

are. In fact, Dr. Hair's NWF is one of only two or three organizations (Mr. Rifkin's Foundation for Economic Trends being another) that have routinely and repeatedly opposed reasonable oversight of product testing and marketing and attempted to use government as a bludgeon on areas of research—such as herbicide-resistant plants—that they dislike.

"Controversy"—in the sense of doubts, debate, and questioning—as an end in itself has intrinsic appeal to scientists. We are brought up on it at seminars and journal clubs and in the pages of scholarly journals. It is the stuff of new theories' sometimes-difficult road to becoming scientific dogma. But all controversy is not created equal and it may be useful to examine the quality of the arguments that Dr. Hair's organization has brought to those controversies that he embraces. In 1990, Reid Adler, the Director of NIH's Office of Technology Transfer, invited several people, including Margaret Mellon, the director of NWF's biotechnology program, and me, to participate in a panel as part of his biotechnology course at NIH. During the panel discussion, Dr. George Shibley (USDA/APHIS) and I pressed Dr. Mellon for an explanation of NWF's vigorous opposition to the testing of recombinant rabies vaccine. Virtually alone among various interest groups in the public and private sectors, NWF had consistently opposed and attempted to delay U.S. trials of the vaccine—despite a demonstrated societal need, the absence of any effective alternative, and the fact that the same vaccine had been widely tested in Europe. She responded that her organization "opposes external interventions into natural processes." One wonders what her views might be on immunization to prevent the "natural processes" of polio and diphtheria in children, pneumococcal pneumonia in the elderly and pseudo-rabies in swine.

In the newsletter of the American Biotechnology Association, Dr. Mellon has written: "At some deep level, I am disturbed by genetic engineering. Basically I am conservative; I feel an affection for the natural world the way it is—the way four billion years of evolution have made it. I resist the notion of improving nature in the future just as I lament the loss of nature as it was in the past." This brief quotation speaks volumes about the quality of the "remarkable presence," to borrow Dr. Hair's phrase, that has been brought too often to discussions of the new biotechnology.

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To the editor:

Jay Hair (*Bio/Technology* 10:216, Feb. 1992), responding to Susanne Huttner (*Bio/Technology* 9:1400, Dec. '91), has listed a number of groups, in addition to Rifkin's organization, that are "currently working to evaluate and influence the development of this new technology" (i.e., that are working to oppose biotechnology). His point is that many of these groups operate outside of Washington, DC, and he does a service in bringing some of their activities to light. He also says that "the Pesticide Action Network, the National Toxics Campaign and the National Campaign Against the Misuse of Pesticides" have voiced "serious concerns about biotechnology." One would have thought that these three groups would welcome biotechnology as providing alternatives to chemical pesticides. Why not?

Watson and Tooze (*The DNA Story*, 1981) list Friends of the

Earth, Sierra Club, Natural Resources Defense Council, and Environmental Defense Fund (EDF) as being opposed to research on recombinant DNA. The Sierra Club board of directors passed a resolution calling for a halt to recombinant DNA work. That was eleven years ago.

Characteristically, environmentalist organizations do not change policies in the light of new information; their minds are made up. Susanne Huttner noted that "serious and widespread negative public perceptions" did not exist at the time of the Ice-minus experiments and that the U.S. public, judged by many surveys, continues to be "cautiously optimistic" about biotechnology and its prospects for improving health, agriculture—and the environment.

Hair also alleges that "bovine growth hormone... leave(s) many people skeptical about the benefits of agricultural biotechnology to any but those in the chemical industry" [again echoing Rifkin]. Hair is wrong; the use of bovine growth hormone increases the milk supply in a world that needs food, and does so without changing the components of milk (Jukes, 1989).

A common bond that unites opponents of biotechnology has been voiced by Rifkin; it is a dislike for technology *per se* as being a force that accelerates the increase in population.

On Feb. 24, 1992, the White House announced a "loosening" of federal regulatory control of biotechnology. Needless to say, one of the Washington-based organizations (EDF) saw "parallels" between biotechnology and "the powerful technologies which had repercussions on the environment." What are these "parallels," except that EDF opposes technology? (Jukes, T.H. 1989. *Feedstuffs*, October 2, pp. 19-20.)

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To the editor:

I am writing to comment on J.D. Hair's rebuttal (*Bio/Technology* 10:216, Feb. '92) to Susanne Huttner's article (*Bio/Technology* 9:1400, Dec. '91). As her predecessor as Director of the University of California Systemwide Biotechnology Research and Education Program, I wish to confirm and support the observations and views expressed by Dr. Huttner.

As Dr. Huttner correctly points out, the hostility to the use of the Ice-minus bacterium in California was initiated and escalated by professional agitators associated with Jeremy Rifkin's Foundation for Economic Trends. In his various writings, Rifkin has made it clear that he is opposed to every science and technology development that supports the current global population. He calls for a reduction in global population from current levels of about 5 billion down to 1 billion, a level that he has determined, apparently through a mystical revelation, to be the appropriate carrying capacity of the world. In his "Declaration of a Heretic," he calls for the recall of technology and declares that "Every act of non-cooperation with the existing world-view buys us more time." "Acts of non-cooperation" are accomplished by creating public hysteria, utilizing legal injunctions no matter how spurious, and encouraging acts of civil disobedience—all aimed at preventing technological progress.

Jay Hair and Margaret Mellon of the National Wildlife Federation (NWF) are apparently cooperating in this mindless Luddite activity. The NWF "primer" on Biotechnology (1988) outlined a set of recommendations that were designed to para-