# Briefings

*edited by* CONSTANCE HOLDEN

## New IOM Head

Kenneth I. Shine, dean of the University of California at Los Angeles Medical School, has been chosen as the next head of the Institute of Medicine (IOM). He replaces Samuel Thier, who left last September to become president of Brandeis University. Shine, a cardiologist who has been an IOM member since 1988, will start work in July.

## Turnabout on AIDS Drug

Hoffmann-La Roche has done an about-face on a promising new antiviral AIDS drug. Seven months ago, the company angered AIDS activists by deciding not to pursue full-scale clinical trials of a compound called Ro 24-7429, insisting that the drug did not fit into its corporate strategy and would be licensed to another pharmaceutical company for development (*Science,* 20 December 1991, p. 1715). Just before Christmas, however, Hoffmann-La Roche announced that it has decided to develop the drug on its own after all.

Ro 24-7429 works in an entirely different way from antiviral drugs currently on the market. Unlike AZT and ddI, which block the activity of the viral enzyme reverse transcriptase, Ro 24-7429 targets a viral protein coded by a gene called *tat*. That protein plays a key role in the viral replication process within an infected cell. Several pharmaceutical companies were reportedly interested in Ro 24-7429 and happily would have taken on the task of developing and marketing it.

Hoffmann-La Roche spokesman Paul Oestreicher says the company's decision to keep the drug to itself was influenced by disappointing results reported from early clinical trials with a new class of reverse transcriptase inhibitors. Those results make it more urgent (and presumably more profitable) to develop drugs with novel mechanisms of action. In a letter to *Science*, Oestreicher insisted that, despite the lengthy delay caused by the search for a licensing partner, the company intends to move forward on Ro 24-7429 "in the most expeditious manner possible."

## Stanford: More Bad News

It looks as if the worst isn't over for Stanford in the indirect cost arena. The Defense Contract Audit Agency has agreed with Navy whistleblower Paul Biddle's claim that the university overbilled the government by more than $200 million in indirect cost charges. The auditors found about $235 million in overcharges between 1981 and 1988, and, according to a congressional staffer, they expect the numbers for 1989-90 to bring the total to more than $300 million. Add to that Biddle's claims of nearly $300 million in overcharges from the yet-unaudited areas of staff benefits and university properties, and the tab could soar to more than $500 million.

Suspecting that the bad news was imminent, Stanford president Donald Kennedy and board of trustees president James Gaither predicted in a letter in the alumni newspaper *Observer* that the government would back up Biddle.

Kennedy and Gaither say Stanford will fight the auditors' finding, which they say improperly disregards all of the memoranda of understanding on which Stanford's indirect cost rate was based during the 1980s. Biddle finds those memoranda invalid, while Kennedy and Gaither call them "binding contracts."

Congressman John Dingell (D–MI) isn't likely to buy Stanford's argument. "If Stanford wants to say to the American people, We screwed you, but we did it legally, they can do it," said a member of Dingell's staff. "That was their defense on the last round, and they lost their president over that one."

## Mothballs for New Zealand Telescope

Astronomers searching for evidence of a tenth planet in the solar system have lost a key telescope that was employed in the hunt. Citing budget pressures, the U.S. Naval Observatory (USNO) has curtailed most of its operations at an observatory near Blenheim on New Zealand's South Island. The 8-inch astrographic telescope has already been dismantled and returned to the observatory's headquarters in Washington, D.C. A smaller transit instrument will remain in operation until 1995.

USNO astronomer Robert Harrington has calculated that the southern sky is the most likely place to find "Planet X"—if it exists (see *Science,* 6 December, p. 1454). But he was able to search only about one-third of the most likely locations before the telescope was

## Greenhouse Gas Tax

People may have to cough up a pretty penny at the gas pump if the nation wants to reduce its emissions of carbon dioxide, according to a December report* from the Department of Energy (DOE). In response to a 1988 congressional request, the report assesses the economic ramifications of ordering a reduction of $CO_2$ emissions to 20% below 1990 levels by 2000.

The reduction strategy DOE explores is a carbon tax levied on utilities. The report estimates that achieving the targeted reduction would require a tax of $500 per metric ton of carbon. That would end up soaking consumers of about $95 billion a year—more than doubling the price of gas, heating oil, and electricity.

In an accompanying statement, Energy Secretary James D. Watkins says the report "points out the very high costs to our economy of the large carbon dioxide emission reductions some are advocating." But the report has outraged environmental organizations. "It's amazing that people keep making the same fundamental mistake—that the only way to reduce energy is to raise taxes," says Peter Miller, an analyst with the Natural Resources Defense Council. Indeed, Watkins failed to mention another carbon-reducing strategy noted in the very same report: a proposed Forest Service tree-planting program, which aims to reforest 15% of U.S. land. According to the report, the new trees would absorb enough $CO_2$ to reduce the new tax needed by about 90%.

*"Limiting Net Greenhouse Gas Emissions in the United States," Office of Environmental Analysis, Department of Energy.

**FUEL PRICE CHANGES PER $500 CARBON TAX**
(adapted from DOE)

| Fuel | Base cost ($) | Added cost ($) | % cost increase |
|---|---|---|---|
| Residential natural gas (thousand cubic feet) | 5.87 | 7.50 | 125 |
| Gasoline (gallon) | 0.98 | 1.30 | 135 |
| Electricity (kilowatt hour) | 0.065 | 0.088 | 135 |
| Heating oil (distillate, gallon) | 0.89 | 1.45 | 165 |
| Crude oil (barrel) | 16.01 | 60.95 | 365 |
| Utility coal (short ton) | 33.51 | 276.65 | 825 |

1989 constant dollars; base year 1990.

