our day. He warns for instance against 'verbi-fication', as he calls it ('to formularize' is a grisly example), but he endorses 'key-boarding' (as does Day). Those of us who have never boarded a key may console ourselves with many classical examples of what can happen when nouns and verbs get confused. Consider for instance the celebrated wartime headline EIGHTH ARMY PUSH BOTTLES UP GER-MANS (which also has a lesson concerning nouns of multitude). Young sets up what seems to me to be a number of straw men: do we really harbour in our profession people who say 'few number', or "to downsize" or "volunteerism"? He excoriates analogue (instead of analog), catalogue and dialogue as archaic, and he asserts that collective nouns take the singular in America but the plural in England; thus Congress is in session, but Parliament are in session. Well are it? Fowler, at least, lays down no rules for 'nouns of multitude', and says we may use whichever sounds more euphonious.

Young has allowed some solecisms to slip through. He does not care for "Neither Randi, Maddox, or Stewart has a background in immunology"; you should write "neither Randi, Maddox, nor Stewart" has such a background. But surely 'neither' can refer only to one of two things, not of three. Sometimes the solecism is calculated, as when Young urges that we should do away with 'whom' (except after prepositions) because, he says, it is hardly ever used correctly. Yet this is not a new problem — compare "Whom are you", he said, for he had been to night-school", from a novel of 60 years ago — and Young's solution dismays me. He also believes that it is time to abandon the distinction between 'shall' and 'will', and it is true that there occur in the American literature sentences on the lines of: "this technique shall be the method of choice". Fowler encapsulates the distinction in the cries of the victim ("I shall drown and no one will save me") and of the suicide ("I will drown and no one shall save me").

Elsewhere also Young takes a confessedly permissive line. He writes judiciously about hyphens, but in the end is content to let the journal be the arbiter, and, as he observes, the trend seems to be to extirpate the hyphen altogether, with further sacrifice in precision. Fowler's exemplar of ambiguity is "the hard working man"; newspaper headlines are ever a good source — HORSE BACK UP SNOWDON is one that I recall. So 'save the hyphen' should have been Young's plea (not that even hyphens are proof against misreading: another headline, this one from the Korean war, went

MACARTHUR FLIES BACK TO FRONT. Here it seems as though the imagination supplies the phantom hyphen).

Well, I have done. But I find that I have not obeyed Professor Day's injunctions in his chapter "How to Write a Book Review". It is just that I seem to be unable to decide whether it is a pair of monographs, reference books, textbooks or trade books that I have been considering (for these must be assessed by different criteria). No matter, for in all cases my brief is to ensure

that "a potential reader will know whether or not to read the book under consideration and why". So yes, the Potential Reader should read these books, if he has time; but not before he has read Fowler. And the reason why he should read them is that if he follows the precepts set out in both he will write shorter, clearer (and, who knows, fewer) papers, and that will be all to the good. □

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Sally on trial

J.A. Gray

The Unheeded Cry: Animal Consciousness, Animal Pain and Science. By Bernard E. Rollin. Oxford University Press: 1989. Pp.320. £17.50. To be published in the United States in June, \$29.95.

BERNARD Rollin hopes that his book will "help scientists break the ideological bonds which keep them from ascribing mental states to animals", and so free them to hear the "unheeded cry" of its title — the cry of laboratory animals. By the end of the book, I at any rate had come to feel that Rollin's heart and mind are both in the right place, as he claims that:

Moral theory and a science of all animal consciousness . . . will inevitably stand in a dialectical relationship, for the burgeoning questions regarding the moral status of animals lead to a variety of questions about animal awareness which science must try to answer, and the study of animal awareness in turn generates its own moral questions.

Here is a promising programme of work — capitalizing on the new moral awareness, in large measure due, as Rollin rightly claims, to the animal welfare movement, but not threatening the whole research enterprise. But, had I not agreed to review the book, I doubt that I would have read as far as this sane and forward-looking conclusion.

To begin with, Rollin's softly-softly message is not helped by the rhetoric in Jane Goodall's foreword ("atrocities . . . perpetrated behind the closed doors of underground animal research laboratories around the world"). Even less is it helped by the straw scientist he sets up as his Aunt Sally. This person is supposed to have accepted an 'official' scientific orthodoxy, according to which animals experience no feelings, and especially no pain, so it doesn't matter what one does to them in the name of science. This orthodoxy has been foisted upon our straw scientist by a conspiracy of psychologists, the chief devils being Watson, Lashley, Skinner and Hull (yes, it is time to kick the behaviourists again). Challenged with the

oddity of his beliefs, our scientist retreats into moral confusion and incoherent recitation of his creed ('science is value-free', 'all I want is the facts', 'keep philosophers out of the laboratory'). But hope is at hand: scientific credos are largely a matter of fashion, anyway, and times are changing, thanks to those splendid fellows the 'animal activists'. So it won't be long before we all accept again — as commonsense did all along — that animals have feelings, and stop committing atrocities.

This caricature is constructed almost entirely from anecdotes (Rollin appears to attend a large number of dinner parties). Far from being apologetic, Rollin prides himself upon this: "like Hegel, I am a believer in . . . particular cases which vividly instantiate and communicate a general truth". So I shall make no apology for answering anecdote with personal history. After all, as a psychologist working on the brain, I am just the kind of guy that Rollin's straw should be stuffing. But his anecdotes barely begin to fit. It has never occurred to me to doubt that animals experience pain. Why else would I use anaesthetics during surgery? (According to Rollin, the official answer to this question is "for chemical restraint".) Nor do I doubt that animals experience other feelings: on the contrary, it is precisely in order to understand the nature of feelings such as anxiety that I work with them. It is, I believe, possible to do this neither immorally, nor in a state of moral confusion, but trying to minimize the harm done to the subjects of the experiments while maximizing the good that comes to people, in the form of both knowledge and medical advance. (This is known, in Peter Singer's phrase, as "speciesism", a charge I am not ashamed to accept.) That is what the reality of hard moral choices is about.

To be sure, some — a very few — psychologists espoused a radical form of behaviourism, according to which conscious experience is simply a fiction. I remember asking one such person to tell me the difference between what happens when a Mozart string quartet is played to a hearing man and to a deaf man; his unconvincing answer turned upon the verbal behaviour they would emit under appropriate circumstances later. But, for most