

Letters to the Editor

• Brief letters—one or two pages—are more likely to be printed than are long ones, which may be cut.

Mendel First—Then Meiosis

I take issue with Thomas Mertens' argument (*ABT* 33[7]: 430) that the teaching of meiosis should precede analysis of Mendel's garden-pea data. His sequence might lead to a faster understanding of Mendelism at the expense of a good deal of mental exercise and fun. Students can readily follow Mendel's techniques, and the experimental results present them with very intriguing problems. Mendel's analysis and conclusions are wonderful examples of scientific explanations.

Mendel presented his paper in the 1860s and died in 1884 unrecognized and perhaps unhappy for a variety of reasons both scientific (his "hawkweed" experiment results) and political (church-state clashes in Austria).

After discussion of Mendel's work and the solving of numerous Mendelian problems, Sutton's work should be introduced. Not before. The instructor should make no attempt to relate Mendel's "law" and Sutton's observation of chromosomes during meiosis until the process is completely described. The students, if they haven't already noticed, should be prompted with questions concerning the significance of the observations. Even if a few students see the probable confirmation of Mendel's hypothesis the instructor should then use a previously-worked-out dihybrid cross and superimpose the hypothetical genes (letter symbols) on the chromosomes of his meiosis illustration (overhead projector or blackboard) and have the students carefully follow the genes from mother-cell chromosomes to those in the probable gametes. Can you appreciate the excitement the student experiences as he realizes the beauty of Mendel's prechromosome analysis?

We teachers could explain many processes and principles more quickly and efficiently if we just told the students directly. The joy, for me at least, and I suspect for many students, is to read the pioneers chronologically and struggle along with them in their investigations. We should not tell the students the answer to a puzzle and then explain how it was solved while they go to sleep. Let us try to recreate the excitement of the original investigations and discoveries.

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Thomas R. Mertens comments:

I do not believe that Messenger and I are as far apart in our ideas about teaching meiosis and Men-

delism as he seems to imply. I would agree with him that to present Sutton's work *prior* to a discussion of Mendelism would be a pedagogic error. I did not say, nor did I mean to imply, that I would do so. Rather, I would try to make the entire presentation as inquiry-oriented or investigative as possible. I would agree that to do otherwise might be counted as a gain in "efficiency" at the loss of joy and real understanding in the learning process.

I agree, furthermore, with the authors of the BSCS Blue Version (1968: *Biological Science: Molecules to Man*, rev. ed., Houghton Mifflin Co., Boston), who have placed the discussion of the meiotic behavior of chromosomes *before* Mendelism. After the basic facts of Mendelian genetics have been presented, they then draw attention to Sutton's theory that the hereditary factors or genes must be located in the chromosomes and that the genes behave the way they do because of the behavior of the chromosomes in meiosis. Better yet, I think that if the students understand chromosome behavior in meiosis, they themselves will be led to derive Sutton's theory after they have been taught the basic facts of Mendelian genetics.

Messenger, the BSCS authors, and I are all striving for the same goal: the understanding of a biologic principle by our students.

Lacewing Experiment Is a Success

The article on lacewings (*ABT* 33 [7]: 421-423) was excellent. We have some students who have had a very rewarding experience with rearing these insects.

Keep up the good work.

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THE NEED FOR HOSTELS

Trails groups that are proposing urban bikeways, which lead cyclists out of the city for interesting riding experiences, should consider the opportunity to incorporate youth hostels in their plans. An ideal cycling experience would be a Saturday of cycling, an overnight stay at a rural hostel, and pedaling back to the city on Sunday. The total adventure should not cost a family much money. But thousands more hostels are needed to accommodate the growing numbers of family cyclists—especially in good cycling country and adjacent to national parks and resorts. American Youth Hostels, 20 W. 17th St., New York City, provides approved plans and other aids to getting hostels started.

*Bikeways, Bicycle
Institute of America*