

## Evolution's Day Off

"Does Evolutionary History Take Million-Year Breaks?" by Richard A. Kerr, in *Science* (Oct. 24, 1997), 1200 New York Ave. N.W., Washington, D.C. 20005.

Does evolution ever take a holiday? Strict Darwinists maintain that life is always in a state of change, with species continually coming and going. But some paleontologists, reports Kerr, a *Science* staff writer, are suggesting that hundreds of millions of years ago, entire communities of marine animals of various species remained virtually unchanged for millions of years, then plunged into brief frenzies of extinction and new species formation.

In putting forward this idea of "coordinated stasis," paleontologists Carlton Brett of the University of Rochester and Gordon Baird of the State University of New York, Fredonia, have built upon the concept of "punctuated equilibrium." This revolutionary concept was advanced in 1972 by Stephen Jay Gould of Harvard University and Niles Eldredge of the American Museum of Natural History, in New York, who argued that species tend to persist unchanged for millions of years before

abruptly giving way to new species. Coordinated stasis, explains Douglas Erwin of the National Museum of Natural History, in Washington, "is punctuated equilibrium at a higher level," involving not just individual species but entire ecological communities.

Examining the fossils of marine animals that lived in ocean-bottom muds some 380 million to 440 million years ago, Brett and Baird identified 14 periods, each running from three million to seven million years, during which at least 60 percent of the species persisted with little change. Each period ended with a drastic turnover of species, lasting a few hundred thousand years.

"Most studies of similar fossil records have found little evidence for prolonged periods of evolutionary stasis," Kerr notes. But if even occasional episodes of coordinated stasis took place, he observes, that could have a major impact on the way in which evolution is understood.

## Recycling Is Virtuous

"In Defense of Recycling" by Allen Hershkowitz, in *Social Research* (Spring 1998), New School for Social Research, 66 W. 12th St., New York, N.Y. 10011.

Recycling, which many regard as environmental virtue incarnate, has come under attack in recent years as itself a waste of human and natural resources, not to mention time and money. "Recycling Is Garbage," shouted a *New York Times Magazine* broadside in 1996. Hershkowitz, a senior scientist with the Natural Resources Defense Council, rises to the defense.

"It is virtually beyond dispute," he says, "that manufacturing products from recyclables instead of from virgin raw materials . . . causes less pollution and imposes fewer burdens on the earth's natural habitat and biodiversity." Modern paper recycling mills, for instance, produce no air or water pollution and no hazardous wastes, while the virgin pulp and paper industry is among "the world's largest generators of toxic air pollutants, surface water pollution, sludge, and solid wastes."

The 1996 *New York Times Magazine* writer, John Tierney, defied environmental correctness by asserting that a disposable polystyrene

cup makes more ecological sense than a reusable ceramic mug, since making and continually cleaning the mug consumes large amounts of energy (and water). But Hershkowitz points out that "oil refineries and plastics production facilities that process crude petroleum into plastic cups and other consumer goods produce some of the most substantial public health threats—including lethal gases like phosgene—posed by any manufacturing process."

Critics have pointed out that the trucks used to collect aluminum cans and old newspapers spew pollutants into the air. Hershkowitz says recycling trucks and facilities generate no more pollution than garbage trucks and facilities, and probably less. Recycling trucks spend less time idling (because recyclables are lighter than garbage and thus easier for workers to carry), and they don't have to travel to distant landfills.

Some recycling critics have also argued that curbside recycling is not economical when compared with garbage collection and landfill

disposal. But the costs involved vary so much, both over time and from place to place, Hershkovitz says, that it is impossible to substantiate that claim. Sometimes recycling has the economic edge at the local level; sometimes it doesn't. But any full accounting, he says, should include the hard-to-measure consequences for the environment, health, and society.

One of the biggest advantages of recycling, Hershkovitz writes, is that it reduces the need for landfills. During the last 15 years, more than 10,000 landfills have been closed in the United States, chiefly because of environmental problems. Critics of recycling tout the environmental safety of modern landfills, but Hershkovitz is not persuaded. "Landfills generate hazardous and uncontrolled air emis-

sions and also threaten surface and groundwater supplies." Of the nearly 3,000 currently operating landfills, less than half even attempt to control dangerous air pollutants, and only one-third have synthetic liners to keep groundwater from being fouled.

With 7,500 recycling programs in operation (compared with only 1,000 a decade ago), almost 24 percent of the nation's municipal solid waste is being recovered. "Of course, as a raw-material commodities business, recycling markets can't guarantee profits," Hershkovitz concedes. "No market does." But the financial risks "in no way negate" recycling's environmental benefits. And, he points out, while "some recycling programs lose money under adverse market conditions, dumping at a landfill or an incinerator *always* 'loses money.'"

## ARTS & LETTERS

### *The Curious Madonnas of India*

"The Indian Conquest of Catholic Art" by Gauvin Alexander Bailey, in *Art Journal* (Spring 1998), College Art Assn., 275 Seventh Ave., New York, N.Y. 10001.

It was by conquest, not choice, that the art of the Amerindians of early colonial Latin America became more European. But in 16th- and early 17th-century India, the story was different. There, writes Bailey, a profes-

sor of Renaissance and Baroque art at Clark University, the Mughal emperor elected, on his own initiative, to serve as a patron of Catholic religious art. "The result was the most visually potent figural iconography ever devised by an Islamic power."

Emperor Akbar (r. 1556–1605), a descendant of Ghengis Khan and ruler of the most powerful Muslim state on earth, had "a passion for world religions and late Renaissance art," Bailey says. In 1580, he invited a Jesuit mission to live at the royal palace in Fatehpur Sikki and take charge of his art projects. "In open defiance of Islam's traditional abjuration of figural art, the Mughal royal family evinced an active interest in—and even open worship of—Catholic devotional images."

Akbar directed his artists to paint hundreds of iconic portraits of Jesus, Mary, and various Christian saints to decorate books, albums, and jewelry. The images also were used in court rituals and at coronations and other major royal festivities. "The dramatic culmination," Bailey says, "came when imperial throne rooms, harems, tombs, and gardens were prominently adorned with mural paintings of Christian figures." European visitors took this to mean that the Muslim regime



Crucifixion (c. 1585–90) was among the works of Catholic art prized by the Mughal emperors.