Animal Rights Review

That *Science* should have chosen Adrian R. Morrison to review the book *The Human Use of Animals: Case Studies in Ethical Choice* (*1*) (*Science*'s Compass, 8 Jan., p. 181), of which we are the co-authors, was unfortunate and unfair. Morrison has been consistent in attacking those who raise serious questions about the ethical justification of animal research. But raising such ethical questions is part of what this book is about. In his review, he is derogatory about one part of the book that describes an Animal Liberation Front (ALF) raid on the institution with which he is affiliated. Morrison's own research has been a target of ALF raids on two occasions, one closely related to the case under discussion. We therefore believe that he could not have been expected to have an unbiased opinion and should have been excluded from consideration as a reviewer.

Morrison surmises, incorrectly, that the "core belief" of some of the authors is that the "[u]se of animals to benefit humans is morally wrong." Moral condemnation of using animals to benefit humans was not among the objectives of any of the authors. Certainly Morrison should have declared his personal involvement in the raids on the University of Pennsylvania.

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References

1. F. B. Orlans, T. L. Beauchamp, R. Dresser, D. B. Morton, J. P. Gluck, *The Human Use of Animals: Case Studies in Ethical Choices* (Oxford Univ. Press, New York, 1998).

Editors' note

In the editing of Morrison's review, his statement "Brief discussion of the ethics of subsequent ALF raids of several laboratories, including mine, ends the chapter" was removed.

Perfect Mirrors, Past and Present

In their report "A dielectric omnidirectional reflector" (27 Nov., p. 1679), Yoel Fink *et al.* describe a model for an omnidirectional reflector in which it is possible to design and build mirrors that have a reflectance that is very high, regardless of the angle at which light is incident—thus the name omnidirectional mirror. These "perfect mirrors" are composed of multiple, dielectric (transparent, nonmetallic) layers that will not incur the light energy losses found in metallic mirrors and will perhaps make possible new applications. Fink *et al.* state that they are unaware of any previous knowledge of this phenomenon.

Fink *et al.* have used their expertise in analyzing the properties of crystalline materials to create a model of the optical properties of multilayer thin films as one-dimensional crystals. The nature of this model makes it straightforward for them to pose a question about omnidirectional reflectivity and from this to develop the characteristics of multilayer stacks that would have this property. They cite an example of layers of tellurium and polystyrene, which form such a mirror in the infrared (heat energy) region of the optical spectrum.

Fink *et al.* describe a novel approach to the problem of designing this kind of reflector, and its existence may certainly prompt new coating designs or applications that up to now have not been generally considered. It turns out, however, that theirs is not a unique approach to this problem, as