## Pack Rats' Liquid Legacy

MICHAEL LYON

**Midden in the making.** *A desert pack rat adds to its nest.*

The lamentable housekeeping of desert pack rats is proving to be a boon for researchers seeking a record of Earth's exposure to cosmic rays. So says Pankaj Sharma, a radiochemist at the University of Rochester who has been analyzing an ancient pack rat "midden" or nest—an underground mass of sticks and other detritus, permeated with the animals' urine. At a meeting of the American Geophysical Union in San Francisco last month, Sharma reported that he and his colleagues have unearthed tentative confirmation that tens of thousands of years ago, Earth was subjected to a much stronger bombardment of cosmic rays than it is today, probably because its protective magnetic field was weaker.

The key is the rats' urine— specifically, the chloride salts it contains, says Sharma. Cosmic rays smashing into argon atoms in the atmosphere generate chlorine-36, a long-lived radioactive isotope. Falling to Earth in rain, the cosmic ray chlorine is taken up by plants, then passed on to plant-eating animals that excrete it in their urine in salt form.

Most animals don't preserve their urine for posterity, but the desert pack rat harbors its own waste so assiduously that middens tens of thousands of years old are caked with a substance said to have the texture of hardened molasses. Such middens have already proved to be rich troves for studies of ancient plant communities. So, says Sharma, he and his colleagues thought: Why not look at cosmic rays?

His colleague Fred Phillips of the New Mexico Institute of Mining and Technology proceeded to extract chlorides from various levels of a large midden excavated in western Nevada by Peter Wigand of the Desert Research Institute in Reno. When Sharma analyzed samples from one of the levels, dated at 21,000 years old, he found evidence that the cosmic ray flux then was 41% higher than it is today; chloride from a shallower level 12,000 years old, indicated a 28% higher flux.

Those results are in line with what other workers have concluded from studies of carbon-14, another element spawned by cosmic rays. And they bode well for the group's plans to broaden their cosmic ray survey to other middens and extend it further back, perhaps as far as 40,000 years.

taken out of action.

The search for a tenth planet was only a small part of the New Zealand station's activities. USNO also had to abandon plans to use the telescope for a major Southern Sky Survey, as well as ongoing work to provide an optical reference frame for interesting radio sources.

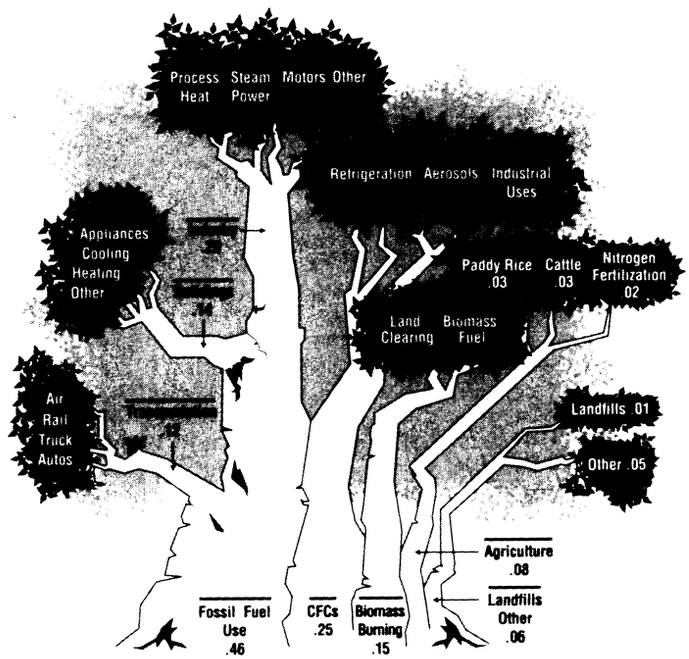
## People vs. the Ecosystem

The causes of the earth's big environmental problems—deforestation, loss of biodiversity, pollution, climate change, and so forth—are all rooted in human behavior. Yet, as noted in a new book-length report* from the National Research Council (NRC), the social sciences have played only a peripheral role at best in environmental research programs such as those on global change. No government agency, other than the National Science Foundation (NSF), has the wherewithal to mount a significant social science research program. And existing research on human-environment interactions tends to be confined "within the boundaries of single disciplines."

The report's recipe for overcoming this neglect? You guessed it: a well-funded new research program. The NRC's Committee on the Human Dimensions of Global Change is urging the establishment of a "comprehensive national research program on the human dimensions of global change." The committee, chaired by Oran R. Young, chairman of the Institute of Arctic Studies at Dartmouth College, calls for the gradual phase-in of a program that would ultimately be funded at $45 million to $50 million a year. It would include the establishment of five new national interdisciplinary research centers, a new information network, a new fellowship program, and a variety of new research programs. That would include an increase in NSF's grants for research on human-environment interactions from $3.6 million to $11 million a year. But other agencies as well as private funding sources are called upon to get involved in all aspects of the program.

Doing it right will require interdisciplinary collaboration on an unprecedented scale. Says the report: "The need to understand global change may well become a powerful force for change in the existing structures of scientific disciplines."

*"Global Environmental Change: The Human Dimensions" is available for $29.95 plus $3 shipping from the National Academy Press, 2101 Constitution Ave. NW, Washington D.C. 20418.




*A tree-structured representation of the relative contributions to greenhouse warming of human activities in the late 1980s.*