as these. And our higher-education and industrial colleagues need the large doses of reality that our daily classroom experiences bring to the realm of physics education.

BEVERLY C. STONESTREET
Maryland State Teachers Association
12/85 *Baltimore, Maryland*

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A high-school science teacher visited my house recently. He was amazed that the copper coils around my wood-fired space heater would send hot water upstairs to a tank without a pump. After seeing the setup, he mumbled about density differences for quite a while.

This reminded me of the article "The physics classroom revisited: Have we learned our lesson?" I read this article through and saw, to my dismay, no serious discussion of making physics interesting and understandable to children. I would think that enough people have seen that young students dislike physics to figure out why and to find a way to present the subject without getting this reaction. But apparently solutions in this direction have not yet been seriously attempted.

Then I remembered my visits with Sears and Zemansky, and the backward (standard historical) way in which the book presented the subject, and how calculus starts with limits, which are promptly forgotten. All this leads me to plead, for the sake of educating the young in science, that textbook writers stop the pomp and circumstance and prepare to teach physics that children want to learn. Once you have the attention of the few capable ones, you can present more esoteric material.

An example: A student wanted to do better video editing (VHS, without a frame editor). I wanted to teach him about raster scans, chroma signals and color vectors. The more I covered this basic material, the less he wanted to be there. When I covered editing topics, such as allowing an appropriate lead out of scene 1 to allow overlap of scene 2 for matching synch, he grew increasingly interested. That was what he wanted. When he needs to solve problems with split screen and gen-lock, he will be ready to learn about rasters.

When I teach electricity, I don't mention Ampère's law or static electricity at first. That is not what is wanted or needed. It is yawn material. What is needed is: There are x number of electrons in a coulomb (and that is not too important), an amp is 1 coulomb of electrons through a surface per second and a volt is the force needed to push those electrons through a restriction called an ohm.

So what type of physics do children want to learn? Why are there colors in an oil slick or a soap bubble? A simple explanation, please. White light, and almost all light seen, is made up of many colors added together. A picture of two prisms would help here: white to colors to white. Turn off the technical stuff—such as what makes each color—when the eyelids droop. Ask the students what kind of physics things they would like to figure out.

What about other things close to life? A biceps puts forces on a forearm to make it work like a lever. The muscle has to lift much more than just the arm. Look for other lever examples, such as window cranks and doorknobs. Look at a ball on a string; compare it to the Earth going around the Sun and the "invisible string." Where are the strings holding us on Earth?

Haven't scientists and text writers even tried to understand what turns kids off about physics? It is the irrelevant stuff that makes no sense and is too hard, with all its new kinds of stuff to think about.

PETER GRANT
1/86 *Bristol, Vermont*

Sabine and acoustics

I am as much of an admirer of Wallace Clement Sabine and his contribution to architectural acoustics as Leo L. Beranek is, but I find it difficult to agree with his opening remark that "Wallace Clement Sabine was the world's first and most celebrated acoustical scientist," which appeared in his article on Sabine (February 1985, page 44). The honor of being the world's first and most celebrated acoustical scientist goes, in my view, to Lord Rayleigh, who had already published his *Theory of Sound*, Volume I in 1877 and Volume II in 1896, and had thereby laid the foundations for the science of acoustics.

B. S. RAMAKRISHNA
University of Hyderabad
10/85 *Hyderabad, India*

BERANEK REPLIES: I wish to thank B. S. Ramakrishna for properly giving Lord Rayleigh credit as the person most deserving the title of "most celebrated acoustical scientist," using the broad meaning of the word "acoustical," that is, "of or relating to sound or sound waves." In the context of my article, "acoustical" meant "the aggregate of qualities of an enclosure (as an auditorium) that affects production, control, transmission, reception and perception of sound" (*Webster's Third New International Dictionary, Unabridged*). Lord Rayleigh seldom used the word "acoustic," preferring "sound."

LEO L. BERANEK
7/86 *Cambridge, Massachusetts*