LETTERS

Exchange of Technical Information

In Gina Kolata's article "Export control threat disrupts meeting" (News and Comment, 24 Sept., p. 1233), in which she reports on the withdrawals of papers under the control of the Department of Defense (DOD) at the 26th International Technical Symposium of the Society of Photo-Optical Instrumentation Engineers (SPIE) in San Diego, California, several statements were made that should be clarified.

I am credited with having said that "a number of members have withdrawn from the organization, reasoning that it is on DOD's hit list," and that "[t]he whole fabric of our society is unraveling in our hands." More accurately, I stated that, if disruptions similar to those experienced by SPIE in San Diego were to be repeated, not only our organization, but other scientific and engineering societies as well, would quickly find themselves losing members, symposia attendance, and general support. I further stated that submission of technical material would be inhibited if individuals perceived that societies were on a DOD "hit list." In effect, the whole fabric of the voluntary communication structure in the United States would begin to unravel, to the detriment of the country (SPIE does not believe that it or any other group is on any so-called DOD hit list, nor do we believe DOD is contemplating generating such a list).

To ensure that the events of San Diego are not repeated, the president of SPIE, Richard J. Wollensak, other SPIE representatives, and I met with key DOD officials to discuss, in a constructive way, how to reconcile the DOD responsibility for national security and the need of the technical community for open and unencumbered exchange of information. SPIE, like most active technical organizations, is endeavoring to address the "cutting edge" interests of its membership. Many of the subjects addressed in San Diego that DOD feels may have been "too sensitive" have been part of an ongoing series of yearly conferences, in many instances organized at the specific request of various government agencies and their key scientific and engineering staffs.

As is true for other professional organizations in the United States, SPIE has no way of determining what material is sensitive or not sensitive and therefore must rely on the advice and judgment of chairmen and presenters and, most important, on DOD itself and its attendant and timely clearance procedures to ensure conformity with national security interests. Every prospective speaker at SPIE conferences is explicitly advised well in advance that all necessary clearances should be obtained prior to presentation and are the responsibility of the presenter and his sponsoring organization.

Obviously, the participation in San Diego of more than 2700 applied scientists and engineers attests to the usefulness of SPIE as an effective forum. We are convinced that, with open-mindedness, goodwill, and mutual respect, a reasonable solution can be found for this vexing problem of national concern.

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Large White Butterfly: A Warning

John Feltwell's book *Large White Butterfly* (Book Reviews, 8 Oct., p. 150) is a boon to those of us who study pierid biology, but it poses an inadvertent threat to American agriculture. For many years I have gotten occasional inquiries from American biologists regarding the availability of laboratory cultures of *Pieris brassicae*. Since the appearance of Feltwell's book, the tempo of these has increased notably. A collection of several thousand technical references cannot help but make the Large White very attractive as a lab system. Therefore, it should be broadcast widely that it is a dangerous pest of cole crops that is rigorously—and rightly—excluded from this country by the U.S. Department of Agriculture. The readily available species in this country—also introduced from Europe more than 120 years ago—is *Pieris rapae*, which for some reason is frequently confused with *P. brassicae* by American workers. It has a respectable literature of its own, thus far not similarly collated, but it has been used much less for biochemical and physiological work because it is quite a bit smaller. Because its degree of phylogenetic relationship with *brassicae* is in question (some authorities now place them in separate genera), extrapolations from one species to the other should be made with great caution.

Anyone tempted to smuggle *brassicae* into the United States should remember that we owe our worst forest defoliator, the gypsy moth, to a well-meaning biologist who brought it into Massachusetts in the 19th century. The native range of *P. brassicae* is most of the Palaearctic region (Europe, nontropical Asia, and North Africa), and it is naturalized in central Chile. There are many lovely *P. brassicae* habitats suitable for a sabbatical.

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Dwarf Cattle and Trypanosomiasis

Thomas H. Maugh II's article about efforts to control the tsetse fly (*Glossina* spp.) through the use of pheromones (Research News, 15 Oct., p. 278) leaves the impression that trypanosomiasis in cattle, called nagana, occurs only in the savannas of central southern Africa and that raising and use of domestic cattle are precluded in the region. The disease equally troubles cattle in the savannas of western and central northern Africa, where it is transmitted chiefly by the morsitans group of *Glossina*. The disease also occurs throughout the rainforests of western and central Africa through transmission mainly by the Palpalis group of *Glossina* (*1*).

Raising and use of European and Asian species of cattle are precluded in all areas infested by the tsetse fly. However, dwarf humpless cattle are native to the savannas and rainforests of West Africa and they are resistant to trypanosomiasis (*2*). These long- and shorthorn species are kept in small numbers as prestige symbols and frequently as part of bridewealth (*3*). Presumably these dwarf breeds could be raised and used in central southern Africa.

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References

1. J. P. Glasgow, *The Distribution and Abundance of Tsetse* (Pergamon, New York, 1963), pp. 170–175.
2. H. Epstein, *The Origin of the Domestic Animals of Africa* (Africana, New York, 1971), vol. 1, pp. 201–326.
3. P. Bohannan and L. Bohannan, *Tiv Economy* (Northwestern Univ. Press, Evanston, Ill., 1968), pp. 123 and 217.

