

tual triumph, Newton was not satisfied. He had elsewhere insisted that the test of a theory was its conformity with precise observations. And so he "came up with all kinds of arguments . . . now known to be wrong." He "made little fixes"—e.g., hypothesizing that there was water vapor in the air that for some reason affected sound waves—"until he finally got his theory in agreement with the experiment." Newton was not behaving very differently from theorists today, Goodstein says. "In hindsight, Newton's fixes are funny and his motive revealing." But they do not add up to fraud.

Millikan was measuring the electric

charges of drops of oil. He wanted to prove the charges came in definite units; a rival scientist contended otherwise and criticized Millikan's results. Millikan went back to his lab to get better data and later published a paper in which he claimed to be providing the data from all the drops observed. In fact, Millikan's notebooks show that he had *not* published everything. Data on drops that didn't fit his theory had been left out. "Millikan did not simply throw away drops he didn't like," Goodstein notes. "That would have been fraud by any scientist's standard. To discard a drop, he had to find some mistake that would invalidate that datum." So he did. It

was not fraud, Goodstein says, just exercise of scientific judgment.

The fine line between "harmless fudging" and real fraud is an important one, Goodstein maintains. If the work, and everything that flowed from it, of Newton, Millikan, Ptolemy, Hipparchus of Rhodes, Galileo, John Dalton, and Gregor Mendel—all accused by Broad and Wade of involvement in cases of fraud—were expunged from the body of scientific knowledge, "there would not be much left."



Pitdown man provided science with a "missing link"—until 1954, when it was exposed as a fake. The ape jaw and human cranium were "discovered" in an English gravel pit some 40 years earlier.

## How to Limit Population Growth

The world's population is increasing by a quarter of a million people every day. Population-control advocates demand a global solution to what they see as a global crisis. But efforts to impose communal control on the fertility of parents keep running up against the European tradition of individual freedom and religious principles (Catholic and Hindu), not to mention the simple reluctance of many people the world over to limit family size to 2.3 children. No way out of this dilemma has been

found. But Garrett Hardin, author of the seminal 1968 essay, "The Tragedy of the Commons," says that even in the absence of a "total answer," progress can be made.

Hardin, a professor emeritus of human ecology at the University of California, Santa Barbara, recommends "the incremental approach, adopting partial measures that will slow the population growth, giving us more time to look for more general solutions." Fortunately, he says, the world is divided into nearly 200 nations:

"Conspicuous Benevolence and the Population Bomb" by Garrett Hardin, in *Chronicles* (Oct. 1991), The Rockford Inst., 934 N. Main St., Rockford, Ill. 61103.

They can all serve as laboratories in which different experiments are carried out. But, he adds, each nation must "experiment only with itself, so it can speedily observe whether an experiment is successful or not."

For rich nations such as the United States, Hardin contends, "the most feasible partial solution is an immediate restriction of immigration." Because immigration accounts for about half of the country's [one percent] annual population growth, he notes, "the potential for progress . . . is great."

Restricting immigration here, he argues, would also help other nations. "No nation that can foist off its extra people onto other nations," he says, "is likely to take its population problem seriously."

Controlling immigration means controlling borders, of course—and that, Hardin says, offends people who cherish the ideal of "One World, Without Borders." But while "religious prophets and secular scholars" have promoted universal loyalty, more practical individuals "have favored the limited loyalties of family, tribe, and nation." There is truth, he says, in the old adage, *Good*

### *Environmental Mystics*

Gonzaga University's John P. Sisk plumbs the depths of "deep ecology" in the *Georgia Review* (Summer 1991).

*Behind . . . "deep ecology," as it is now called, is the conviction . . . that "rights" must be extended beyond human beings. Once [they are], of course, people end up on a moral level with redwoods, earthworms, Cape fur seals, and the nearest alley cat . . . [For radical environmentalists,] a range of problems—nuclear pollution, acid rain, ozone depletion, the destruction of Amazonian rain forests and coral reefs—become darling issues in a new and intransigent morality, so that the green rage of Earth First! is a holy rage, and humanity, as Earth Firster Dave Foreman has put it, "is a cancer on nature." What's more, in the Earth First! perspective, humanity is no less cancerous when its efforts to repair or reclaim the environment are motivated primarily by the selfish anthropomorphic desire to make the environment more available for human sport and comfort . . .*

*Among environmentalists Earth Firsters are plainly a minority, but they are out on the cutting edge of the issue where the publicity is cheap and abundant, and where the opposition, no longer sure of its own rights, is easily shouted down . . .*

*[U]neasy and guilt-stricken in our abundance, [we are] easy prey to cynical denigrations of our nurtured well-being—and to apocalyptic predictions that we are about to lose everything or to become so overheated in a greenhouse universe that everything might as well be nothing.*

*fences make good neighbors.* Effective borders are needed to keep antagonistic ethnic groups apart. "A peaceful, borderless global village is an impossibility. But a *globe of villages* can, if we keep our fences in repair, endure and enrich our lives." And perhaps even help to control the globe's population growth.

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## ARTS & LETTERS

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### *Corrupting Rap*

"The Rap on Rap" by David Samuels, in *The New Republic* (Nov. 11, 1991), 1220 19th St. N.W., Washington, D.C. 20036.

Hailed by many critics as authentic street music and damned by others for the same reason, rap music has taken the country by storm. Last summer, *Niggaz4life*, a celebration of gang rape and other violence by the

group N.W.A., or Niggers With Attitude, was the best-selling record in America.

In the past, notes Samuels, a Mellon Fellow at Princeton, black music (such as jazz and R&B) has been modified to appeal to