

applicant's and the foundation's time may be wasted.)

Yet another matter deserves attention. In one case our school received a personally written letter asking it to apply for a fellowship, only to learn afterwards that the foundation had thus addressed a hundred times as many people as it had fellowships available. In another instance we applied for funds from one agency, and when the request was rejected, the administrator of another chided us for not having simultaneously applied to his—on another set of forms. In spite of a reputation for liberality in this respect,

one national foundation refused to accept a duplicate of an application we had submitted to a federal agency and demanded 20 copies of an application in a different format.

We need a closer link, it seems to me, between foundations and research workers if the most important phase of research—the planning—is to be adequately supported. At the very least, granting agencies should pay the costs of duplication, circulation, and evaluation of applications and should accept the responsibility of telling unsuccessful applicants in detail why their projects are

rejected. Removing the secrecy which now prevails in this respect admittedly would add to the foundation's job, but to the benefit of science. Moreover, when the foundation executive believes that support for a particular study might more suitably come from another agency, he would render a real service, not alone to the applicant but to scientific progress, by so informing him.

Donors of funds know in a general way what they want of science. So does the public. One of the foundation's functions is to translate such felt purpose into effective scientific research. Scientists share this objective. To achieve this common end, should not the foundation inform the applicant more often than it now does of ways in which he could make his project acceptable? Far from interfering with freedom of research, this form of friendly collaboration would actually advance it by removing one of the frustrations which so often beset the path of the scientist.

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Invisible Words—Invisible Evidence

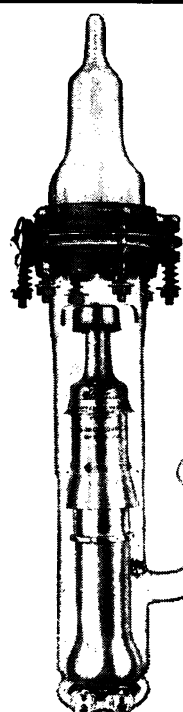
Your recent editorial [*Science* 126, 681 (11 Oct. 1957)] was as usual of timely interest, but it was inaccurate in one respect. The existence of subliminal perception is not as well established as you suggest.

The crux of the problem is the meaning of *limen* or *threshold* in this context. In psychophysical research, *thresholds* are usually defined as the least intensity, size, duration, position, and so on, of a physical stimulus (absolute threshold), or least change in one physical stimulus, or difference between stimuli (difference threshold), which will elicit verbal recognition as determined by the average of a series of measurements. The question is whether it has been demonstrated that physical stimuli below one of these thresholds can influence behavior. I have recently reviewed the considerable experimental work on this question and have arrived at the seemingly obvious conclusion that the demonstrations of the phenomenon are far from conclusive [*Perceptual and Motor Skills* 7, 29 (1957)].

Therefore it is yet to be proved that anyone could have his subconscious polluted by subliminal messages. Being a resident of the Cornhusker State, however, I'm all for it if it can be used to increase the sale of popcorn.

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of cyclotrons and Y-12
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OPERATIONAL DATA


Amount of Oil 150 milliliters
Forepump Capacity* 0.1 to 2.0 liters per second
at 0.001 mm. of mercury, or less
Forepressure (maximum) 0.02 mm of mercury
Baffle Temperature 35°C. or lower
Heater Voltage 100 to 110 volts
Heater Current (at 110 volts) 1.7 amperes
Speed, without baffle (approx.) 67 liters per second
at 4×10^{-4} to 4×10^{-6} mm Hg
Speed, with baffle (approx.) 32 liters per second
at 4×10^{-4} to 4×10^{-6} mm Hg

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