Peer Review Problems

It has probably occurred to all of us that "the system works when I get funded and fails when I don't." Nonetheless, S. Walter Englander's letter (10 Sept., p. 984) must have struck a sympathetic

chord in many, particularly his reference to the noise level and the penalization of innovation, which is also becoming axiomatic. Although his proposed criteria will mean different things to different reviewers, we do need to pay more attention to more consistent definitions of such scoring criteria. Another major weakness of the present system, at least with respect to the process at the National Institutes of Health, is the lack of a timely means to clarify misunderstandings or misinterpretations. This could be accomplished by changing the schedule between the time applicants actually receive the sometimes noisy critiques and the time the councils meet; this is often inadequate to clearly eliminate the confusion. The problem is made more acute by the increasing tendency of reviewers to infer ideas or opinions from the applications—and by implication the minds of the applicants—that are not stated and not held. This may streamline review at the expense of understanding and useful evaluation, and in the end everyone loses. It is particularly odious to read statements like, "It is unlikely that useful information will result," when everyone knows that few reputable scientists would propose experiments whose outcome they knew. All the same, economic realities force just this kind of value judgment.

Paying more attention to track records, and above all to innovation records, as Englander suggests, should help us in making more useful choices. Alternatively, we might get all participants off the hook by simply refraining from calling this whole process scientific peer review. In an age when words are fast losing their precision of meaning and questionable conduct often passes as simple politics, we need to recall that the idea of peer review has very deep biological and philosophical roots.

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History of Science Centers

History centers devoted to specific disciplines have an important role to play in the development of strategies for promoting the history of science and technology and in assuring preservation of adequate documentation. Perhaps the best known of the existing centers is the American Institute of Physics' Center for History of Physics. The Institute of Electrical and Electronics Engineers recently formed a similar center. The Babbage Institute for History of Information Processing at the University of Minnesota and the center for the history of chemistry recently established by the American Chemical Society and the University of Pennsylvania are other examples.

The Joint Committee on Archives of Science and Technology (JCAST)* has given special attention to the discipline centers in an attempt to gauge the sources of their success and to examine their best role in dealing with the general problem of historical documentation in the sciences. Crucial to the centers' success is the involvement—including funding—of the major professional scientific societies. The involvement of historians and archivists also is important. By focusing on the discipline, the centers transcend and supplement the institutional bases of science and technology in universities, government, and industry, where the chief archival repositories should be developed. The centers also have an important role in facilitating the mutual involvement of scientists, historians, and archivists in the discipline's history, identifying individuals, institutions, projects, and events that should be documented, locating records or papers of historical value and directing them to the most appropriate archival repository, studying the source and character of documentation in the discipline, and advising archivists on what should be saved.

JCAST would be pleased to hear of any current efforts to establish new discipline centers and to share our concerns with individuals, societies, existing centers, or other agencies.

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*History of Science Society, Society for the History of Technology, Society of American Archivists, Association of Records Managers and Administrators.

Investing in Science

As a result of our new tax laws, there has been an explosive growth of science-based businesses that serve as vehicles for tax-sheltered investment opportunities for individual investors. This source of capital should be viewed as a serious potential source of funding for scientific research and development projects, particularly when there is anticipated commercial application of the research efforts. At this time, the coming together of such investors and scientists is based on haphazard and serendipitous processes. In such arrangements it frequently happens that all participants (scientists and businessmen) are not able to evaluate the skills and motives of the people with whom they are working. Scientists are not necessarily able to evaluate the business acumen of their financial organizers, and business underwriters may not be able to evaluate the merit or likelihood of success of the science basis for new businesses. In addition, there seems to be no mechanism for open competition for access to venture capital funds. To remedy this situation professional organizations might play a role. Centralized registries for project outlines and budgets or listings of new patents available for implementation could be maintained by appropriate professional organizations, the listings free to scientists and available for a fee to investors. The professional society's clearinghouse could assure scientists that investors had appropriate disclosure agreements on file and could provide basic information about the financial soundness of potential investors to the scientist. In addition, professional societies might suggest to investors methods and experts to review proposals for scientific merit. Universities could play a role in helping scientists to get listed at appropriate registries and by making known the institution's policies with regard to overhead requirements, royalty expectations, and rewards to the principal investigator.

Government could play a role in the stimulation of venture capital investment in research and development by enactment of legislation allowing for variable tax reductions on profits when commercialization of supported research projects occurs. State governments would gain by promoting local business and industrial development, and the federal government could thereby encourage funding of research and development projects whose outcome could be considered to benefit the public interest. The best projects, in terms of merit and promise of financial benefit to investors, might find more than one "buyer" and could be "sold" to investors willing to return some of the tax advantage capital to fund research on projects when commercial application is a long time away, or not even apparent.

While the placement of private capital will not replace the support formerly given research by the federal government, it is, at least, another possible source for meritorious projects.

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