which I know, they eventually succeeded. An article that would resolve the apparently conflicting statements of the letters would, I think, attract considerable interest.

EUGENE P. WIGNER
*Princeton University*

### Personal ivory towers

As a physicist turned engineer (by choice) I could not help commenting on two things in PHYSICS TODAY. First the job shortage for PhDs. It exists because some people got the idea the US owed them a personal ivory tower—equipped with secretaries, technicians and an unlimited supply of money. Now the coach has turned into a pumpkin; the horses are mice, and a cold cruel employer asks, "What can you do for the corporation?" I fear it is just about time that Alice returned from Wonderland.

Second, the journals of the American Physical Society. They are excellent. Try submitting a paper to some engineering journal. Six months later (honestly) you get a letter saying, "We regret that the reviewer . . ."

STUART A. HOENIG
*University of Arizona*

### Modifying lunar atmosphere

The lunar atmosphere (vacuum) is a source that has become available to mankind only within the last few years. It appears likely that studies of residual gas near the moon's surface will provide useful information concerning the history and composition of the body. It is possible that the moon will find important use as a support for large infrared and ultraviolet telescopes, thermionic devices and other apparatus that requires high vacuum for operation. Perhaps it is worthwhile to point out that this environment may be changed appreciably by the process of lunar exploration and that in particular some consideration should be given to the effects of injection of large amounts of rocket gases into that environment.

A typical manned landing module will exhaust 5000 pounds of gases, mainly water and carbon dioxide in nearly equal molar amounts with measurable amounts of heavier hydrocarbons. At a mean temperature of 300 K the vertical distances required for $1/e$ reduction of atmospheric pressure on

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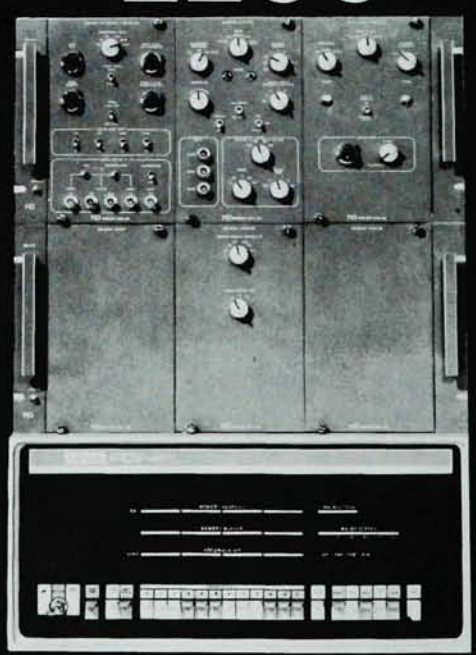

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the moon are $8.2 \times 10^6$ cm for water and $3.4 \times 10^6$ cm for carbon dioxide. These gases thus expand into effective volumes of $3.1 \times 10^{24}$ cm$^3$ and $1.3 \times 10^{24}$ cm$^3$, respectively. To within an order of magnitude, the pressure rises to be expected due to ejection of this amount of gas are $2 \times 10^{-13}$ torr for water and $5 \times 10^{-13}$ torr for carbon dioxide. Pressures of this magnitude are measurable with commercially available equipment.

Simple estimates of typical escape times for these gases indicate that they will remain for at least several thousand years. We may then expect to modify the total lunar environment irreversibly, and only partly predictably, each time a rocket lands there. Only if the natural background pressures of water and carbon dioxide are several orders of magnitude larger than the above values will our perturbations of these quantities be unimportant.

JOHN O. STONER JR
*University of Arizona*

### Emily Wolf and register

I enjoyed the article "The National Register Looks at Manpower" in the October PHYSICS TODAY. In one statement, though, it is in error.

At the request of Henry A. Barton, then director, and Wallace Waterfall, then as now secretary of the American Institute of Physics, I organized the register in November 1953. I employed Sylvia Barisch, your senior author, in March 1954 as one of my part-time coders. I remained in charge of the register until 1960, when it was transferred to the newly formed Education and Manpower Division. Mrs Barisch had been named supervisor in May 1959.

EMILY WOLF
*American Institute of Physics*

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CORRECTION: The editors apologize for two typographical errors in Don B. Lichtenberg's October review of *Paradoxes in the Theory of Relativity* by Yakov P. Terletskii. The word "comparable" was substituted in the last sentence, which should have read, ". . . the theory of relativity is *compatible* with dialectic materialism." The first equation in the fourth paragraph should have read $\gamma = 1/(1 - u^2/c^2)^{1/2}$. □