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- Structure of nuclear reactors
- Pros and cons of nuclear power
- Reactors and the proliferation of nuclear weapons: the nuclear-weapons nations, bomb-grade materials and reactor fuels, dangers of enrichment, recycling, breeders, research reactors, power reactors, case histories (India, Pakistan, Libya, Israel, Iraq).

Class discussions, course evaluations, and hallway conversation all indicate great student interest in these topics. Interest is further stimulated by laboratory films (*The War Game, Building of the Bomb, War Without Winners, Hiroshima-Nagasaki*), current-event articles, optional outside readings, evening bull sessions, and the requirement that students compose a letter to a public official about some physics-related social issue.

ART HOBSON
University of Arkansas
Fayetteville, Arkansas

7/82

Role of the referee

R. Jones' letter in May (page 131) went directly to the heart of the manuscript refereeing problem. As an occasional referee myself, I do not wish to become entangled in a welter of bureaucratic regulations. But as a frequent author, I would surely appreciate a code of behavior for referees and editors.

Jones' first point, that referees' judgments should generally be supported by explicit evidence, is especially germane. Even such diffuse charges as triviality, irrelevance, and general lack of understanding can usually be documented if the referee stops to think about them. And, conversely, so can such laudatory comments as brilliant, searching, and original. (One ought not to become overwrought by unsubstantiated judgments, good or bad.)

Even an unsubstantiated negative judgment is, however, not without its uses; at the very least it testifies to a lack of sympathy on the part of the referee. And since I want my readers to hearken to what I write, I regard it as a nearly infallible indicator of the need for an imaginative reworking of my manuscript.

I like to think of myself as participating in a community of scholars whose members strive together to advance knowledge. Therefore I always try to make my own efforts at refereeing useful guides on how to improve the

manuscripts in question; in my experience, the vast majority of manuscripts do have at least some worthwhile thoughts or contents, and our duty as referees is neither the denigration nor the mystification of the authors but rather their edification. They are colleagues whom we are (anonymously) endeavoring to help; and we expect them to do the same for us.

What Jones failed to mention is that the refereeing situation is (or often seems to be) markedly worse for grant proposals. There the opinions take two to three times as long to filter back, are sometimes no less vague or ill-formed, and can be much more damaging professionally. Moreover, it is much harder to argue successfully with a granting agency than with a journal. Perhaps we should seek to have standards of refereeing justice (speedy refereeing justice) established first for grants proposals, assuming that their merits would thus become so evident that they would forthwith be adopted for scientific manuscripts.

WILLIAM F. PICKARD
Washington University
St. Louis, Missouri

6/82

THE AUTHOR COMMENTS: William Pickard has noted the obvious problem of (bureaucratically) over-working referees. My suggestion is that past authors in a journal be made subject to "jury duty." I imagine that the rules for selection of jurists from this pool might be similar to that currently found in the criminal justice system. When one becomes an author, one would have to agree to enter the pool. The referees themselves would ultimately be a subset chosen from this pool. Of course, volunteers could also be considered (and would be most welcome), subject to the same refereeing practices code. Causes for exemption from "refereeing duty" would, of course, exist as they do in the criminal justice system. Election of referees from the pool would, itself, be subject to ordinances established in the editing code.

Pickard's reference to grant refereeing is well taken. In fact, I simply lacked the courage to take on that whole question. I felt the "old boy" system was too strong to overcome at this time.

R. JONES
National University of Singapore
Kent Ridge, Singapore

6/82

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More on Einstein papers

The letter by E. J. Post (June, page 11) refers to Einstein's recognition of the need for distinguishing between two distinct vacuum speeds of light.

This can be stated as the following principle: The speed of light relative to the local Lorentz frame is constant (1, in geometrized units), but the speed relative to a global frame is not constant ($\neq 1$ in general), except in the limiting case of special relativity (flat space-time).

In particular, the vacuum speed of light relative to the solar system (a global frame) is $1 + V$, where V is the gravitational potential (to close approximation), indicating how a ray of light slows down in passing the Sun, and why it is necessary to allow a modification in Einstein's original statement of the principle of the constancy of the vacuum speed of light.

KENNETH J. EPSTEIN

7/82

Chicago, Illinois

THE AUTHOR COMMENTS: Permit me to add to Epstein's observation that Einstein discussed this very issue in 1911 (*Annalen der Physik* 35, page 898). From the finite gradient of the speed of light he calculated the refractive gravity-bending of light. The actual bending, later predicted by his general theory, is twice this amount and happens to equal the sum of two identical contributions in the sense of a particle-wave duality: wave refraction through gravity and gravity pull on photons. This double deflection is now believed to be reasonably well confirmed by observations as a genuine effect of gravity—rather than as an outer-atmosphere effect of the Sun.

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