

SCIENCE & TECHNOLOGY

Curing Cancer

"Cure" by Haydn Bush, in *Science* 84 (Sept. 1984), P.O. Box 3207, Harlan, Iowa 51593-2053.

To judge by press releases and newspaper headlines, the cure rate for cancer has been improving steadily for years. Actually, writes Bush, director of the London Regional Cancer Centre in Canada, "we're not curing much more cancer than we were a generation ago."

Doctors can claim real progress in effecting cures for a few relatively rare cancers (e.g., childhood leukemia, Hodgkin's disease) but for only two of the more common types, stomach and uterine cancers. The cure rates for the biggest killers—cancer of the lung, breast, colon, and prostate—have improved very little during the last 25 years. What good news there is regarding these diseases, Bush adds, is often misinterpreted.

The survival rate for women with breast cancer, for example, climbed from 57 percent during the early 1950s to 66 percent 20 years later. Bush believes that earlier *detection*, not more effective *treatment*, was behind the change. "Most potentially fatal human cancers," he notes, "eventually kill because they have already spread to distant sites in the body before the disease is diagnosed." Moreover, cancer statistics count patients who live for five years after their diagnosis without a recurrence as "survivors," even though they are at risk for up to 30 years.

The treatment of cancer today is at a comparatively primitive stage, Bush says, and it may be years until substantial gains are made. In the meantime, he favors a diversion of some money from cancer cure studies into research on treatments that are more humane than today's radical surgery and debilitating drug and radiation therapies; these are sometimes of little use and "far worse than the early physical effects of the disease."

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*Learning to Live
In a 'Greenhouse'*

"Anticipating Climate Change" by Thomas C. Schelling, in *Environment* (Oct. 1984), 4000 Albemarle St. N.W., Washington, D.C. 20016.

At the rate that carbon dioxide (CO₂) is accumulating in the Earth's atmosphere today, mankind is virtually certain to suffer the results of a "greenhouse effect" within a century. But the obvious solution—to cut back on carbon dioxide output—is not as logical as it seems.

So argues Schelling, a Harvard political economist. Higher atmospheric concentrations of CO₂, chiefly the result of burning such fossil fuels as oil, coal, and gas, would trap heat in the Earth's atmosphere and raise the global temperature. That, in turn, would have two serious effects: a drop in rain and snowfall (though some areas would experi-

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ence an *increase*) and, as a result of partial melting of the polar ice caps, a rise in sea levels.

Schelling is skeptical of efforts to curb the world's CO₂ output. The level of CO₂ in the atmosphere is now growing only half as fast as scientists were predicting it would just a few years ago, but the total concentration will still double by the year 2100. Ironically, the very fact that the greenhouse effect is a global problem militates against cutbacks in fuel use simply to reduce CO₂: Individual nations would bear the costs of conservation while all would share in the benefits. And for many poorer nations, such as Bangladesh, there are a number of more pressing needs than combating the greenhouse effect.

Mankind may be only decades away from being able to engineer a kind of global countercooling, chiefly by means of releasing into the air particles that, like ordinary pollution, would partially block the sun's rays. For the present, however, Schelling believes that it makes sense to learn how to live with a warmer, drier Earth.

A drop in rainfall would hit farmers hardest, but he sees several possible responses: cloud seeding, desalinizing seawater, "mining" icebergs, and developing crop species better suited to growth in brackish water. Over the course of several centuries, the global warming trend might raise sea levels by 16 to 20 feet. Coastal residents would have plenty of time to decide whether to fall back or fight, and Schelling thinks that, at least in certain urban areas, fighting will be economical. Much of the Netherlands is below sea level today, effectively sheltered by dams, dikes, and landfill. A six-mile dike around the mouth of Boston harbor, for example, would shield that city from a higher sea level.

Two Cheers For EDB

"Give Thanks for Pesticides, Too" by Elizabeth M. Whelan, in *Across the Board* (Nov. 1984), 845 Third Ave., New York, N.Y. 10022.

For 50 years, American farmers used the pesticide ethylene dibromide (EDB) to protect fruits and stored grains from insects. But after a public uproar sparked last year by the discovery of traces of EDB in some breakfast cereals and cake mixes, the U.S. Environmental Protection Agency (EPA) abruptly banned the chemical.

Whelan, who heads the American Council on Science and Health, thinks that the EPA was stampeded into making a mistake. EDB, she contends, was only a moderate threat and is merely being replaced by other chemicals that are "less effective in destroying pests and offer no safety advantages to humans—at an enormous cost to the consumer."

The discovery of EDB's presence in food set off so many alarms because the chemical is a carcinogen. But the fact that laboratory rats fed massive doses of EDB developed tumors does not mean that humans will. Indeed, the EPA estimates that the average American ingests between five and 10 micrograms of EDB daily, compared with 140,000 micrograms of plain old pepper. To consume proportionately as much