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speed, and direction. Speed and velocity are not the same. Speed does not indicate direction. If you are going to use the terms, I suggest you know their meanings." That pretty much ended the interrogation and the case was settled.

Maybe that lawyer got his science education from one of the poorer textbooks. Would that mean he could sue the teacher, school system, textbook publisher, or author? Let's hope that the statute of limitations has expired.

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In his article, John Hubisz commented on "error-filled physical science textbooks." In particular, he wrote: "Many of the errors involved sloppy use of language . . . as in 'an acceleration is a change in velocity. . . .' Note the use of 'change in velocity' instead of the correct 'change in velocity with respect to time.' That imprecision was a common error." Apparently, this error is found worldwide and in areas other than textbooks.

For example, there was a German court case reported last year in the influential German weekly magazine *Der Spiegel* (issue 16, p. 196, 2002). The article carried the title "Schraube im Nacken," that is, "A Screw in the Nape of the Neck." A whiplash victim had suffered such serious damage to his neck (cervical spine) that he required a few screws to immobilize it permanently. But in the trial, the court expert, a "human biologist and professional engineer (*Diplomingenieur*)," testified that the victim's head had sustained only a change in velocity from "12.4 to 15 kilometers per hour," which was, he said, insufficient to cause such a serious injury. The judge in the case evidently knew his physics better than the court expert. The victim, as I later learned, was awarded €35 000 (about \$40 000) for pain and suffering.

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I endorse John Hubisz's quest to improve textbooks for middle-school science courses and to stress the accuracy of the material. But perhaps emphasizing the good parts of the existing books would provide more immediate progress.

We scientists who have been working with publishers to write middle-school texts have managed to provide

a lot of accurate and interesting content for students; the presence of this better material should be emphasized. Criticism may be fun—and gets a lot of publicity—but is less effective than pointing out the best of the available materials. Alternative distribution systems will not soon match those of the existing publishers, so students and teachers should be encouraged to use and appreciate the good material that exists in the current textbook system.

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Hubisz replies: I am quite pleased with the response to my article on middle-school texts. The large number of letters both supports my message and makes it clear that many others are concerned about the problem and are attempting to do something about it.

Martha Schwartz asks if I have looked for signs of change in the textbook selection process. Admittedly, I am most concerned about the end product—the adopted texts. But because of the publicity that my work on the textbook problem has received through print, radio, and television, I have responded to hundreds of requests (from a governor, several state senators, and a host of science curriculum supervisors and teachers) for my suggestions on a procedure for selecting science textbooks. Their replies suggest that changes are being attempted. After a radio interview in California, I received a blizzard of horror stories about the selection process. Schwartz's description of the process is similar to my proposal, except that many excellent texts never get to the first stage. My article at http://www.johnlocke.org/policy_reports/2003012933.html describes why many publishers do not even bother to submit their texts. Richard Feynman once served in California on a textbook selection committee that graded a blank mathematics book higher than the two other books in the series.¹ That incident suggests that time and manpower can overwhelm even the most conscientious and expert reviewers. Schwartz's reference 2 contains a discussion of how that can happen.

Kimball Milton is correct to point out that we have to be precise, but we are not likely to change the historically sanctioned language. I have suggested that texts clarify the vocabulary and now suggest that when

referring to such words used inappropriately, we include them in quotes as our grammar dictates.

Richard Factor's letter reminded me of the first time I heard "antipode" spoken aloud. I was glad that I had never needed to use it in conversation. Pronunciation guides for specialized vocabulary are generally a good idea, but box 1 of my article referred to standard English/American words. But, then, how do you pronounce "laboratory" and "apparatus"?

I thank Norman R. Dotti and Borut Gogala for two practical examples of the importance of precision to

add to my collection. I have just finished reading an informative forensic science book (they are great for demonstrating the scientific approach to solving problems). The book informed me that "7,000 volts of electricity jumped into the body of Theodore 'Ted' Bundy," that one could "send 50,000 volts of electricity for 8 seconds into the wearer [of a shock belt used to control difficult prisoners]," and that "the current generated . . . could be detected and measured in millivolts." Middle-school texts frequently confuse current and voltage.

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