

their talents to make a useful contribution to society.

The point is that we should teach both the principles of physics and their application in a way that constantly emphasizes that physics is a practical science and that undergraduate education in physics develops student talent into specific capabilities. For example, to teach modern ideas in atomic and optical physics, students could work with a laser cavity and related optical diagnostics. They could learn to construct, to design, to operate and to analyze the laser. In addition, they would learn atomic physics through the study of the characteristics of the atoms that produce the gain for the optical cavity. Make no mistake, the principles of the nature of light and quantum theory can be studied here, but at the completion of this course the student can now look back and identify his achievements. He has now developed some of his talents and interest into some specific capability. He has learned both the principles of physics and their application. There is no reason to separate one from the other.

Another example might be microwave communication systems for electricity and magnetism. Students would study the design, the operation, and the characteristics of modern microwave-communication systems. Similar ideas would apply to most topics in physics. With a curriculum designed in this way the student majoring in physics will, at each step in his education, be able to look back and recognize his new achievements and capabilities and look forward and identify his goals and potential contribution to society. He will sense that his education is planned to make him a useful and capable individual. He will feel that physics is a practical and useful science and that he has developed specific skills.

GREGORY J. SALAMO
University of Arkansas
Fayetteville, Arkansas

10/29/76

Copyright law complaint

Wholesale theft of copyrighted materials by copier-machine vendors and libraries was made legal by the recently enacted Senate Bill S-22, which was signed into law by the lame-duck president. Sections 101-107 of S-22 are fairly straightforward, and set forth rights of the creative person and his publisher to the fruits of their sacrifices and labors. But under Section 108 (Reproductions by Libraries and Archives), all of the previously enumerated benefits of the copyright law are taken from the author and his publisher, and bestowed upon the copier-machine vendors and their library clients. For under Section 108 any library employee or patron may reproduce the whole work of an author without paying the author or his publisher a dime. On a 400-page book, at

5¢ per page, the copier-machine vendor and the library split \$20.00 for each copy thus pirated. The more they pirate, the more they make. And since they do not have to pay for research, or for today's prohibitive publishing and marketing costs, they can sell the author's creations *below the author's cost*.

No wonder there are so few publishers remaining who are willing to invest in authors' manuscripts. Only giants, such as Random House (itself a network subsidiary) or others with pipelines to governmental coffers or the movie and TV industries, dare publish anything except porno trash and unscholarly junk, whose marketplace is the checkout stand of the supermarket.

I am sure the American Institute of Physics and its thousands of creative authors, who daily are robbed by copying machines, would not mind sharing their creations—so long as their copyrights were protected and they received a fair share of the revenues their creations had made possible. It was wrong of the 94th Congress to deprive them of such a fair share, while at the same time protecting every country singer recording on juke boxes. Yes, Section 115 of the same S-22 requires compulsory licensing and royalty payments, if you want to hear Johnny Cash in some beer joint.

Right now we need laws that encourage the small creative segment of our society to be creative. We need to encourage publishers of vision, both great and small, to publish manuscripts. And now that we have a new Congress and a new president, it is hoped they will immediately abolish many stifling laws of their predecessors, especially that despicable Section 108 of S-22, which converted our copyright laws into a Xerox privilege.

JACK C. VAUGHAN, SR
12/14/76
Arlington, Texas

Family-tree error

I would like to call your attention to an error in the November 1976 issue. In the article entitled "Role of Crystallography," the authors credit me with having built the high-voltage scanning transmission electron microscope at Arizona State University. However, the Arizona high voltage STEM was designed and built by my father, Alex Strojnik, who is currently at the Cavendish Laboratory, Cambridge, UK.

MARLIA STROJNIK
University of Arizona
11/22/76
Tucson, Arizona

Correction

November, page 92—The letter by William H. Jefferys should begin "In his February letter (page 12)" instead of "... In his March letter..." □

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