

Editor's Note: The following comments are being shared with our readers because the editor felt that they represent legitimate differences of opinion and offer the opportunity to our readers to witness professional disagreements about subtleties. While the two reviewers strongly appreciate the author's perspective and desire it to be shared with the readers of Bioscene, they also felt that the readers should be aware of other interpretations as well.

Anonymous Reviewers' Comments on Reassessing Van Helmont, Reassessing History

by Douglas Allchin

In addition to the author's list about the uses of history of science in science education (page 3), history also serves as an occasion to organize the serial development of concepts, and, as a comparative tool useful for forcing students (and teachers) to think critically about their own ideas and methods. Perhaps one might think of "homologies," analogies," and differences between past and present science.

While the author correctly infers that Hershey "does not fully respect the context of Helmont's work" (page 4), a very real problem with how history is used by Hershey (1991) is not so much abuse of history as very incomplete use of history. Shouldn't we be able to do both:

- 1) present science in its historical context, and
- 2) use this history to challenge students to think about how early science is similar to and different from modern science?

The author states: "Again, one may ask whether one ought to assess the original experiment by importing standards of experimental design developed only later. More significantly, Hershey neglects the role of demonstration as an effective form of experiment, ..." (page 4).

Reviewer: A very good point, but can't we use the case to stimulate class discussion about how modern scientists--or the students themselves-- might design experiments?

This is a very well-written critique of how historical cases studies have been used by science teachers. But, given his criticism, shouldn't the author provide us with a discussion about how to actually use his richer historical perspective in a real classroom situation? What lessons about the nature of science will the students take away from the experience? It seems that a few concrete suggestions would be helpful. In addition, the article might better serve the readers if references to professional history of biology literature were given on van Helmont (especially "the belief that the tree was earth mixed with some fire"), on Darwin's mistaken beliefs on the "parallel roads of Glen Roy," probably other references to histories of botany, and uses of history, philosophy, and social studies of biology in biology education (BSCS and SSEC, 1992).

References:

Hershey, David R. 1991. Digging deeper into Helmont's famous willow tree experiment. *American Biology Teacher* 53(8) (Nov./Dec., 1991): 458-60.

BSCS (Biological Sciences Curriculum Study) and SSEC (Social Science Education Consortium). 1992. *Teaching About the History and Nature of Science and Technology: A Curriculum Framework*. Colorado Springs, Colorado: BSCS.