

can and *Science* are located in secondary reading rooms or only in science departmental libraries, it makes it difficult for the average undergraduate to satisfy even a momentary curiosity about scientific progress.

College and university librarians might indicate their awareness of the importance of scientific and engineering literature, not only to the specialist but to all men, by making available in the main reading rooms the major scientific and engineering periodicals. Perhaps *Science* could aid in accomplishing this task.

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Language of Scientific Reports

It has struck me forcibly of late years that many of your technical articles are getting so highly specialized that it is difficult even for one who, like myself, has studied quite a bit in experimental pathology to understand some of the newest papers and to make out what the authors are really driving at. Some of this, undoubtedly, is due to advancing science, but some of it, I think, is rather in the nature of showing forth what one might call the "cacophony of erudition." Quite a bit of it, I think, could be modified so that most scientists could get at least a vague idea of what is being done.

This is especially true of the recent papers dealing with viruses in their relation to oncology, the science of the study of tumor formation. With the present "Tower of Scientific Babel" getting ever more complicated, authors should be more explicit when addressing common ordinary medical men and should get down to earth, as it were; instead of presenting long columns of figures, which are all right in their place, they should give more time to relating the subject to everyday practice. For example: Does such and such a virus cause tumor formation? What is the exact relationship between the viruses inside the affected cell and the cell-free fluid? Is the fluid infectious?

Though it is, after all, highly specialized, *Science* could be made more understandable to the average reader if more common terms could be used where possible. For example, psychologists, instead of saying, "the candidate indulges in escapism," could say,

"the candidate likes diversionary entertainment." The phrase, "the siblings in this case," could well be changed to, "the brothers and sisters in this case."

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Scientific Nomenclature

Boulding's system of "Scientific nomenclature" [*Science* **131**, 875 (18 May 1960)] is suitable only for use by astronomers. There are many other areas where more efficient systems are needed. The following system is highly adaptable and especially suitable for use on automobile license tags or other cases where the ability to read the nomenclature at a glance, remember it easily, and communicate it quickly and accurately by voice are important.

Each of 20 consonant symbols are rotated through five positions, each position associated with one of the five basic vowels. This gives the equivalent of 100 symbols, and can be translated easily into the decimal system for machine records.

Each symbol has a distinct single-syllable counterpart. The symbol "B" would be read as "Bay" when lying down to the left, as "Bee" when inclined to the left, as "Buy" when standing erect, as "Bow" when inclined to the right, and as "Bue" when lying down to the right.

To minimize errors in either reading or hearing, I found it advisable to use several digraphs. Chosen for maximum accuracy in both visual and aural perception, the 20 symbols are:

B	J	R
C(ch)	K	S
D	L	A(sh)
F	M	T
E(fl)	n	Ʀ(th)
G	P	V
h	E(pl)	

The upper case forms of H and N look the same when lying on either side, therefore the lower case forms were used. The S must be printed with a very small top curve and a large base curve in order to avoid the same type of ambiguity.

Selection of symbols for the digraphs was not entirely arbitrary. Those for "fl" and "pl" are the equivalent of upper case strikeouts. By crossing the capital T twice, "th" is

appropriately represented. To represent "sh", the capital A was chosen because it is a known symbol that is distinctive in all positions.

Combinations of four symbols or less can identify 101,010,100 vehicles. That is enough to identify every vehicle in the nation regardless of state. Using state identification, a large percentage of tags would need no more than three symbols. This would greatly facilitate the reading, memorizing and reporting of wanted vehicles. (Many combinations are identical with common words or phrases. A license tag might read something like "dynamo" or "Bye Baby.")

In combinations of no more than five syllables (or symbols), over ten billion persons could be identified—ideal for a worldwide ID card system.

I believe that it will be difficult to devise a system that is easier to learn, read, remember, or communicate by voice without error.

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If Robert Koch Had Applied for a Research Grant

Suppose Robert Koch had needed a research grant to study the cause of anthrax. An obscure district physician, without university or research institute affiliation, he wished to develop original techniques to explore a new field. He worked, not in a laboratory, but in his own house. It seems obvious that he would have been brushed off quickly by almost any foundation or funding agency operating according to current practices.

Suppose Edward Jenner had applied for a grant. He was a country practitioner, without university or research institute affiliation. He proposed to investigate an old wives' tale, that cowpox would prevent smallpox. He planned to test his postulation on human beings, without prior trial on animals. He had no statistically sound plan. Would any respectable voluntary foundation or government agency give such a crackpot funds?

Koch and Jenner were fortunate that their studies did not depend on successful research grant application under 1963 conditions.

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