

LETTERS (continued from page 15)

ence. He offers a rational argument: Science is an investment that pays practical dividends. And he makes an emotional appeal: Science fulfills "needs of the spirit."

The emotional appeal might be appropriate for soliciting voluntary contributions to the funding of science. Surely it is quite beyond the pale to suggest, however, that people's spiritual needs are the responsibility of government, a responsibility to be met through the expenditure of funds extracted from them by the IRS.

The investment argument has at least two serious problems. First, the length of time between discovery and application of pure-science results is not inconsequential. It is entirely plausible that government funding artificially stimulates premature research. That is, the resources could have been used more directly to build a wealthier, technologically more competent society, in which industrial or philanthropically funded research could have achieved the same results later, but still in time to apply them. The burden of argument in this regard clearly lies with those who, like Richter, advocate that the government take money from taxi drivers, mill workers, and waitresses and give it to scientists.

The second problem is that politics inevitably distorts government spending priorities. If government is in the business of funding science long-term, then there will be earmarking of research funds for use in the districts of influential politicians. There will be manned space spectacles, misguided wars on cancer, 50-mile-long particle accelerators (perhaps only half finished before political winds shift) and so on.

If government funding produces boondoggles and premature basic research, the cost is not merely in dollars. The intellectual resources involved are priceless far, far beyond the financial cost of salaries and equipment (which is one reason why economic studies of rates of return from scientific research can be very misleading). How else might those brains have been employed?

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RICHTER REPLIES: Allan Walstad does not like my comments on "the needs of the spirit." I thought I made a pretty good case, but he disagrees. So be it.

He is concerned that funds used for research could have been better di-

rected to benefit society. The only way to address that concern is to look at outcomes. In my article, I cited several economists who estimate large positive economic returns to society from the investment in R&D.

Perhaps there are investments with a still greater return, but the investment in science does appear to benefit "the taxi drivers, mill workers and waitresses" as well as the scientists.

Walstad and I agree that there are distortions and inefficiencies introduced by politics and earmarking. I would try to fix them. He seems to want to withdraw.

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Human Rights Issues Aired at Meeting in China

The 19th International Conference on Statistical Physics took place on the campus of Xiamen University, in China, between 31 July and 5 August 1995. Some 700 scientists (about half from overseas) participated in the conference, which was sponsored by the International Union of Pure and Applied Physics, the Chinese Academy of Sciences, and other organizations in China.

As with all IUPAP-sponsored conferences, the organizers had agreed that StatPhys 19 would comply with the general guidelines contained in the *Handbook of ICSU's Standing Committee on the Free Circulation of Scientists* whereby no bona fide scientist would be excluded, and they had gotten assurances to this effect from their government. To the best of our knowledge, every foreign scientist who wished to participate obtained a visa in timely fashion.

During the conference, some of the individuals presenting scientific papers began by dedicating their presentations to free speech and to support of peaceful pro-democracy movements in all countries, including China. They also appealed to the Chinese government to release those punished for having taken part in the pro-democracy demonstrations in Beijing's Tiananmen Square in 1989 and in other peaceful protests.

These matters also were the subject of an informal session convened during a conference lunch break by four StatPhys 19 participants: Joel L. Lebowitz, Joseph L. Birman, Bernard Derrida and Eytan Domany. About a hundred other participants attended

the session, and several of them offered comments on this issue.

At that lunch session a petition directed to the Chinese authorities was circulated for signature. It specifically asked for the release of three young physics students currently incarcerated for having spoken or put up posters in favor of the pro-democracy movement. The three are Lu Yanghua, a graduate student in physics at Lanzhou University; Zhang Lin, a student in nuclear physics, now in Nanhu Labor Camp; and Zhu Xiang Zhong, a physics graduate of Xiamen University. The petition also asked the government to respect the provisions of the Chinese constitution (section 35) that guarantee individuals the right of free speech and free assembly.

About 120 participants (but none from China, or with relatives in China) from 22 countries signed the petition, which was then sent to the Chinese authorities. In addition, many of the signers were planning to send copies of the petition to their governments, asking them to intervene directly with the Chinese government on behalf of the three prisoners.

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Write to Reply, Briefly

Jack Sandweiss, the editor of *Physical Review Letters*, insists that an author's reply to criticism be subject to peer review, whereas Duncan Bryant, Robert Bingham, and Umberto de Angeles press for an author's "guaranteed right of reply" (October 1995, page 106). Given that scientific issues are not decided by majority vote and that peer reviewers (and editors) can turn out to be wrong, I suggest a constructive compromise: Allow the criticized author to publish a non-peer-reviewed and very brief (up to 100 words) reply in the same journal.

In some cases such a reply may not address the issue in full, but at least it will establish that the author has a criticism to put forward. It also will give the author a chance to offer to provide readers directly with an extended version of the reply.

Such a compromise would not severely burden a journal's format, but could prove to be useful to the scientific community.

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