# Letters

## Vietnam Refoliation

The continuing exchange of ideas on Vietnam defoliation (more than ten articles in *Science*) indicates that the defoliation program is having serious side effects in Vietnam. As tropical ecologists with herbicide experience, we recommend a ten-point research program which could begin now and could contribute to a successful ecological rehabilitation of Vietnam to correct some of the side effects of the war. The studies could be performed in tropical areas far from Vietnam.

1) Examine right-of-ways maintained with herbicides and test mangroves from other tropical areas for species tolerant of herbicides.

2) Examine the economic feasibility of harvesting, storing, and introducing seeds of *Nipa fruticans, Morinda* spp., and *Annona* spp., and other useful species with salt tolerance.

3) Examine the tolerance of tropical living-fence-post trees from various life zones for planting in defoliated areas.

4) Establish a breeding program to develop herbicide tolerance in annual grasses and legumes.

5) Examine the feasibility of decimating bamboo brakes following defoliation in monsoon forests by (i) planting stakes of rapid-growing fence-post trees which might physically or chemically retard the development of the bamboo, or both; (ii) inducing the bamboo to flower with auxins or other chemicals (Japan is lamenting the loss of bamboos due to flowering while Vietnam is lamenting the increase in bamboos following defoliation); and (iii) replacing with vigorous grass strains which might be controlled by edible bovines.

6) Study normal and abnormal succession following defoliation in other treated tropical areas (Florida, Hawaii, Malaya, Panama, Puerto Rico) to detect favorable and unfavorable trends in succession.

7) Devise a means for determining which logs contain shrapnel and devise a recycling process for logs damaged by shrapnel.

8) Determine the feasibility of introducing the South American toothcarp or its eggs into the millions of bomb craters in Vietnam as a method of converting mosquito larvae into edible fish.

9) Examine tropical insecticidal plants to determine which would survive in shell-holes and which might kill mosquito larvae, or deter oviposition.

10) Defoliate carefully selected test areas (like those recently defaunated experimentally) with doses comparable to those used on Vietnamese mangroves to determine (i) how long herbicides persist; (ii) where herbicides and their derivatives go; (iii) if man is liable to consume organisms which have concentrated herbicides or their by-products; (iv) how long it takes mangrove to reestablish itself naturally; (v) if man can speed up mangrove reestablishment; (vi) if man can substitute an economically more useful and ecologically equivalent community quicker than he can reestablish the natural community; and (vii) if biologists can leave Vietnam better off than they found it by means of environmental engineering.

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## Stanford: Moot Point

When Boffey asked President Pitzer "if it would be fair to say that most alumni knew Stanford as a regional school that catered to the not-so-bright sons of rich Californians who were out to get their 'gentlemen's C's' in contrast to the current student body which is selected nationally from a broad social spectrum on a highly competitive basis," the implications of his question were incorrect ("Stanford: Why Pitzer resigned as president," 7 Aug., p. 561). During my first decade of teaching at Stanford (1929–39), more than half of our engineering students were partly or entirely self-supporting. The tuition then was $300; now it is $2400, and students today who do not have large scholarships must come almost entirely from affluent families. During the '30's at least one-quarter of the student body came from outside California, representing all the states and many foreign countries—Stanford was hardly a "regional" institution. The "not-so-bright" label is equally inaccurate. In successive quarters I taught an identical course at Stanford and at a state university in which the Stanford students scored a median grade twice as high as that earned by the state university students. During the difficult financial years of the depression Stanford held the line by continuing to apply more severe scholastic standards of admission than were common at most competing institutions. If the phrase "not-so-bright" described the average Stanford student, then "even-less-bright" should have been applied to students at the other institutions. Pitzer's answer to Boffey's question showed that he also was uninformed about Stanford history.

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## Sorcerer's Apprentice Crisis

"Not only is there too much scientific work being published; there is much too much of it . . . the need to get recognition by publication forces each of us to shout a little longer and louder so as to be noticed at all in the gathering, swelling crowd of voices . . . [The result has been a proliferation of] semiliterate, semiscientific, half-baked and trivial material, which threatens to swamp the whole system" (*1*).

In these stark terms, John Ziman, professor of theoretical physics at Bristol University, focused on the *real* heart of the matter raised by Dale Z. Baker's article "Communication or chaos?" (21 Aug., p. 739). This is not to fault Baker, who gives an excellent review of the technological aspects of handling information during the past decade and suggests the needs of the future.

But, in my judgment, we are not faced with a machine problem, but a man problem—that is, a human problem. Whether we call the exponential rate of increase of information an explosion or merely a flood, the key word

in dealing with it is "control"; specifically, control at the source. The control principle is not new to us in its social applications. Strenuous efforts are being made, for example, to gain acceptance of birth control as the only rational way of keeping human numbers at a manageable level.

If we are to avoid the chaos in information transfer that Baker warns of, it will be by controlling information *before* its publication. This method—"worth control"—requires a human qualitative judgment of the value of the information. If this step were bypassed in favor of channeling the flood of information into better-designed computers for manipulation in a dozen different ways, the real problem would simply be deferred and eventually our entire system of information transfer would collapse. There is no easy answer. The only method is to apply those unique human skills—the ability to evaluate, to judge, and to select—to the problem of controlling publication and dissemination of information. Anything less will speed us toward the time when, like the Sorcerer's Apprentice, we will be swept away by the flood.

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**Reference**

1. J. Ziman, *New Sci.* **46**, 212 (1970).

## Blunt Words

Never in a scientific journal have I seen a more irresponsible statement than that by Southwick ("Campus unrest: Which tack for President's commission?" 11 Sept., p. 1061): "His [President Nixon's] decision to invade neutral Cambodia triggered campus violence across the country and led to the deaths of students at Kent and Jackson State."

It is extremely difficult to believe that an undergraduate, even at Harvard, could be so naive as to believe that any single act was responsible for the "explosion" that took place. The "explosive charges" had been planted and the fuses lit weeks, months, if not years, earlier. The Lovers-of-Peace were well organized with respect to bringing war to the campuses.

I wish Southwick could have seen the completely unprovoked assault here