As educators, we are continually designing new methods and procedures to enhance learning. During this process, good ideas are frequently generated and tested, but the extent of such activities may not be adequate for a full manuscript. Nonetheless, the ideas may be quite beneficial in improving the teaching and learning of physiology. **Illuminations** is a column designed to facilitate the sharing of these ideas (illuminations). The format of the submissions is quite simple: a succinct description of about one or two double-spaced pages (less title and authorship) of something you have used for the classroom, teaching, laboratory, conference room, etc. You may include one or two simple figures or references. Submit ideas for inclusion in **Illuminations** directly to the Associate Editor in charge, Stephen DiCarlo (sdicarlo@med.wayne.edu).

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**Translating Old Units of Measurements**

In my experimental physiology laboratory class, in which students use invertebrate model systems to study physiological phenomena, they must read older (preelectronic) literature, where they often encounter methods that are no longer used in the modern biological laboratory. For example, when they look at the results of a 1937 paper describing autorhythmic gastrointestinal tract smooth muscle in the polychaete worm *Arenicola marina* (2), they ask why the force transducer tracings are white lines on a black background. The answer is that the tracings were made with a smoked drum kymograph, an instrument that many physiologists today have never even seen, much less used (3).

Another problem arises when students are trying to duplicate solutions described in older papers. I have been able to help them when solutions are described in mg% (mg/100 ml of solution), but I was not confident that I knew what M/100,000 or M/40,000 meant. My students found this notation in the classic paper by Forster and Taggart on renal tubule transport (1). After failing to find any of my more senior colleagues at University of Texas who could translate the notation, I asked for help through the American Physiological Society Teaching Section listserv. The answer to my question came from William H. Waugh, emeritus professor of physiology at East Carolina University. I am submitting his answer, relayed to me through Robert Carroll, here so that we can have a written record of it.

The slash in M/100,000 represents division, so M/100,000 means 1/100,000 or 1 × 10^{-5} M. The more puzzling notation M/40,000 means 1/40,000 M or 2.5 × 10^{-5} M. Dr. Waugh explained that the calculations in 1950 were done by slide rule and therefore it was easier to work with the real denominator than to work in scientific notation.

Now if I only did not have to explain to my students what a slide rule is and how one would use it...
Questionnaires were given to both presenters (n = 30) and the rest of the students (n = 300), and their responses are shown in Tables 1 and 2. Student feedback indicates that this activity is very effective, not only in breaking the monotony of lecture but also in generating interest in the topic as well as involving students in the discussion. Many students found it as a useful method of review because they were made to recall previously discussed topics during the activity.

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Starting Physiology: Understanding Homeostasis

The life of a cell is heavily dependent on the composition and stability of the physical chemical characteristics of the surrounding external environment. Thermodynamically, the cell is an open system making a universe with the surrounding, which provides the substrates that the cell needs for living and receives the waste substances disposed of by the cell. Changes in the physical chemical conditions beyond a narrow range leads to the cell’s death. In multicellular organisms, as in the human being, the medium surrounding the cell (represented by the extracellular fluid and known as the internal environment) is continuously monitored by a variety of control systems in the body. Several variables of the internal environment, such as Na⁺, K⁺, Ca²⁺, Cl⁻, HCO₃⁻, and glucose concentrations, temperature, pH, O₂ and CO₂ partial pressures, osmolarity, and many others, are tightly controlled within a nonlethal range. If the conditions of the internal environment are favorable, each cell keeps itself alive and hence gives its functional contribution to the tissue of which it is a part. In a similar way, tissues contribute to organs, which, in turn, are part of systems. Ultimately, a homeostatic cycle (Fig. 1) can be constructed in which the systems of the body work interdependently to give their functional contributions to the adequate maintenance of the internal environment.