Letters

Reprints: Return Envelopes

I suggest two refinements on the reprint-request format suggested by A. A. Hirata (Letters, 1 Oct., p. 8): First, instead of using a postcard, reproduce the form on a full-size sheet and enclose it in an envelope large enough to hold the reprint. Second, type the return address on a standard gummed sticker and fasten this sticker to the form by moistening one corner. Also attach in the same way a four-cent stamp, and invite the return of the reprint in the envelope in which the request is being sent. With these improvements, the cost of sending the reprint is reduced by the cost of envelope, addressing, and postage.

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. . . In our laboratories we use a large (8½-by-11-inch) envelope, which we mail out empty with the flap tucked in. Printed on the front is the line "Please Pull Out Flap—Message Inside." The flap is large (8½ by 4 inches) and rectangular. Its inner side bears the request, as follows:

"We would greatly appreciate receiving a reprint, if available, of your paper ———— which appeared in ————. If no reprints are available, please check here —— and return this envelope. Thank you for your courtesy." Spaces for date and signature are also included.

On the outside of the flap, which when sealed will conceal the address to which the request has been sent, is our return address (and the government frank).

I got the idea for this from the National Bureau of Standards, which, I understand, got it somewhere else.

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Utah Schools

In "The financial status of National Merit Finalists" (3 Sept., p. 1071), Robert C. Nichols notes that there is a correlation between state expenditures for schools and the representation of poor families among the finalists of the state. Among the states where this correspondence does *not* hold he names Utah.

Utah's expenditure for public schools in $407 per child; this is below the national average. Yet one-fourth of the National Merit Finalists in Utah in 1965 came from poor families. I should like to speculate on why, despite relatively low public school expenditure per child, Utah schools are providing poor children with fairly adequate education.

Utah has a state uniform school fund based on a variety of taxes and an equalization policy whereby school districts with low assessed evaluation are given substantial state help. Consequently the quality of schools is more even in Utah than in most states, although we still have some inequities.

The Utah population is predominantly middle class, with few minority groups. Most of its low-income families tend to have middle-class attitudes toward education. Utah people consider education important; they are professionally ambitious. A study of *American Men of Science* shows that since 1938 Utah has been producing more scientists per million population than any other state.

Why, then, if Utahans value education, is the expenditure for public schools per child below the national average? There are two main reasons. First, we have a very large proportion of our population in the public schools; Utah families are among the largest in the nation, and there are very few private schools. Secondly, Utah has difficulty finding enough resources to support her schools. Only 5 percent of Utah land is arable, industrialization is not great, and 68 percent of the state is federally owned. Resources must also cover a large state-supported enrollment in colleges and universities.

Direct expenditure of state and local governments for all education amounts to 8.5 percent of total personal income. In this respect only New Mexico exceeds Utah.

Our Utah schools could be improved. We need money to lighten class loads, increase the number of counselors and other specialists, and improve curriculum and libraries. Ironically, Title I of the federal Elementary and Secondary School Act provides money according to a formula that involves average state expenditure for education. Utah does not fare well in this regard.

Incidentally, Logan High School, enrollment 817, has been giving National Merit Tests to all students in order to make sure each youngster has opportunity and to find out how we rank in relation to the rest of the country. The class average has always been above the 50th percentile. And financially speaking, Logan is one of the poorest of the 40 school districts in the state!

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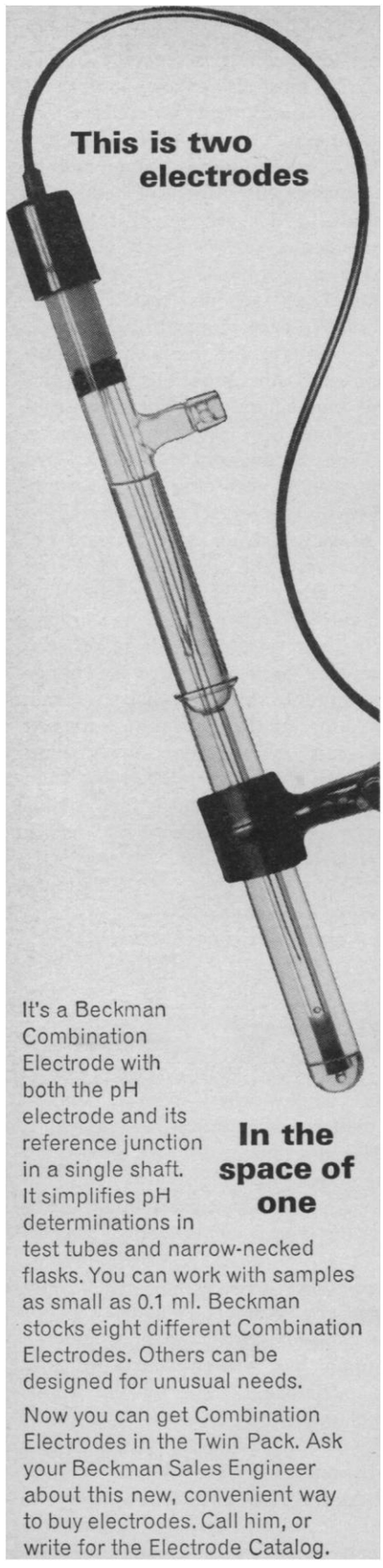
Cybernetics: The Word

