Letters to the Editor

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

USGS WORK CREDITED

May I take this opportunity to apologize to Bruce Lium and the staff of the U.S. Geological Survey for having been remiss in citing their work in my article "The Biotic Index as a Measure of Organic Pollution in Streams" (*ABT* 34 [2]: 79-83). Stream stations referred to in fig. 1 were established by Lium in a pioneering study in Chester County, Pennsylvania. These stations were used with his permission.

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SUPPORT FOR "RELEVANCE" VIEW

• The following comment was received by Maurice Bleifeld in response to his letter "The Fourth R: Relevance" (*ABT* 34 [1]: 33).

How wonderful to see your letter in *American Biology Teacher*. BSCS was, I think, the best and worst thing that could happen in the field of biology. There was no doubt biology needed upgrading, but why do we always go to extremes? Chem Study led to the same extreme.

Maybe a few more teachers and administrators will see the light and we can develop relevant courses to which you refer—that is, until the pedulum swings back again.

In the meantime I am trying to keep my courses modern and relevant; but it's awfully hard to swim against the tide.

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DEPT. OF FRUSTRATION

The following was written by one of my sophomore biology students, obviously frustrated in performing research on her family's genetics. I would like to share it with you and your readers.

"Dear Mr. Postiglione:

"I realize this lab is late, but a few of my relatives were away and I just recently finished compiling the results. I was interested in the results of this lab, and I would rather have waited than to make up part of it. I even dittoed up questionnaires with PTC paper attached to them, and mailed them off to all of my living relatives along with self-addressed, stamped envelopes. This, I thought, would ensure a quick return of questionnaires.

"Just to give you an example of the kind of a family I have: when I asked the question 'Are your earlobes attached to the side of your head?' I got one reply of 'No, they're attached to my elbow.' One of my aunts (elderly) had replied that the PTC paper tasted like balloon rubber. When I saw the PTC paper still in the plastic bag, attached to the questionnaire, I realized she had tried tasting the plastic bag!"

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"BETTER WAY" THAN A.P.

In his letter "Opinion on Advanced Placement" (*ABT* 34[1]: 33) Harold Kiehm questioned the restraints of the standard advanced-placement course. In reply to his query, "Isn't there a better way?" I should like to describe an advanced-biology course that I taught at the Dalton School, New York City.

The students who took this course had studied both BSCS and Chem Study previously. I assumed that the most valuable learning would occur if I taught topics that interested me and if the students pursued self-chosen inquiries. I selected several concepts in molecular biology and presented them through assigned readings and a weekly discussion period. The students, however, lacked the organizational skills needed to carry out long-term studies. In an attempt to correct this I prepared and distributed a booklet of 20 experiments with bacteria, molds, and phages, and I directed the students to work on them in any order. No one was expected to do all 20; careful, efficient work was stressed. Class attendance was voluntary and the lab was open for work all day. Students were responsible for the preparation of their own media, cultures, and equipment. Detailed accounts of the experiments, some of which were of several weeks' duration, were kept in a notebook.

A few frustrating experiences, like being unable to do an experiment because the autoclaving of materials the day before had been neglected or having to repeat an experiment because crucial data had not been recorded in the confusion of doing three experiments simultaneously, soon taught the lessons of careful planning and recording. Motivation was seldom a problem; it was typical for students to work on experiments during class time *and* free periods. By the ninth week each student had completed about 12 experiments and could carry out, independently and efficiently, long-term experiments using sterile techniques.

Each student then formulated a research problem based on the reading and submitted a proposal for a six-week project. Procedures were proposed for comparing the effects of two chemical mutagens, studying recombination in *Neurospora*, inducing abnormal

growth in tadpoles, and inhibiting RNA synthesis in planaria, to name a few. At the end of the semester formally written research papers were presented to the class. The processes of formulating, planning, carrying out, and reporting on an original experiment were exciting experiences for everyone, regardless of the outcome of any of the experiments. Some of the students even made recommendations for future research. This is what I had hoped my course would produce: independent, productive thinkers, not founts of biologic knowledge.

These students are in college now. They have all continued to study biology, although many of them will major in psychology or art or English. None of them took the AP exam; nevertheless, a description of the content and format of this course was sufficient for most of them to be placed in advanced courses.

This is the "better way" that I have found. The enthusiasm and learning generated by such a course more than repay the efforts of the teacher who develops and teaches it.

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WHY HE LEFT BIOLOGY-TEACHING

I enjoyed reading your editorial, "Bridging the Gap" (*ABT* 34 [3]: 114). I would like to point out that not only are our nation's secondary and undergraduate students leaving the sciences for the humanities and social sciences, but so are their teachers.

It was because of many of the reasons stated in your editorial that, after five years of teaching high school biology and general science, I decided to leave the profession. How could I teach DNA replication or the anatomy of the earthworm when all around me I saw my students being killed by drugs and poverty? Teaching in New York City demonstrated to me that all the money spent by the federal government to develop BSCS biology and all the other alphabet curricula and the money spent on equipment necessary to implement these curricula could have been better used in the war on poverty.

After leaving the biology-teaching profession I pursued a doctorate in early-childhood education. My feeling was, and still is, that by the end of the third grade the schools have failed to provide an environment that will support the needs of the children in a rapidly changing society. Working with the preschool child and training Head Start teachers has provided for me a means of beginning to "bridge the gap" between school and society.

At the University of Massachusetts School of Education many former secondary-science teachers have few positive statements to offer regarding the way science is taught within the changing social scene. These "school drop-outs" represent some of the most innovative and talented teachers in the field of education. So many tried to bring about changes, only to be frustrated at every turn. Education is a big business, and science is a big money-spender. Just take a look around at NSTA or NABT conventions. Whose needs are we as science educators serving: the children or the textbook and equipment houses?

I hate to be sarcastic, but your editorials, when considered along with the advertisements and some of the articles, really strike a funny note in me. In the same issue we find articles concerned with how to make a machine-scored test and how to analyse the chromosomes of a frog. I would not even want to cite an example of the advertisements.

I think I have made my point clear. All I can say is "right on!" Keep up the good work—but don't feel bad about leaving the ship sometime: it may be sinking. Anyway, join some good people in the water. We can change science through the back door.

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Who Needs Alaskan Oil?

Development of Alaska' North Slope oil resources has been labeled crucial to America's energy needs, by both the U.S. government and the seven oil companies concerned. If so, how could any of it be exported? But Japan expects to buy Alaskan oil. In a recent, little-noticed remark Japanese prime minister Eisaku Sato said: "We will, of course be purchasing [North Slope] oil in the event that the pipelines are completely laid."

Conservation News

Getting the Phosphate Out

New York state is cracking down on stores that have not taken high-phosphate detergents off their shelves. The state law, aimed at reducing the phosphates in detergents in steps, allows no more than 8.7% by weight of phosphates expressed as phosphorus. Some stores already have been issued summonses and are liable to fines up to $2,500 for each violation and an additional $500 for each day. The illegal detergents found on the shelves included Spotless, 18.0% phosphorus; All, 12.9%; Dash, 14.0%; Tide, 12.3%; and Oxydol, 11.7%.

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