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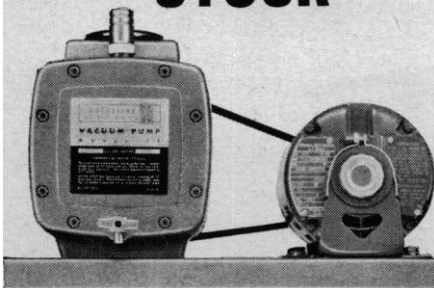
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Prospective teachers who, in this way, come to know the real flavor of the intellectual enterprise called science will be in a better position to transmit to their students the spirit of man's endless search to comprehend the world around him.

Teachers with such training will make sure that students do not get the impression that all the major discoveries already have been made; that the basic facts and principles of science are unchangeable; that there is nothing left for them to do but to learn about what others have done. Instead, these teachers will engender the feeling that there is always more to explore; that the road to discovery is wide open; that the horizons of science are unlimited.

Teachers with such training will know how to use curiosity to generate in their classrooms the kind of provocative stimuli that impel research scientists to pit their minds against the challenges of nature. They will know how to establish a free atmosphere in which individual initiative and ingenuity can flourish and in which each student is encouraged to express his own ideas no matter how far-fetched they may seem.

In *Walden*, Thoreau expressed the idea that "if a man does not keep pace with his companions perhaps it is because he hears a different drummer. Let him step to the music which he hears however measured or far away." What would be the impact on student interest and growth if this idea were to be adopted as one of the foundation stones of science instruction?

HARRY MILGROM

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Pseudo Science and Censorship

The letter by H. C. Dudley on "Pseudo science and censorship" [*Science* 132, 378 (12 Aug. 1960)] requires additional comment in rebuttal. Dudley makes a plea for fair-mindedness and questions the right of anyone to censor another's pronouncements as being "preposterous" or "crackpot."

Although examples may be quoted wherein reputable discoveries were denounced by contemporaries, examples of the reverse are truly legion. For an excellent compendium of wild ideas, crazy machines, crackpot inventions and theories, and general "magic black box" hoaxes, one may well read *Fads and Fallacies in the Name of Science*, by Martin Gardiner (Dover, New York, 1957).

Gardiner sets up a rather useful group of ground rules for separating

the honest effort in a new field from the work of the venial deluder or psychopathic crank. Thus, on pages 12 and 13 he outlines five excellent criteria which will trip up the crank.

Dudley's sense of fair play is admirable but does not, apparently, include the judicious selectivity required so desperately in our modern society. So often, today, individuals worry so about the rights of others and the problems of the minority that they allow the minority to subvert the ideals and steal the rights of the majority.

One is reminded of the tale of "The bear who let it alone" in James Thurber's *Fables for Our Times*. The moral of the tale is very relevant to conditions today. "You might as well fall flat on your face as lean too far over backwards."

F. W. MORTHLAND

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Starvation with and without Painful Hunger Pangs

Kelman (1), Wittenberg (2), and Ross (3) regarded starvation as too painful to justify its use in studies on animals such as Denenberg and Karas (4) made. The gnawing pangs of hunger are commonly considered to be the most disagreeable accompaniment of prolonged starvation, and hunger generally makes even a few days of fasting difficult. However, Kelman, Wittenberg, and Ross apparently did not take into consideration the fact that disagreeable hunger sensations usually decrease or disappear after the first few days in prolonged starvation without any food. Unfortunately, even widely accepted authorities like Cannon and Carlson did not agree about the manifestation of hunger during prolonged starvation, although both regarded the hunger experienced during a few days of starvation as consisting mainly of uncomfortable or gnawing sensations produced by periodic contractions of the fasting stomach (5, 6). Cannon maintained that hunger disappears after the first few days in prolonged starvation, while Carlson maintained that hunger persists. Cannon's view was based on the reports of others but not on any study made by him or his students. Carlson's view was based on a study made on himself and an assistant while they fasted about 5 days.

Eight years ago before I learned of Carlson's view by reading his monograph on hunger (6), I accepted the explanation of hunger or normal appetite advanced by Fletcher (7). Fletcher distinguished between a normal appetite and a false appetite but not between hunger and appetite. He considered normal hunger or appetite to be mainly of



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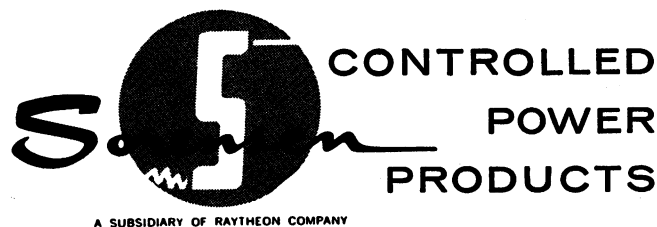
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