SCIENCE, TECHNOLOGY & ENVIRONMENT

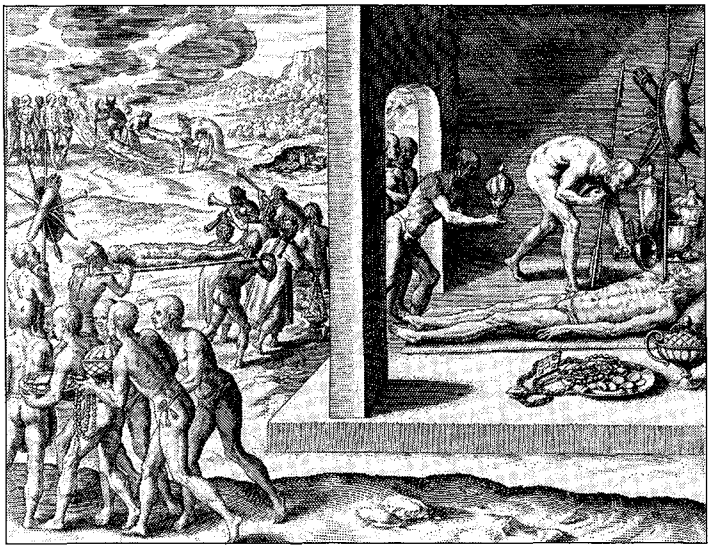
One-Way Plagues

"The Arrow of Disease" by Jared Diamond, in *Discover* (Oct. 1992), 500 S. Buena Vista St., Burbank, Calif. 91521.

Less than 200 years after Christopher Columbus set foot in the New World, the native American population of some 20 million had declined by perhaps 95 percent. The main killers were not swords or firearms but microbes carrying smallpox, measles, influenza, typhus, plague, malaria, and other diseases. But why, inquires Diamond, a UCLA physiologist, was the exchange of lethal germs so one-way? Why is it that, with the possible exception of syphilis (whose origin is still debated), no native American diseases spread back to Europe?

The answer, according to Diamond, has to do with the way in which acute infectious diseases evolved. To survive and spread, such diseases require large, dense human populations. The rise of agriculture and then of cities, in both the Old World and the New, provided the "crowd diseases" with a welcome mat. The rise of farming and cities also put humans in close contact with the apparent source of the disease-bearing microbes: domesticated animals. Among animals, as among people, infectious crowd diseases need large populations to survive, and this, Diamond writes, indirectly explains why the New World exported no deadly diseases to the Old.

In Eurasia, humans domesticated many herd animals, such as cows and pigs, that were rich sources of crowd diseases. In the New World, however, most large wild mammals became extinct at the end of the last ice age, and only a handful of animals came to be domesticated. Besides the dog throughout the Americas, these included the turkey in parts of North America, the llama/alpaca in the Andes, and the Muscovy duck in tropical South America. None of these animals was a likely source of crowd diseases. Muscovy ducks and turkeys do not live in enormous flocks or come into very close contact with humans; llamas never spread beyond the Andes.



Native Americans lacked immunity to Old World epidemic diseases as well as an understanding of how the maladies spread.

Fortunately for the post-Columbian Europeans, the extinctions about 11,000 years ago had removed "most of the basis for Native American animal domestication—and for crowd diseases" that might have made their way back to the Old World.

Sexing the Brain

"Sex Differences in the Brain" by Doreen Kimura, in *Scientific American* (Sept. 1992), 415 Madison Ave., New York, N.Y. 10017.

Are men and women virtually alike, aside from the obvious physical attributes? In the latest chapter of the nature/nurture debate, many feminists insist that most differences between the sexes result from sexism. Kimura, a psychologist at the University of Western Ontario, finds otherwise: The bulk of the evidence suggests that "from the start the environment is acting on differently wired brains in girls and boys."

It is not that males are more intelligent than females, or vice versa, but rather that the sexes tend to have different patterns of ability, Kimura says. Men, on average, outperform women in mathematical reasoning tests and in following a route on a map, whereas women tend to do better in arithmetic calculation and in using landmarks to navigate a route. Women also tend to have greater verbal fluency and to have better perceptual skills (e.g., rapidly identifying matching items), while men have an advantage when called upon to manipulate imaginary objects. Males also have an edge when it comes to "guiding or intercepting projectiles," as in throwing darts or catching balls. Three-year-old boys outperform girls of the same age in tests of such "target-directed motor skills." In tests of young adults, experience playing sports did not account for the difference.

The most likely explanation for such sex differences, Kimura says, is the impact of sex hormones on developing brains in fetuses and very young children.

Especially compelling evidence of the sex hormones' influence comes from studies of girls who, as a result of a genetic defect or other condition, were exposed before birth, or just after it, to unusual amounts of male hormones, or androgens. Studies by Anke A. Ehrhardt of Columbia and June M. Reinisch of the Kinsey Institute, Kimura says, have found that these girls "grow up to be more tomboyish and aggressive than their unaffected sisters." Sheri A. Berenbaum of the University of Chicago and Melissa Hines of UCLA found that when such girls are given a choice of toys, they opt for cars and trucks, "the more typically masculine toys."

Kimura believes that the apparent sex differences "arose because they proved evolutionarily advantageous." In the distant past, when humans lived in relatively small groups of hunter-gatherers, men and women needed different skills.

Since the sexes do differ in the way in which they solve intellectual problems, Kimura notes, men and women may well have "different occupational interests and capabilities, independent of societal influences." Any particular individual might be able to do very well in an atypical field, of course. But one would probably not find as many women as men in professions that emphasize spatial or math skills, such as engineering or physics. On the other hand, Kimura says, "I might expect more women in medical diagnostic fields where perceptual skills are important." Inequality? Blame it on Mother (or Father) Nature.

Saving Tropical Forests

"The Tropical Timber Trade and Sustainable Development" by Jeffrey R. Vincent, in *Science* (June 19, 1992), American Assoc. for the Advancement of Science, 1333 H St. N.W., Washington, D.C. 20005.

Sustained management of the world's tropical forests is an ideal of many environmentalists. The boom-and-bust export pattern of the tropical timber trade stands in the way, however, and the United States and other developed countries are often blamed for those destructive ups and downs.

There is no question that the pattern exists, acknowledges Vincent, an associate at the Harvard Institute for International Development. In one tropical country after another, soaring timber exports have depleted old-growth forests. Development of second-growth forests was not managed, and domestic timber-processing industries collapsed. The pattern emerged in West Africa during the 1950s and '60s, and is being repeated in Southeast Asia. Thailand and the Philippines have already gone bust. But the fault does not lie with the developed countries, Vincent maintains.

Behind the pattern is rising global demand for wood products. But developing countries themselves account for much of the increase, Vincent points out. In 1989, only about one-third of the logs and pulpwood (used in making paper) harvested in developing countries was exported, and much of it went to *other* developing countries. In fact, developing countries (excluding China) *imported* almost as much in wood products that year ($11.5 billion) as they exported ($12.7 billion)—and took in a good deal of that from the developed countries.

Critics also argue that high tariffs in the developed countries have stunted the Third World wood-processing industries that would encourage good forest management. But the tariffs have been cut in recent years under the General Agreement on Tariffs and Trade. Today, in many cases, developing countries' *export* taxes are higher than the tariffs.

The developed countries are also accused of manipulating world prices. Prices for many