In advance of any formal solicitation, nine publishers have volunteered contributions ranging from $500 to $5000. Many others have said they will make substantial contributions now that the Williams & Wilkins appeal has been accepted. I confidently predict that 50 to 100 publishers will contribute to this cause.

Further, six professional societies have already pledged contributions ranging from $100 to $5000. They are the American Chemical Society, American Society of Microbiology, American Society for Testing Materials, Society for Applied Spectroscopy, American Society of Civil Engineers, and the Institute of Electrical and Electronics Engineers. We are told that several other societies will contribute when a formal appeal for contributions is made.

This evidence of professional society concern exposes an odd conflict of interest that needs to be pondered thoughtfully by all scientists. While many individual scientists, along with many librarians and other information specialists, are pushing hard for exempted privileges of photocopying for scientific and educational uses, the officers of their professional organizations (and especially their publications officers) are drawing back from the sure prospect of resulting losses of subscription and advertising income to their already straitened journals. And, strangely enough, many members of the societies that are supporting the Williams & Wilkins appeal are also supporting the National Education Association's Ad Hoc Committee of Educational Organizations and Institutions on Copyright Law Revision, a group that has made the loudest and most persistent demands for the broad special exemptions.

Scientists should not confuse the rhetoric of "free flow of information" with the economics of "flow of free information." There is no such thing as free information; somebody has to pay the cost of any system for the organization and dissemination of science information. The privilege of "free" photocopying simply is not compatible with the economics of book and journal publishing. Why, then, do so many scientists seem to think they can have their cake and eat it too?

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Science Management Training

In his editorial "Managers of science" (15 Feb., p. 599) Dael Wolfle comments on the mid-career "training" of managers in mission-oriented and industrial sciences. While I believe that mid-career management training is an important way to correct deficiencies in science management, a more fundamental problem is the lack of management training of scientists during their doctoral programs.

As one who has twice been in middle management positions (as manager of operations and data systems for a small corporation and as chairman of a biology department in a university), I have found that when this topic was raised with upper management, in either industry or academe, only rarely was there any concern about either the correction of lower or middle management deficiencies or about the development of training programs.

After years of frustrated self-education in management technology, with a correlated lack of career productivity, I have decided that the only solution for me is to return to teaching and research activities.

Deficiencies in science management in both academe and industry (and I suspect the problem exists in government as well) can only be corrected by a basic change in attitudes early in the educational process. We are now seeing the conversion of certain traditional Ph.D. requirements (such as foreign languages) to more contemporary options (such as statistics, computer technologies, teaching and evaluation skills, and communication skills). Managerial skills should also be included as an optional Ph.D. requirement, since a smaller and smaller proportion of current and future Ph.D.'s will probably be retained in purely nonmanagerial positions, such as teaching.

There are two excellent reasons why the solution must come during the Ph.D. program and not at mid-career: (i) mid-career training is inefficient, as stresses of family, shifting career objectives, and peer pressure inhibit concentrated efforts; and (ii) middle management training (as we now know it) is too "expensive" in terms of bad management decisions made during on-the-job training.

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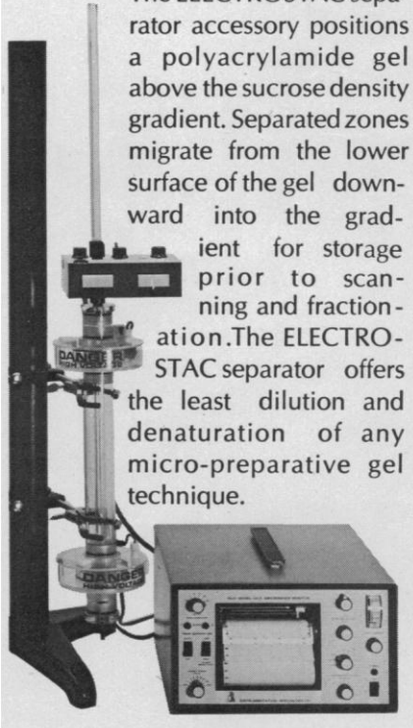

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