

making (Kuno, Rosenblueth); for others, history is in discontinuity (Bykov, Häusler). Physiology appears to lose ground where no public appreciates its worth.

The authors indicate that in most countries there is little or no physiology outside of medical institutions; actually, representatives of other brands of physiology were not heard from. All but two of the 17 contributors are shown in portrait; the portraits are inadequately reproduced. There is no index. Some errors

of dates and spelling of proper names mar the book.

The general reader will correctly gather that physiologists around the world are factual folk who deal precisely with special and limited varieties of abstractions. Physiologists believe in laboratories, scientific lineage, instinctive behaviors, and what they are doing. They also have abiding faiths in a future that is socially hazardous.

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Communications

Ten Commandments for Technical Writers

At the last session of the Conference on Scientific Editorial Problems at the AAAS Berkeley meeting, Elmer Shaw read these ten commandments for technical writers. He wrote them as a result of listening to the speakers in the first-day sessions.

- 1) Thou shalt remember thy readers all the days of thy life; for without readers thy words are as naught.
- 2) Thou shalt not forsake the time-honored virtue of simplicity.
- 3) Thou shalt not abuse the third person passive.
- 4) Thou shalt not dangle thy participles; neither shalt thou misplace thy modifiers.
- 5) Thou shalt not commit monotony.
- 6) Thou shalt not cloud thy message with a miasma of technical jargon.
- 7) Thou shalt not hide the fruits of thy research beneath excess verbiage; neither shalt thou obscure thy conclusions with vague generalities.
- 8) Thou shalt not resent helpful advice from thy editors, reviewers, and critics.
- 9) Thou shalt consider also the views of the layman, for his is an insight often unknown to technocrats.
- 10) Thou shalt write and *rewrite* without tiring, for such is the key to improvement.

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That and Which Again

It was a pleasure to re-read the charmingly humorous Christmas piece reprinted from *The New Yorker* [*Science*, 120, 7A (1954)]. But I have wondered again, as I did on first reading the article, whether the editor of *The New Yorker* seriously believed that the Bible could help us use *that* and *which* in the ways that would now be regarded as correct. And now I must also wonder whether the editors of *Science* believe it,

since they tell us they reprinted the piece in the hope of softening the hearts of certain contributors who had been incensed at their "which hunting." Be that as it may, the reprinting seems to invite discussion of the use of *that* and *which* by Fowler, St. Matthew, and others.

The practice advocated by the Fowler brothers (joint authors of *The King's English*) is the most rational that has been described in print, and yet I believe it could be slightly improved. Their rule is, briefly: Use *that* for defining clauses, and *which* for nondefining clauses. They also appear to regard any clause properly begun with *that* as restrictive, and therefore not to be preceded by a comma, unless the comma be one of a pair enclosing a parenthesis ("the house, as you know, that Jack built"). They also appear to assume that any clause properly begun with *which* is supplemental, and therefore must be preceded by a comma. I do not think the correlation between pronoun and punctuation is quite so close, but in order to justify that view it is necessary to consider the difference in function between the two kinds of clauses.

Defining will serve to describe the proper function of a *that* clause, provided that we use the word in a rather broad sense. A *that* clause could rarely serve as a dictionary definition of the antecedent. What it generally does is to identify, or characterize, the antecedent by distinguishing it from other things (or rarely persons) of the same class. A clause properly begun with *that* can therefore be aptly described as a *distinguishing* clause.

Nondefining, the term the Fowlers apply to clauses properly begun with *which*, is not very useful, for it fails to tell us what such a clause does; it merely tells us one thing that it does not do. The main purpose of a *which* clause, it seems to me, should be to give us information about the antecedent, and a proper *which* clause may therefore be called an *informing* clause, or an *assertive* clause when that word better describes its tone.

Almost every clause properly begun with *that* is in fact restrictive, and therefore should not be preceded by an unpaired comma, but there are cases, though they are very rare, in which this rule does not seem