

letters

had some unpleasant encounters with the Physics and Astronomy Classification Scheme, which is used in indexing some journals published by the American Institute of Physics. Although PHYSICS TODAY doesn't use a PACS index, I'm turning to you in search of a forum to discuss the matter because your magazine goes to all AIP members, and I understand that the PACS indexing reflects AIP policy.

I receive two AIP journals which use PACS indexes—*Applied Physics Letters* and *Physical Review Letters*—and find these indexes essentially worthless. With a PACS index, trying to find papers on a particular subject is a multiply iterative—and very frustrating—process. First, I have to go through the whole list of categories to try to deduce the right one. Then if I find nothing in the index under that category, I have to go back to the list of categories and make another guess. The process continues until I find something or get totally disgusted.

The alphabetical subject listings used to index PHYSICS TODAY and the journals published by other organizations are much easier to use. A good alphabetical listing will include either entries or a cross-reference under major terms describing a particular subject. Even in a poor alphabetical listing that lacks cross-references, it at worst takes a few guesses to pick the term used in indexing. For example, a paper on fiber-optic sensors could end up under optical sensors, optical transducers, fiber optics, sensors or transducers, but there are only a small number of categories to check.

Perhaps PACS makes sense to people who use it daily, but I suspect that's a small minority of the people who would like to be able to use the indexes of AIP journals. To the rest of us, it's just a frustrating and unnecessary guessing game that impedes, rather than facilitates, the flow of information.

I'll concede that the PACS may be useful in computer indexing, but even then it should be used only as an internal code. The computer could readily be programmed to generate an alphabetized listing of index categories rather than one organized by PACS numbers. The result would be an index easy to compile and readily usable by the human readers of AIP journals. As is, I feel as frustrated as I would if confronted by a library organized by the Dewey decimal system but lacking an alphabetized card file.

JEFF HECHT

3/82 *Auburndale, Massachusetts*
REPLY FROM AIP: I suspect one reason Jeff Hecht finds the PHYSICS TODAY subject index easier to use than those in *Applied Physics Letters* and *Physical*

Review Letters is that it is much smaller, with only a fraction of the total number of entries found in the journal indexes. Also, the PHYSICS TODAY subject-index headings are chosen anew each year to suit the articles and news items indexed that year, much as the subject index of a book is made up to suit the entries that appear in it. The Physics and Astronomy Classification Scheme, on the other hand, is designed to suit all AIP journals and most of the member-society publications, and must remain reasonably static from year to year with periodic updates every few years. Thus a search covering several years' worth of indexes, or several journals, can be made on the same set of terms. In addition, consistent indexing brings like articles together in the five- and ten-year cumulative indexes produced for most of the journals but not for PHYSICS TODAY.

If Hecht finds alphabetic listings especially to his taste he should look in the back of the AIP publication *Physics and Astronomy Classification Scheme*, where he will find all the PACS terms laid out in alphabetic order. We will be happy to send him (or anyone else) a copy for \$15.00 prepaid; ask for AIP Publication R 261.2.

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3/82

Physics for architects

Recently, Albert Bartlett commented on the failure of the physics community to reach out more effectively to students of architecture (October, page 9). We heartily agree; physics clearly has a message for the budding artists who would turn their designs into buildings. Since Cal Poly University has the na-

tion's largest school of architecture (1500 students), and since California is located in the heart of "earthquake country," we have been teaching resonance (the damped, driven, coupled oscillator) to our students for the past decade. In fact, the accompanying photo shows some of our students shaking some building models with our "earthquake spectrometer" that has been modeled after Mössbauer spectrometers. The amplitude and phase of the structure are monitored by comparing the driving and pick-up signals with a Lissajous figure on an oscilloscope. The students also perform various practical experiments on electricity and solar energy; they also make visits to neighboring homes as "house doctors" to determine infiltration leaks with a blower door, to determine heat losses through walls and windows with heat-flow meters, and to determine energy usage by appliances with kWh meters. Since the heating and cooling of buildings consumes about 25% of the nation's annual energy budget, the physics community has an opportunity to reduce the waste of energy in buildings. The text used in this required course, *Physics for Modern Architecture*, builds on the required two quarters of Halliday and Resnick. We found that the third quarter of the normal engineering-physics sequence that dealt with esoteric E&M (Gauss's law, Ampere's law, and so on) was of little relevance to the architects, and now they (and we) are much happier talking about the classical physics topics of resonance and energy loss.

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11/81

"Scientific" creationism

I am glad that PHYSICS TODAY has finally recognized the existence of creationist scientists ("Mainstream scientists respond to Creationists", February, page 53). But I am sorry that the Council of the American Physical Society has chosen to side with the evolutionists. In their statement, the men of the council assume that the theory of evolution is more scientific than creationism. Readers of PHYSICS TODAY should know better—at least because of one article which appeared a decade ago in this magazine, entitled "Thermodynamics of Evolution."¹ The article made the following intriguing statement:

The probability that at ordinary temperatures a macroscopic number of molecules is assembled to give rise to the highly ordered



Architectural models are shaken by Cal Poly students Elizabeth Fisher and Douglas Maze with the "earthquake spectrometer," which uses Lissajous figures to monitor the amplitude and phase of the resonances of the structure. (Photo by Brad Hartwell.)