

claimed only 10 or 20 tests would be required either to determine whether a Soviet x-ray laser would pose a serious threat or to develop a weapon if a decision were made to do so.

Miller argued that underground testing is crucial to determine whether SDI components and systems can survive and function in an environment in which nuclear explosions are occurring. "Above ground nonnuclear simulators are not sufficient to provide realistic tests," he contended.

Garwin pointed out, however, that one important weapons effect, the electromagnetic pulse generated by a high-altitude nuclear burst, cannot be created in underground testing. "We can do the nuclear effects testing through simulation and design. You cannot take an arbitrary system and make it reliable by testing. It has to be made reliable by design," he said.

In a similar vein, Miller argued that nuclear testing is required to guarantee the reliability of weapons in the existing stockpile. He cited one particular case in which a warhead had just entered production when it was tested for the first time at low temperature; it gave only a tiny fraction of its expected yield, even though previous simulations had given no indication of any problems.

In response to a question, however, Miller conceded that weapons are almost never taken directly from the stockpile and exploded in an underground test. ■

COLIN NORMAN

## AIDS Stresses Health Care in San Francisco

While the rest of the nation looks to San Francisco as a role model for coping with the AIDS crisis, its health care system is showing signs of severe stress. "I don't think the system in San Francisco will stand the test of time," says Paul Volberding, director of the AIDS program at San Francisco General Hospital. Speaking at a AAAS session on AIDS, Volberding cited burnout of health care workers, the ever-increasing numbers of AIDS patients, competing needs of other patients, and a lack of coordinated long-range planning as problems the city must face quickly.

Because of the relatively high number of AIDS patients in San Francisco, both solutions and problems with the health care system have emerged quickly. The city has had a total of 3140 patients with AIDS as of 19 February, about half of whom are alive today. Roughly one-tenth are hospitalized at any given time, and San Francisco General cares for a third of them. Starting in 1982,

within the space of a year, the city adjusted its existing in-patient health-care facilities for AIDS patients, established out-patient clinics, and developed "a vigorous community support structure that includes in home nursing and hospice care as well as residential support," said Volberding.

But now, definite signs of depletion and stress mark the system. Doctors and nurses who care for AIDS patients have a high rate of absenteeism and job turnover and volunteers for community-based services are more difficult to find. Part of the problem is the sheer burden of caring for this group of patients, more than half of whom suffer from neurological problems including dementia, and another part is the emotional stress of watching so many young adults die.

For San Francisco, and for other cities as well, the health care crisis has two distinct facets. One is acute care for hospitalized AIDS patients, and the second is chronic care. The most pressing current problem is chronic care, an issue that will inevitably worsen as the number of AIDS patients increases. If current projections about the number of AIDS cases in San Francisco are too low, as Volberding thinks they are, then the present acute care system, in addition to the chronic care system, will soon be hopelessly inadequate.

Volberding estimates that, in the absence of a cure for AIDS, by 1991 the number of total AIDS patients in San Francisco may be close to 18,000, a number 2 to 3 times the 8000 cases predicted by the Center for Disease Control. If his projection is at all accurate—Volberding says it is "very rough"—then San Francisco needs to prepare itself for nearly a thousand hospitalized AIDS patients in 5 years, a number the present system is clearly not able to handle.

Evidence for the much higher estimate of 18,000 AIDS cases by 1991 comes from data on more than 6000 gay men, some of whom now have AIDS, who entered into a hepatitis B study in 1978–79. George Rutherford, of the San Francisco Health Department, follows the group and has new data showing that, while the number of people who develop full AIDS is fairly low and constant during the first 5 years of viral infection, it increases dramatically after the sixth year when well over half develop AIDS or AIDS-related diseases. More than 40,000 individuals in San Francisco are believed to be AIDS virus carriers.

"I don't see how the existing system can continue to care for AIDS patients without compromising other groups of patients," Volberding says. To help alleviate the situation, he proposes that national regional hospitals, specializing in the care of AIDS patients, be established. In addition, both he

and David Werdegar, Director of the San Francisco Department of Health, strongly advocate direct involvement of the federal government in planning short- and long-term responses to the AIDS epidemic. "The government ought to have a national commission that is looking in a coordinated way at what is a national emergency," says Werdegar. ■ **DEBORAH M. BARNES**

## "We're Killing Our World"

A global ecological disaster is a very real possibility in light of the rate at which forests are being devastated and biological species wiped out, according to Peter H. Raven who painted a bleak portrait of the future in the keynote address at the AAAS meeting.

Enormous areas of the world's forests are being destroyed for a variety of reasons, said Raven, director of the Missouri Botanical Garden in St. Louis. "The relentless search for fuelwood is wrecking many tropical forests," for instance. Consumer demand for timber in industrialized countries is also spurring deforestation in poorer nations that are looking to the short-term economic benefits they get from exporting their resources, often so they can make payments on their international debt. "The existence of this debt clearly encourages many Third World countries to overexploit their natural resources without the creation of stable, productive alternatives," he said. "Payments on the international debt should be mitigated or suspended when necessary, or managed in such a way as to add to, rather than subtract from, world stability."

Perhaps the most serious consequence of deforestation is the loss of a large portion of biological diversity, Raven contends. "The notion that extinction is a routine part of the evolution of life on earth is correct, but it does not address the fact that the extinction rates of the present are, to the best of our knowledge, at least a thousand times those of the preceding tens of millions of years," he said.

The loss of plant and animal species is more than an esthetic loss, Raven pointed out, noting a number of drugs that have been derived from plants and that the gene pool of corn (a staple of the world's food supply) has been enriched by the recent discovery of a perennial wild relative in a small area of the mountains of Jalisco, Mexico.

"Biological diversity . . . should be surveyed as a matter of urgent priority and conserved to the extent possible . . ." for future generations if we want to prevent killing our world, he warned. ■

**BARBARA J. CULLITON.**