

**SCIENCE & TECHNOLOGY**

**Finding Fun in Physics**

**By Simson L. Garfinkel**

**L**AURENCE KRAUSS'S charming new book, "Fear of Physics: A Guide for the Perplexed," may be for the physics-shy, but it is certainly not for the physics-illiterate. The technical jargon comes so fast in this little volume that a reader who has not prepared for class will feel lost minutes after starting each of the six, lesson-sized chapters.

While many other books, from Fritjof Capra's classic, "The Tao of Physics," to Stephen Hawking's "A Brief History of Time," attempt a layman's explanation of how modern physics works, "Fear of Physics" is perhaps the first major work to successfully convey how physicists think. It's fun to follow along.

Physicists aren't lazy people, explains Professor Krauss, but they know a good thing when they see it. For the past 300 years, much of physics has been discovered by people who developed rules that explained how one group of objects behaved, and then saw how those rules could be applied to new circumstances.

The stuff that works can be used again and again, or "creatively plagiarized," as Krauss calls it, for everything from atoms to billiard balls to the movement of the planets. "Most of modern physics comes down to showing that new problems can be reduced, by some technique or other, to problems that have been solved before," he writes.

Many people think about these

rules – principles like Newton's Laws of Motion, Einstein's Law of Relativity, Maxwell's Equations of Electrodynamics – as if they were set in stone. Krauss shows how these laws can be derived from common-sense thinking about the nature of the universe. And he does it without resorting to a single line of mathematics.

The lack of math will raise the hackles of a few scientists, be-

was going on in the front of the classroom.

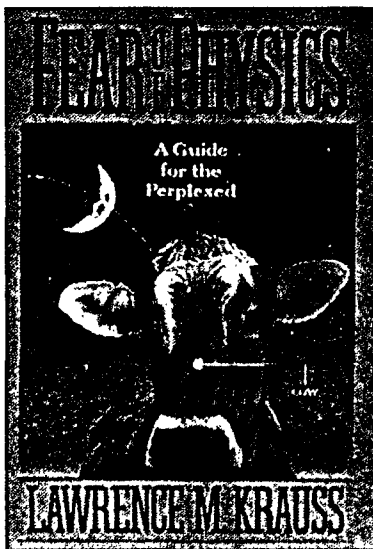
One of this book's real contributions is its explanation of scientific progress and revolution. It's not that the physics establishment doesn't like new ideas, Krauss argues: It's always after new ideas, as long as they work. Most progress in physics comes from experiments and new theoretical twists that force old theories to be extended in order to remain logically self-consistent. And Krauss goes to great lengths to show that Einstein's Relativity did not disprove Newton's Laws of Motion, but in fact is the only way of explaining both Newton's laws and the behavior of light.

Beyond the name-brand theories, this book packs a surprising amount of detail, including a wonderful explanation of why physicists want Americans to pay for their \$8 billion experiment in Texas, the Superconducting Super Collider.

Nevertheless, "Fear of Physics" is not without its faults. Its six chapters jump around so much that one gets the impression that Krauss is more interested in telling a good story than in teaching his subject. He frequently races ahead of himself, using vocabulary that hasn't been introduced and concepts that haven't been explained.

"Fear of Physics" won't help anybody cramming for an exam, but it will help people to remember that physics is something that can be loved, even if it is not completely understood.

■ *Simson L. Garfinkel is a freelance writer who specializes in science and technology.*



**FEAR OF PHYSICS:  
A GUIDE FOR THE PERPLEXED**  
*By Lawrence M. Krauss*  
BasicBooks, 206 pp., \$20

cause everything that Krauss states must be accepted on faith – unlike a first-year course in modern physics for majors, where much is rigorously derived. But Krauss's approach is fine for his intended audience: people who may have passed physics – or simply picked up terms by listening to their friends – but who really didn't have a clue about what

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**'Clean Up the World' Effort Takes Off**

**By Ron Scherer**

Staff writer of The Christian Science Monitor

UNITED NATIONS, N.Y.

In the United States, eight states have organized activities. In Huntington Beach, Calif., 3,000 people are expected to comb beaches and roads, picking up trash. "We've got banners all over the city and there will be sky writers urging people to volunteer," says Jessica FaBrizio of the EGBAR