The late Norbert Wiener, founder of modern cybernetics, was a son of a Harvard professor of Slavic languages and was himself a linguist as well as a mathematician. In his *Encyclopedia Americana* article "Cybernetics" (vol. 8, p. 351, 1964), Wiener stated that "cybernetics [is] a word coined by Norbert Wiener." In the *Encyclopaedia Britannica*, Claude E. Shannon has written that "the word was introduced . . . by the mathematician Norbert Wiener" (vol. 6, p. 937, 1965). *Time* has referred to "cybernetics, which Wiener coined" (27 Mar. 1964, p. 53).

"To coin" means "to originate or invent, as a word or phrase." And Wiener did not originate or invent the word. It was Plato who first employed the word "cybernetics," meaning "the steersman's art." In fact, the Athenian philosopher used the word quite frequently. In his *Gorgias* (511c-d), for instance, Socrates says to Callicles, "I



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will speak to you about a greater art, that of cybernetics, which saves, not only souls, but also bodies and possessions, from the greatest dangers." In the *Statesman* (299b-c), the Stranger suggests to the Younger Socrates that a law be passed to prevent people from "persuading other younger men to essay cybernetics and medicine not according to the laws." And in the *Cleitophon* (408b), we find "the cybernetics of men, as you, Socrates, often call politics."

Many centuries later, the French mathematician and physicist André Marie Ampère (1775–1836) employed the word "cybernetics" in his great *Essai sur la philosophie des sciences* (1834). By this, of course, Ampère meant only the "means of governing" people, not Wiener's important new science.

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Readers, Foreign and Domestic

In his letter about the readership of *Contributions to Geology* ("Who reads the journals?", 17 Sept., p. 1325), R. B. Parker reports that "apparently our foreign readers outnumber the domestic ones by a very large factor," basing that conclusion on the fact that "we see references [to the journal] in many foreign journals, and reprint requests from abroad are numerous." He goes on to say, "The fact that many such requests and references are from respected and influential scientists reflects discredit upon American scientists," and he suggests that American scientists should "spend more time reading and less writing."

One is tempted to ask: How many journals has Parker canvassed in a search for references to *Contributions to Geology*? And in comparing reprint requests, has he taken into account that many American scientists mail reprints routinely to their colleagues without waiting for requests?

Having been associated with a perhaps similar publication (*Tulane Studies in Zoology*), I am aware of the tremendous response by institutions in foreign countries to an offer to exchange journals. American journals do not, to my knowledge, make a practice of exchanging. Thus an equally plausible explanation of the large number of foreign reprint requests may be that the distribution system favors them.

I object to the castigation of the reading habits of "American scientists" (presumably of all disciplines) on the basis of an unsubstantiated opinion concerning the reading of one journal primarily of interest to scientists in a single discipline. There may be some truth to Parker's accusation, but it is not supported by the statements in his letter.

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Parker concludes from the active foreign readership of *Contributions to Geology* that "our colleagues in Europe and Asia are apparently vastly better informed than we are." I should like to suggest that exactly the reverse may be indicated. For most scientists serious reading represents an acknowledgement of the need to be informed. Those scientists who are geographically farthest removed from personal contacts with fellow specialists are quite likely to feel the greatest need for journals. It does not necessarily follow that they will become the best informed. Personal observation leads me to the opposite conclusion—that the man who is best informed relies least upon the journals for enlightenment. He is served by a number of other communication channels—personal contacts, conferences, correspondence, preprints —most of them considerably faster and more efficient. There may even be a continuous negative correlation across the spectrum of informedness, leading finally to the nervous neophyte who reads all the journals for fear of missing something.

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. . . I should like to ask Parker why he felt it necessary to start yet another journal. I submit that American scientists do read worth-while journals, but that most of them, like me, have more and more difficulty reading through more and more publications to separate the mass of trivia from the relatively few significant contributions to scientific knowledge.

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