the local community so that they know that some scientists want to and can communicate with them on technical issues in a manner that they can understand. I hope that other scientists will do the same.

MARY OSBAKKEN
Milton S. Hershey Medical Center, Pennsylvania State University, Hershey 17033

Marshall's article on the TMI Public Health Fund includes some contradictory statements concerning the current status of my membership on the fund's advisory board. I have looked at my files and find that I submitted my formal resignation in a letter dated 6 April 1983. The reason for my resignation was simply lack of time.

FRANK VON HIPPEL
Woodrow Wilson School for Public and International Affairs and *Center for Energy and Environmental Studies, Princeton University, Princeton, New Jersey 08544*

Instruction in Science and Mathematics

Recent studies by several qualified commissions have called attention to the general failure of our educational institutions to meet the high teaching standards to which all students are entitled and which must be maintained if we are to survive as a modern nation with economic stability and an adequate national defense.

The most serious deficiencies of our educational institutions, as emphasized by the National Commission on Excellence in Education and the National Science Board's Commission on Precollege Education in Mathematics, Science and Technology, lie in their inadequate teaching of mathematics and science, from early elementary grades through community (or junior) college.

Most proposals to remedy the situation would, if implemented, assist in improving the quality of science and mathematics education, but at best would be long-range in their impact. In general, they do not focus on the primary cause of the problem: most individuals who are qualified to teach science or mathematics can make considerably more money, associate with intellectual and professional peers, and avoid the hassles of teaching by working any place other than the classroom. Certainly society is indebted to those who are still teaching science and mathematics.

One suggestion that has received too little attention is included in a legislative package sponsored this year by Senators John Glenn (D–Ohio) and Ernest Hollings (D–S.C.) and by Representative Dave McCurdy (D–Okla.) and 63 other members of the House of Representatives. The Glenn-McCurdy bills that could have the greatest impact are S. 290 and H.R. 836. They would provide tax credits to certain employers for releasing their employees who are qualified scientists, engineers, or mathematicians (and who are qualified as teachers) to teach, without pay, a limited number of hours each week in local schools.

Glenn and McCurdy recognize one critical weakness in our existing educational system: that it cannot be expected—with its present severe shortage of qualified science and mathematics teachers—to pull itself up by its own bootstraps. They also recognize that this country cannot wait for a generation or more for quality education; that we cannot wait that long to catch up with the rest of the industrialized world, and even with some of the developing nations.

The proposal in the Glenn-McCurdy bills would, if implemented, provide truly effective improvement in science and mathematics education all across the country *almost at once*. Moreover, its cost would be much lower than some of the other suggestions that have been offered, and it would require almost no additional administrative personnel, either at the federal or the local level.

There are, as with any challenging idea, a number of debatable aspects associated with this proposal, as well as two obstacles. One obstacle is possible concern among some members of teachers' organizations that their professional status would be threatened. I believe this can be avoided by creating a special category such as "guest instructor"—totally outside the regular faculty—for teachers loaned by industry. A second and major obstacle is the normal apprehension in Congress and in the Administration about bringing up any tax bill for consideration during a presidential election year.

But it is obvious that the situation with respect to mathematics and science education in this country is already calamitous and cannot be ignored. Our reaction to it must be to insist on immediate and meaningful corrective action.

No one program—including the Glenn-McCurdy proposal—will, by itself, restore the quality of the education our children receive. Many steps must be undertaken as soon as possible, and science and mathematics are not the only subjects in need of assistance. However, there has been, I think, no other suggested plan that would break the existing condition in which unqualified teachers are passing on to uninspired students unacceptable attitudes toward an understanding of science and mathematics.

The time has come for all concerned citizens to speak out vigorously on this subject. This is especially true of certain groups—such as scientists, mathematicians, engineers—and all who are concerned with quality education for our country's youth. I recommend that all such persons write or phone their congressmen and senators, calling for support of the Glenn-McCurdy tax credit legislation (S. 290 and H.R. 836) for the teaching of science and mathematics by volunteers from industry. As a former member of Congress, I can assure the readers of *Science* that their letters and calls could easily make the difference and help bring about the enactment of this legislation.

MIKE MCCORMACK*
McCormack Associates, Inc., 508 A Street, SE, Washington, D.C. 20003

*Former member, Committee on Science and Technology, U.S. House of Representatives.

Software Piracy

The "weak bit" scheme to foil software pirates (Research News, 23 Sept., p. 1279) is a perfect example of a technical solution to what is really a social problem.

It is pretty clear that in many respects software and book publishing are similar: authors spend a lot of time doing research and then write up a package that is mass-produced and sold to individual consumers.

The only real difference is price. Whereas a book may retail for $10 to $30, popular software such as word processors and spreadsheets often go for $300 to $500. Any consumer who has done a little programming knows that such prices are unrealistic. (If such prices reflect true costs, how can one explain the recent trend to "bundled" computers that include $1000 to $2000 worth of software in their price?) It is this inordinate profit margin that causes the software pirate to flourish. Reduce the price of software to a realistic level, and he will cease to exist.

ROBERT LYNCH
4 Leopold Terrace, Dora Road, Wimbledon SW19 7EY, England