Soviet repression of its dissidents neither by cutting off all relations with Soviet science nor by a business-as-usual approach. Believing myself—as I presume Turchin does—that some US actions (such as the National Academy's resumption of cooperative relations with the USSR Academy of Science) may be too close to business as usual, I found Toohig's article an interesting and valuable witness to the importance of continuing person-to-person relations.

Surely to believe in the efficacy of either boycott or exchange requires the assumption that the present Soviet society is basically a moral society and hence influenced by moral persuasion. Clearly Toohig posed hard questions to his hosts, and clearly their answers were troubled and defensive. Defensive not because they are less decent than we, but because, as Toohig shows us, as individuals they are as good, as honest and as moral as we are. The USSR is a powerful and repressive society, governed on a very narrow base with inadequate control of its military. In their own humanity and the humanity of their leaders lies the hope of the Russian people—and ours.

ROBERT K. ADAIR
Yale University
5/85 *New Haven, Connecticut*

VALENTIN TURCHIN REPLIES: Pitiful is the future of a nation that puts its hope in the humanity of Soviet leaders. That is all I can say, because Robert Adair passes in silence my charges against Toohig concerning his treatment of Sakharov and Orlov.

VALENTIN TURCHIN
11/85 *New York*

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I can't agree more with what Valentin Turchin wrote (April 1985, page 104) about the probable motives of Timothy Toohig when writing his Guest Comment (January 1984, page 9). What were Turchin's intentions in writing his letter? Did he ever get acquainted with Andrei Sakharov or Yuri Orlov? Or did he just feel that it wouldn't hurt him if he jumped on the bandwagon and joined the endless line of praisers?

I also fully endorse what Turchin wrote in the second half of his letter about the Soviet establishment. However, I wish to ask where he thinks the "noble" Sakharov and Orlov belonged before they changed their minds? Does Turchin think they differed from the rest of the Soviet establishment? If so, how could they have risen to the top in a system where loyalty to the Communist Party comes first, second and third, and everything else after that?

Yet, this tasteless, orchestrated, or rather, "naturally selected" praise drags on and on and on in PHYSICS TODAY. All that is left is their canonization by the capitalist–materialist temple of scientists. Based on my first-hand experience, I suspect they forgot that the Communist Party made them what they became by enlisting talented but disloyal scientists to work under these "noble opportunists." They miscalculated their importance, which was built largely upon their political, rather than scientific, contributions.

L. I. KETHLEY
5/85 *Vancouver, Washington*

Courtesy in the marketplace

I wish to protest the handling of job applications by physics departments in North America.

This year I was among those completing a PhD and applying for postdoctoral positions at places around North America as well as elsewhere. Out of the 21 places to which I sent applications early in this year, 10 did not acknowledge receipt of the application and 8 did not send a reply for several months. I sent inquiry letters to four of the places that I had heard nothing from and only one of them replied in suitable time. There are still four places that have not communicated any decision to me and there is one place that has not sent a reply of any kind. Of the replies I did receive, about half were of the "don't call us, we'll call you" type: "If further interest develops, I will encourage your preparation of a formal application at that time." (How many times do you have to apply for this job?) Not one of the places that gave a decision date actually made a decision on time, or even close to it.

I feel that basic civility requires more than this. No doubt the evaluation of many applications is tedious, but the process of searching job ads and listings, of preparing a CV, and of sending out decent applications is not a small task either, and I think it deserves three things:

▶ An acknowledgment of receipt of the application, sent out immediately. This could be a form letter, though it would be nice to have a realistic indication of the decision date.

▶ If the application is not complete within, say, ten days, a notice saying what is missing.

▶ Once the decision has been made, a letter giving a definite answer one way or the other.

I was lucky enough to find a job in the first round of applications, but not without several months of wondering. Those who were not so lucky must have been pulling their hair out over places that did not reply or that gave noncommital answers.

letters

My last point concerns job ads and is as much directed to PHYSICS TODAY as it is to its advertisers. Many of the job ads that appeared this past year were poorly planned, so that it was necessary to read the whole thing before you found what position was open or what specialization was being sought. There were even a couple that did not give all the important information. To make an ad effective, it should have the position, the specialization and the institution in bold-face type at the top, with the details left for last and only for those who are still interested. Could not PHYSICS TODAY make it a policy that classified ads be presented in some reasonable manner?

CHARLES HELLABY
Queen's University
8/85 *Kingston, Ontario, Canada*

AIP ADVERTISING DIVISION REPLIES: It's difficult to legislate style in advertisements, but Charles Hellaby certainly raises a legitimate point. In future promotional pieces, we will suggest that prospective advertisers highlight the position, specialization and institution at the top of the advertisement.

EDWARD P. GREELEY
8/85 *Manager*

Computer simulations

In a recent letter (May, page 9), L. Kowalski writes about computer simulations and recommends them to science teachers. As he indicated, I have a long-term interest[1] in this area, so I support their use in learning physics. However, a balanced view should present not only the advantages of using simulations in teaching physics students, but also the possible pitfalls. Only at the beginning and end of his letter does Kowalski discuss the pedagogical situation; much of his letter is concerned with the "nature" of simulations.

My experience over a 25-year period with simulations suggests that they can be valuable, but also that they can be a disaster in some learning situations. There is nothing magical about the computer or any other learning device; the quality of the learning material, regardless of the medium used, is the dominant factor.

Rather than attempt a full discussion, I will make in this letter some statements that I believe to be supportable. My books and papers discuss[2] some of these:

▶ Simulations are more effective for learning if they are designed to be used directly by the student, rather than by the instructor.

▶ Simulations need to have a very friendly user interface, one that takes into account the student's knowledge, abilities and interests; asking for many numbers, with the student having few clues about what these numbers do, is, for example, an unfortunate beginning.

▶ We should not confuse simulations with pure games.

▶ Consideration must be given as to how students learn to use the simulations.

▶ As far as possible, the initial learning in a simulation should be internal to the program.

▶ The main pedagogical role of the simulation is to develop student intuition in a certain area through creating "controllable worlds" that allow a wide range of experiences.

▶ Simulations alone are unlikely to be usable, particularly in large beginning classes.

▶ Supporting material, either within the program or in the form of associated workbooks, is essential.

▶ We should not assume that a simulation that is extremely interesting for the professional physicist will also be interesting to students.

▶ Development of good simulations, in the pedagogical sense, is a time-consuming and expensive activity.

I would be happy to discuss these issues further with others.

References

1. A. Bork, PHYSICS TODAY, September 1981, p. 24; Am. J. Phys. **46**, 3 (1978); Computer, October 1979.
2. A. Bork, Am. J. Phys. **38**, 5 (1970); A. Bork, S. Franklin, M. Katz, J. McNelly, Science NECC 81, June (1981); A. Bork, *Computer Assisted Learning in Physics Education*, Pergamon, New York (1980); *Personal Computers for Education*, Harper and Row, New York (1985).

ALFRED BORK
Educational Technology Center
6/85 *University of California, Irvine*

Fair reporting

How proud I am of PHYSICS TODAY for continuing to publish all sides of important issues, such as the articles (June, pages 24, 34) by Gerold Yonas and Wolfgang K. H. Panofsky on the Strategic Defense Initiative—especially today, when there is an almost religious intolerance in much of the academic community and in certain "scientific" journals toward dissenting views and their holders. It cannot be stated too often that democratic societies have long found in political, judicial or other controversies that the best approach to the truth comes through hearing fully all sides of the issues.

JOSEPH J. DEVANEY
7/85 *Los Alamos, New Mexico* □