It is on this point that Kao and I disagree. I do not question his experience and authority, but I believe that his argument in this case falls wide of the mark. He and I do appear to agree, however, on three important points: (i) TTX can cause a person to appear to be dead even though that person subsequently revives; (ii) TTX was an ingredient in one of the samples of the zombie powder that Yasumoto analyzed; and (iii) occasional Japanese victims of fugu (TTX) poisoning appear to be dead but are not. The causal hypothesis may be wrong or in need of substantial revision, but none of the objections raised by Kao changes its status relative to its alternative.

The most serious issue raised in this controversy is that there is a vast difference between an unresolved or even false hypothesis and a fraudulent one. For Kao to suggest, after a complete review of the research, that my theory linking TTX to zombification is wrong would fall within the ordinary domain of science; but for him to disseminate unwarranted allegations of fraud lies within another domain. In Booth's article, John Moore of the Duke University Medical Center in Durham, North Carolina, is quoted as noting that the burden of proof of any hypothesis lies with the scientist. It is precisely because of this that I have chosen to continue to pursue what seems to me to be the most viable explanation of an exceedingly complex cultural phenomenon. But it is equally true that, in the case of a public accusation of fraud, the burden of proof lies on the accuser. Should the accusations prove false, as in this case, the individual responsible for the inflamatory statements should be held accountable.

WADE DAVIS
1073 Clyde Avenue, West Vancouver, British Columbia, Canada V7T 1E3

REFERENCES

1. W. G. Clark and B. A. Caldwell, *J. Physiol.* **230**, 477 (1973); W. G. Clark and J. M. Lipton, *ibid.* **238**, 181 (1974).
2. W. Davis, *The Serpent and the Rainbow* (Simon & Schuster, New York, 1985).
3. ———, *Passage of Darkness* (Univ. of North Carolina Press, Chapel Hill, NC, 1988).

Response: Most points raised by Davis appeared in the article, including one item which I consider central to understanding the whole affair: that an anthropologist in the field and a chemist at the bench approach a highly sensational subject such as zombies in very different ways. This clash of research cultures has been exacerbated by the long-standing publicity surrounding Davis and by the relative absence of published data on the presence of tetrodotoxin in zombie powder.—WILLIAM BOOTH

Translation of Einstein Papers

John Walsh's article on "Editorial changes for Einstein papers" (News & Comment, 15 Apr., p. 278) comments that the translation of the documents of volume 1 "has been excoriated by reviewers on the grounds of both gracelessness and inaccuracy and for lacking notes." Similarly, the review of volume 1 by Peter Loewenberg (29 Jan., p. 510) complains that the translations "are often awkward in the rendering of Einstein's clear and pungent style, and are sometimes misleading."

As the consultant on the translations, I am dismayed that various reviewers did not take note of the preface of the translation volume. Its second paragraph stated (*1*):

> The purpose of the translation, in accordance with the agreement between Princeton University Press and the National Science Foundation, is to provide "a careful, accurate translation that is as close to the German as possible while still producing readable English," rather than "a 'literary' translation." This type of translation should allow readers who are not fluent in German to make a scholarly evaluation of the content of the documents as well as obtain an appreciation of their flavor, in particular that of the correspondence. If some of the passages sound awkward, it is usually because the original passages were awkward—both because many of the letters and notes were obviously written in haste, and because the writers (especially Mileva Marić, whose native language was not German) did not always express themselves in correct, not to say literary, German.

It then noted a number of "particular problems that arose in translating the correspondence." It is of course quite proper for reviewers and reporters to question the decision of the National Science Foundation and Princeton University Press to publish a raw translation without notes and other editorial material, which "should be read only in conjunction with the documentary edition," as noted in the preface. But the translator should not be faulted for carrying out the mandate of NSF and the Press precisely as it was intended. While we do not claim perfection, we have yet to be furnished with a specific example of inaccuracy, apart from Loewenberg's statement that in the report of a detective on the financial assets of the Einstein family we should have used "fortune" rather than "real property" ("eigentliches Vermögen"). Although "fortune" may not be wrong, we consider our translation of the detective's bureaucratese to be more accurate. *Science* is not the place to engage in a debate on whether Loewenberg's other translations are any better or more faithful to the original than ours; we do not thnk so. But his advice for "readers who wish to appreciate Einstein" to provide their own translations is beside the point; if they could, they should not consult the translation volume at all.

Furthermore, one should not make the mistake of expecting the "clear and pungent" style of the *mature* Einstein to be always present in all the communications of the young one (volume 1 ends in 1902, when he was 23). We have not attempted to provide versions we wished Einstein had left us with if English had been his native language and if he had always written with posterity in mind. To do this would have been a disservice to scholars who want to study Einstein's life and the development of his ideas, but are not sufficiently fluent in German (scientific, colloquial, as well as some of its dialects, as used almost a century ago) to be able to rely on the original documents alone. The problems of a literary translation are quite different as, for example, shown by a current debate (*2*) on and the retranslation (*3*) of *L'étranger* by Albert Camus. Readers of translated novels or poems have a right to demand a re-created work of art. Scientists who intend to make a scholarly evaluation of documents they cannot read in the original require a translation as close to the original source as possible.

PETER HAVAS
Department of Physics, Temple University, Philadelphia, PA 19122

REFERENCES

1. J. Stachel, Ed., *The Collected Papers of Albert Einstein*, vol. 1, *The Early Years, 1879–1902*. English translation, A. Beck, translator; P. Havas, consultant (Princeton Univ. Press, Princeton, NJ, 1987), p. xiii.
2. H. Mitgang, *New York Times*, 18 April 1988, p. C21.
3. A. Camus, *The Stranger* (Knopf, New York, 1988).

Gaia Modified

Concerning Gaia and Richard A. Kerr's discussion of 22 April (Research News, p. 393), the tendency of Earth's spheres of activity to maintain or systematically renew a harmonic balance within themselves and among one another is well known among observers of nature. We observe the centennial of this observation as the Le Châtelier principle this year.

Although Earth may remind one, in poetic moments, of a living system, it does not metabolize, replicate, mutate, or reproduce mutations as living systems do. Gaia in its current mystical sense invokes poetic license. With the modifications described by Kerr it becomes a junior synonym of the Le Châtelier principle; or, biologically speaking, homeostasis.

PRESTON CLOUD
400 Mountain Drive, Santa Barbara, CA 93103