LETTERS

Science and Human Rights

G. Ankerl (Letters, 15 July, p. 216) voices the viewpoint that the AAAS should reconsider its policy toward "protests and pleas for more or less distinguished scientists in the U.S.S.R." In effect, the author's message is that the AAAS should not devote its efforts (and *Science*'s valuable space) on behalf of imprisoned colleagues in the U.S.S.R., since "it should avoid becoming involved in politics as long as government action does not directly concern science and its development."

I find Ankerl's opinions, despite his parenthetical statement that he is "deeply concerned by the fate of all fellow human beings in prison in any country," to be totally antithetical to my own and to the viewpoints expressed by many others who are deeply concerned about any perceived schism between science and humanism.

It seems to me that the policies of the Soviet state, which responds so cruelly to what we in the West would consider routine acts of political dissension, are an offense to the moral principles of every scientist who respects human rights and human dignity. These principles cannot get tossed on the hat rack when one enters the research lab in the morning and put back on only later when the day's science is done.

It is also not correct to imply that Soviet repression of any large group of scientists "does not directly concern science and its development." The atmosphere of pervasive gloom and fear and the insecurity of one's position in a state where allegations about one's antigovernment behavior need not be proved in a court of justice cannot help but filter down from the "more or less distinguished scientists" into all echelons of science and research and influence the degree of concentration needed for successful research.

It is not sufficient to limit the efforts of the AAAS to intervention only in "Galileo-like circumstances" (punishment because of the nature of the research); any systematic violation of human rights and repression of free expression is deserving of every public forum the free world offers. I congratulate the AAAS and all scientific journals that fully appreciate the indivisibility of humanism and science.

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History of Quantum Theory

I was surprised to read in Paul Forman's review (20 May, p. 824) of the first four volumes of Jagdish Mehra and Helmut Rechenberg's *The Historical Development of Quantum Theory* the statement, "A particularly heavy responsibility for this work must . . . fall upon those who, being pleased and flattered by the attentions and representations of its authors, gave it support and encouragement, morally and materially."

As I indeed gave the support of the Solvay Institutes in Chemistry and Physics, of which I am director, to Mehra's research in history of sciences, I find myself publicly accused. Let me therefore state that I am still very happy that we were able to support the research of Mehra in the history of sciences, including the preparation of the volumes which have just appeared.

The suggestion by Forman that the institutions which supported Mehra's work in the past or the eminent physicists, such as Born and Heisenberg, who provided him with the necessary material for the work did so because they were "pleased and flattered by the attentions and representations of its authors," is preposterous.

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Commerce Department and Education

We were pleased to see the editorial by F. Basolo and E. Wasserman (22 April, p. 363) calling attention to the valuable programs of the Phillips Petroleum Company, Xerox Corporation, and certain industrial associations that are aimed at bringing scientists and engineers into contact with students and teachers. We hope more scientifically oriented organizations will take up this cause and expand it into areas not yet benefiting from such activities.

The Commerce Department's National Bureau of Standards (NBS) has two programs which fit into this pattern. At its laboratories in Boulder, Colorado, NBS has operated the Career Awareness and Resource Education program since 1979. In less than 4 years, Commerce Department scientists and engineers have contacted more than 40,000 students and teachers in fourth to twelfth grades in Colorado, Wyoming, New Mexico, Nebraska, and Kansas. Most of these technical personnel are NBS staff, but a few are from other agencies at the Boulder Laboratories (the National Oceanic and Atmospheric Administration and the National Telecommunications and Information Administration). Their presentations have dealt with subjects as diverse as robotics, cryogenics, geophysics, optics, math, electromagnetics, and solar energy. The program also loans demonstration equipment in several fields to science teachers for use in their classes, and offers a "shadow" program in which pairs of students visit a scientist or engineer at work for half a day to see firsthand what a typical researcher's job is like.

In a different approach, at our laboratories in Gaithersburg, Maryland, we began the Career Education Program in 1982. Since then NBS has signed agreements with three school districts in the Washington, D.C., area. These agreements encourage students from these schools, especially females and minorities, to participate in the Student Volunteer Program, which provides a summer of work experience to talented high school students who contribute to projects that can be of use to NBS as well as to the students' educational development. More than 30 positions have been filled this summer.

In addition, NBS scientists and engineers have volunteered to give presentations to high school and elementary school classes dealing with subjects as diverse as lasers and holography, nuclear power, infrared radiation, and radiation research.

There is much that organizations and individual scientists and engineers can do to improve the quality of our students' training. They are, after all, our finest national resource.

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Erratum: Because of an error in the program used to calculate the volume of cylinders, the egg volumes for pomacentrins reported by R. E. Thresher (1 Oct. 1982, p. 70) were uniformly too large by a factor of 4. In figure 1 (p. 71), the scale on the abscissa for the size-frequency distribution of pomacentrin eggs should be 0 to 1.0 cubic millimeters, rather than 0 to 4.0 mm^3, and the average egg volumes for western Atlantic and western Pacific species are, respectively, 0.165 mm^3 and 0.46 mm^3. The error affects neither the distributions of egg volumes in the two areas nor the magnitude nor significance level of the differences between them.