letters

1968 by E. Migneco and J. P. Theobald[4] demonstrated the same dramatic grouping of resonance clusters in the neutron-induced fission of Pu^{240}. Subsequently, the effect was confirmed further in other non-fissile nuclei, such as U^{234} and U^{238}

The Np^{237} results, of which we were well aware but had accidentally transposed with the later Pu^{240} findings, should have been accorded their deserved precedence, and due credit should have been given to the above Saclay group. As Andre Michaudon is currently preparing an abridged version of the above ICINN Conference review paper for publication in PHYSICS TODAY, we hope that this timely correction may set the matter straight and apologize for any misconceptions that may have arisen.

References

1. A. Michaudon, "Neutrons and Fission," on pages 641–724 of Proceedings of the International Conference on the Interactions of Neutrons with Nuclei, Lowell, 6–9 July 1976, edited by E. Sheldon (U.S. ERDA Report CONF-760715-P1 & P2, 1976).
2. A. Michaudon, "Nuclear Fission," in Advances in Nuclear Physics, edited by M. Baranger and E. Vogt, Vol. 6, pages 1–217 (Plenum Press, New York and London, 1973): see pages 74–83.
3. "New Insight is Offered into the Fission Process," Search and Discovery, PHYSICS TODAY, Feb. 1969, pages 64–67.
4. E. Migneco, J. P. Theobald, Nucl. Phys. **A112**, 603 (1968).

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7/11/77

More physics in poetry

Further to the remarks of H. A. Klein (January, page 84) and V. F. Weisskopf (June 1976, page 23), your readers may be interested in a remarkable (if unwitting) anticipation of special relativity in Wagner's "Parsifal." In Act I, as Parsifal is led through a forest to the Hall of the Grail, he sings[1]

"Ich schreite kaum—doch wähn' ich mich schon weit."

To which Gurnemanz replies:

"Du siehst, mein Sohn, zum Raum wird hier die Zeit."

A literal translation is

"I pace hardly at all, nevertheless I feel I have come far already."

"You see, my son, that here time transforms into space."

This is not the "official" translation,[1] which is modified by the constraints of rhyme, meter and dramatic singing in English.

Why Wagner chose this phraseology is not at all clear. The idea does not appear in his medieval sources, and he gives no explanation in his own writings. The discussion by Paul Bekker,[2] although complicated, does explain what Wagner probably meant, although there is no clear agreement among the experts. The actual choice of words again may have been dictated by poetic requirements.

I find no indication in Einstein's biographies, nor in talking with several of his biographers and colleagues, that he was ever aware of these unusual lines. In fact, Einstein's tastes in music ran to more classic composers, and he apparently showed no interest at all in Wagner. Banesh Hoffman relates one story: he invited Einstein to join him at a performance of "Tristan and Isolde." Einstein declined, saying "They have died too often."

This passage in "Parsifal" was first called to my attention in a *son et lumiere* lecture by Edwin Land at John Hopkins' Rowland-Wood Symposium on 21 November 1975.

References

1. "Authentic Librettos of the Wagner Operas," Crown, New York (1938); page 445.
2. Bekker, "Richard Wagner, His Life in His Work," W. W. Norton, New York (1931); page 491.

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Origin of solar system

I am writing in reference to Grace Spruch's news story in your May issue (page 17) on the origin of the solar system directly from a supernova. I would like to point out that many years ago Fred Hoyle suggested that a solar system might arise from a binary star in which one of the components becomes a nova.[1] In 1971, I published my own theory of formation of solar systems from fragments of a supernova shell.[2] More recently, I have written a concise review of this model and its extension to the formation of galaxies.[3]

References

1. F. Hoyle, Mon. Nat. Roy. Astron. Soc. **105**, 175 (1945).
2. W. K. Brown, Icarus **15**, 120 (1971).
3. W. K. Brown, L.A.S.L. report LA-5364 (1974).

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Optics today

In his review of our text, *Contemporary Optics for Scientists and Engineers* (May, page 74), Charles Frahm raised

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