

The Devil's Advocate

- The right to dissent, to question and challenge the norm of popular ideas, is basic to a free society and the democratic process. If our science classes are to be centers of inquiry thinking, where we encourage students to express themselves freely, then we teachers must continually provide the image and leadership these students will seek and respect. Speak out—become the devil's advocate! *The Editor*

The Chicken Biologist

Some biologists look with favor on smog, since it conceals our cities and improves the appearance of the architecture. That good old sulfur dioxide in the air reminds them of the primordial atmosphere in the earth's dim past. Smog also hides spewing smelters, car-clogged freeways, ghettos, and pulp mills discharging effluents into the water.

One biologist has noted that we don't even need to mow the weeds along the highways anymore. Beer cans and disposable bottles are providing a thick, glossy carpet beside the right-of-way, with only an occasional mycophyte showing through.

Of course, there are even those biologists who like water covered with multicolored industrial slime, since it reminds them of cryptogams growing on bare stone. Besides, this eliminates their having to take their classes outside to study aquatic ecosystems.

The encroachment of concrete on all sides of suburban schools is looked upon with relief and some satisfaction by the modern biology teacher, since it reinforces his belief that outdoor activities in biology are a waste of time anyway.

The recent attempts by some industries to flood, mine, or otherwise desecrate the national parks are condoned by the professors of biology. Since they get their grants from these same industries, do they not contribute to scientific research and the welfare of mankind? Read the ads in your favorite magazine if you question the motives of these "environmentally concerned" corporations.

Biology teachers are not disturbed by the technology-environmental movement. They can teach scientific inquiry as well over the noise of bulldozers busily filling in the local swamps as they can in their quiet classrooms with daylight blackboard slides.

"What is a bird habitat?" they ask, as the machine covers the cattails. "Describe how the use of pesticides in a marsh improves the health of local communities."

After the marsh is filled, the teacher and students can again visit the site and glow over the beautiful new filling station and discuss the biologic origin of oil.

The really far-out biologist, who likes to run the

risk of losing his next summer's employment in one of our "environmentally conscious" industries, may even dare to discuss in his laboratory biologic cycles and pollution (if he has time between lab 15-1 and lab 16-1). After all, it seems proper to discuss these things as long as you don't do anything about them.

Barry Commoner (1966) suggests that scientists are now bound by a new duty, which adds to their older responsibility for scholarship and teaching: the duty to inform. "We have no right to withhold information from our fellow citizens," he says. Biology teachers apparently feel they already inform. After all, what's teaching but a long round of "Now hear this!"?

Marston Bates (1970) likes what he calls "skin out" biology in high school teaching. Some of my biology-teaching friends feel they have time to do both a "skin in" and a "skin out" by avoiding controversial issues in the classroom and by ignoring irrelevant questions on such topics as Ralph Nader's *Chemical Feast* (1970) and Paul Ehrlich's *Population Bomb* (1968).

René Dubos (1970) claims that our failure to prevent environmental degradation cannot be accounted for by lack of awareness. "We would like to improve our polluted and cluttered environment," he says, "but we like economic prosperity more."

A lot of biology teachers teach this cult of technology-worship and suggest to their classes that cleaning up the environment is obviously too costly and too difficult. "Be reasonable," they say. "Look at what happened to Rachel Carson when she tried to tilt at windmills."

Philip Abelson, editor of *Science*, has really spotlighted one part of the issue "bugging" the public. "Environmental reforms in this country are being sabotaged by the poisonous cumulative effect of the advertising industry," he said (Abelson, 1970). Stewart Udall (1970) paraphrases the biologically related consumer myths fostered by the idiot box: "Cigarettes are good for you, the electric life is the only life worth living, throw away containers are what you want, the more gadgets and kids you have, the merrier." But the busy biology teacher is far, far too busy to tackle any of these falsehoods.

Well, we can all "cool it," play "chicken," and all die together.

If A. Starker Leopold (1969) believes, "We seem to be trading cultural and environmental values for baubles and trappings of a civilization that provides a poor habitat for its people"—

If Colin Bertram (1969) thinks 98% of all the big mammals will be gone in Africa in this century—

If LaMont Cole (1969) believes the public is ill informed owing to "detached and bemused scientists"—

If Barry Commoner (1966) is indeed correct in his prediction that we have only one generation to balance the unbalanced environment—

WHAT ARE ALL THE BIOLOGY TEACHERS DOING ABOUT IT?

At recent hearings in Seattle, Wash., on the proposal by the city's municipal power company to flood national park land in Washington's North Cascades, not one college biology professor and only one high school biology teacher spoke in defense of the national park.

In Washington state, where this fall we were desperately attempting to gather signatures on a shorelands protection initiative, biology teachers were reluctant even to discuss the issue, urge their students to participate, or participate themselves. Yet who could better understand the need for such legislation than biologists? Especially those who saw Santa Barbara! It must be comforting to make like an ostrich.

There are dozens of national, state, and local battles whose outcome is going to shape our biologic and physical surroundings. Hell's Canyon, Storm King, Alaska's north-slope oil, the cross-Florida canal, pesticides, and the fire ant are only a few of the better known.

The citizens are aroused. They are concerned about the quality of our environment. They realize that no one is going to pay for all the needed studies leading to legislation aimed at cleaning up the mess. This is the key role for biology teachers.

If biologic information is needed and we are not willing to aid in its procurement, then legislation will be attempted without this knowledge. Mostly this means industry will continue to do what it wishes wherever it desires, regardless of the ecologic effects. What little man knows about living systems is indeed a major factor in making good decisions about our environment. If biology teachers can't help, who will? Union Carbide, U.S. Steel, and Standard Oil of California?

If you have a local group of the "Nader's Raiders" kind or a local environmental action group—join it. Don't wait for the group to seek its biologic information from the local college. Chances are the professors are all tied up with research grants or consulting fees from the very polluting outfits the citizens are fighting.

You can be objective. The big requirements for such a task are scientific inquiry, persistent research, and guts—the latter being the most important.

I do not wish you to believe that the task will be easy. But since some of you cut your teeth on obdurate school boards, blew your minds on teenage dances, and still teach a six-period day, you are eminently qualified.

It is certainly a golden opportunity for the biology teachers of this nation to make a contribution now that might well be the most important gift to man in this century.

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GRASSLANDS, DESERTS STUDIED

Major ecologic investigations of the nation's deserts and grasslands will continue under \$3.15 million in grants from the National Science Foundation.

Part of the ecosystems analysis of the International Biological Program (IBP), the two studies form part of an overall approach to the study of environmental quality.

"Information growing out of these studies, along with that from related investigations of deciduous and coniferous forests, tundra regions of Arctic areas, and others, will provide greater understanding of how biological systems work and how they are affected by man," said W. D. McElroy, NSF director. "It is only through accumulation of this detailed basic knowledge, and its careful consideration in the future, that we can plan intelligently the best uses of our resources and solution of many environmental problems."

The grants were made to Utah State University, Logan (\$1,350,000), and to Colorado State University, Fort Collins (\$1,799,500).

The grant to Colorado State provides for the third year of a broad study of the nation's grasslands. Involving approximately 80 senior scientists from 24 colleges and universities and four federal agencies, the project is under the direction of George M. Van Dyne, of the institution's Natural Resource Ecology Laboratory.

The grant to Utah State provides for the second year of a major investigation of American deserts. Nearly 100 senior scientists from 19 institutions will be involved ultimately in the project under the overall direction of David W. Goodall, of Utah State University's Ecology Center.