opinion. The demand should not be "to improve Orlov's situation" or "to ease his condition in exile," but to send him out of the country. It is the only way to save him (and this is not only my opinion). If a person is not needed to the state, neither as a citizen nor as a scientist, the state should let him go. He was "punished" well enough.

VALENTIN F. TURCHIN
City College of the
City University of New York

5/85

Is the moon there?

I was startled to discover the editorial sleight of hand by which you presented me in the April PHYSICS TODAY table of contents, apparently declaring to 98% of my distinguished colleagues, friends and associates that they have rocks in their heads.

Because some of these people may quite justly have felt disinclined to hear anything else from me, would you please permit me to explain to them that the statement you quote after my title ("Anybody who's not bothered by Bell's theorem has to have rocks in his head") is not mine. I quoted it as a remark that was once made to me, and cited it as an example of the variety of attitudes one encounters. True, I characterized its point of view as "moderate," but that was relative to a range of positions extending all the way to the assertion that the theorem is the most important result in the entire history of physics.

May I also note that the biographical information accompanying the article contains an incorrect statement about my future literary efforts. Neil Ashcroft and I have no current plans to update our solid-state physics text, 95% of which is basic enough to require no significant revision. We do, however, want to produce a shorter and less technical version of the same material for those who find our book too unwieldly for the one-semester undergraduate course and are (perhaps optimistically) aiming for 1988.

DAVID MERMIN
Cornell University

5/85

Small-scale research

Daniel Kleppner, in his article "Research in small groups" (March, page 78), gives the minimum size of a small-scale research group. This minimum group is a single faculty member with one *graduate* student.

The article, consistent with its title, excludes considerations of research on the part of a single individual. It also excludes research on the part of a single faculty member with one or more undergraduate students (or high-school students). These exclusions are not an issue, because if these investigators' research makes advances in physics it is partly because their peers have generously shared enough time (advising, preparing samples or computer outputs and refereeing) to equal, approximately, that contributed by a graduate student—or possibly even more.

Now I would like to call attention to unique facets of research with students whose level of preparation is below the graduate-level minimum imposed by the article.

The obstacles facing research with such students include three more beyond those considered in the article: The faculty member must be prepared to devote more time to explanations and checking of results; the subject of the research must be within the grasp of the students; and, usually, it must capture their interest in the absence of remuneration or graduation requirements.

For example, my former research on spectroscopic plasma diagnostics at Southern College, in Tennessee, went beyond the grasp of our undergraduate students at the same time that it was being left behind by the superb instrumentation at NBS and elsewhere. My present research, on the periodic law of molecules, its geometric representations and its predictive use, seems ideally matched to undergraduate students' skills and interests. In each case, I have devoted at least 30 minutes to each student's clock hour. This intimate relationship also contributes to the training of what will become "our graduate students."

Thanks to Kleppner for his conclusion that "the collective needs of the small independent research groups deserve to be considered in parallel with the need for . . . major facilities."

RAY HEFFERLIN
University of Denver
Denver, Colorado

4/85

•

Fortunately, granting agencies do realize that, as Daniel Kleppner stated in his article, "Research in small groups," (March, page 78), a "$1-million price tag for a molecular-beam epitaxy machine is too high for most research programs." After all, homemade MOCVD equipment costs less than $100 000! However, I appreciate Kleppner's point of view, indeed the varied viewpoints in your special March issue on major research facilities. It is encouraging to be reminded in your editorial that the main aim of