

ors, in some cases with impressive results.

Regardless of this lack of context, this book presents an important view: The Exploratorium became a "Palace of Delights" and inspired fresh thinking worldwide about how to communicate science, in large part because it carried out its founder's philosophy with uncommon conviction.

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## Turning the World Inside Out: And 174 Other Physics Demonstrations

Robert Ehrlich  
Princeton U. P., Princeton,  
N. J., 1990. 216 pp. \$14.95 hc  
ISBN 0-691-02395-6

I must confess, I'm getting tired of demonstrations. After years of teaching physics I'm reaching my limit of seeing (mostly the same old) demon-

strations at every gathering of physics teachers. Perhaps I should have refused to review a book on demonstrations. But the title attracted me. When I heard "*Turning the World Inside Out*," my interest rose. I thought this was going to be a big collection of either new demonstrations or at least fascinating twists on old classics. I felt the need for freshness, so I said, "Send it along."

It turns out that the majority of the demonstrations in this book are familiar ones. The most common twist is scaling the demonstrations down to fit on an overhead projector—an admirable goal but clearly it does not turn *my* world inside out. (The title, by the way, comes from a throw-away line in one demonstration on the focal lengths of Christmas-tree ornaments.)

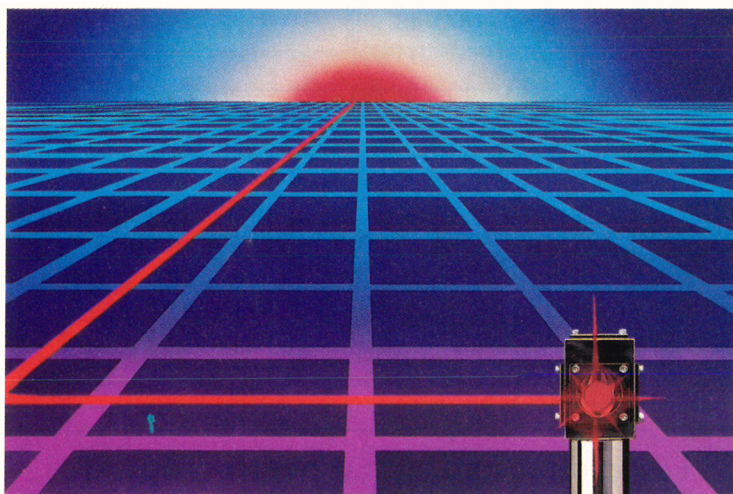
The structure of the book groups the 175 demonstrations into 17 traditional fields. Each demonstration is numbered and presented in a format that gives a short abstract of the demonstration, lists the equipment needed, explains how to construct the equipment and finally comments on the experiment. It is in the comments sections that the physics is brought into the demonstrations.

There is an aspect of this book that is pleasantly surprising: The author has taken the extra step of analyzing the physics behind the demonstrations. For this reason, the book is not to be taken lightly. Thus, while the introduction claims that the book is appropriate for a wide range of readers, those who have not had a solid introductory physics course will not get much out of it.

Another reason for needing a good background is to clear up some sloppiness in parts of the treatments. An occasional slip-up on a diagram isn't too crucial, but a paragraph that uses the symbol  $F$  for the centripetal acceleration in the first sentence and for the tension in a string in the last sentence requires sorting out. In addition, phrases like, "according to the right-hand rule" followed by an equation for torque—complete with cross product—give a clear signal of the book's level. And I'm still unconvinced that moiré patterns are "essentially an interference effect," as Ehrlich states in the book.

As promised on the inside cover, there are some new demonstrations. In between the Cartesian diver and the force table, a reader finds a few new games. I was fascinated by the rotation capability of a casserole-dish cover: It has a remarkably persistent angular rotation. The demonstration that uses a six-foot balance beam made from household molding pro-

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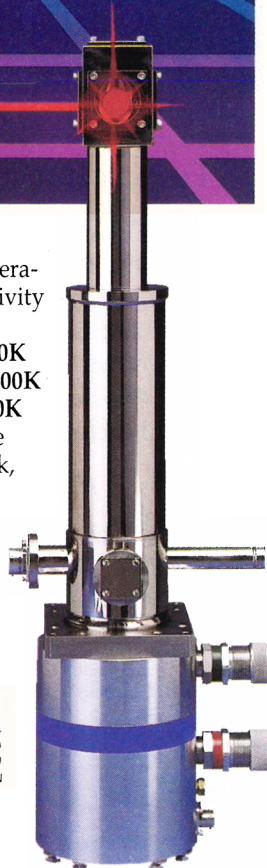
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## BOOKS

vides an inexpensive way to look at some interesting physics. One favorite of mine is the illustration that a ball rolling in the balanced molding's groove will create an oscillatory motion for a specific initial condition. After a couple of differentiations of a fourth-order equation, the author reaches the oscillatory equation of motion. These new demonstrations are not for your weak-kneed students and they probably won't flip your world inside out. But most are still fun play, even for the jaded physicist.

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**Physics.** R. Schwenn, E. Marsch, eds. Springer-Verlag, New York, 1990. 282 pp. \$69.50 hc ISBN 0-387-52081-3. *Compilation*

**Physics of The Outer Heliosphere.** *Cospar Colloquia Series 1.* Proc. Conf., Warsaw, September 1989. S. Grzedzielski, D. E. Page, eds. Pergamon, New York, 1990. 409 pp. \$80.00 hc ISBN 0-08-040780-3

**Rotation and Mixing in Stellar Interiors.** *Lecture Notes in Physics 366.* Proc. Wksp., Les Houches, France, June 1987.

M.-J. Goupil, J.-P. Zahn, eds. Springer-Verlag, New York, 1990. 182 pp. \$33.00 hc ISBN 0-387-53059-2

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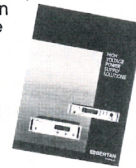
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