research, and work with industry. "Livermore has always done best when it is working on the nation's 'A-list,' " he says. It is up to the Galvin task force to decide if Livermore's strengths are on that list today.

Plotting the future

UC officials note that Tarter is the first Livermore director not to have been an integral part of the weapons program, improving his chances to be named permanent director. But lab officials worry about running a lab without a clear mandate from Washington. Tarter rues the seemingly endless political head-scratching over the labs that has left Livermore under a cloud (the Galvin panel is the third such panel in 5 years, and there have been several congressional hearings on the subject). "It has become almost a cottage industry in Washington," he says. Some in Congress have called for a redirection or consolidation of the weapons labs, although none of the proposals has come close to passage.

As the debate goes on, lab officials are divided over which path to follow. Some are pushing technology transfer, while others talk optimistically about being the site for the National Ignition Facility, a large laser fusion project that would follow on from Livermore's Nova laser facility. Nuckolls' own preference is work on technologies to combat nuclear terrorism (see sidebar). O'Leary, meanwhile, has emphasized that she would like Livermore to work more with industry; indeed, more than half of the members of the Galvin panel are industry representatives.

Whatever Livermore does, it is difficult for lab scientists to imagine its not having a role in nuclear weapons and national security. Indeed, the Clinton Administration —from the president on down—endorses the continuing need for some number of nuclear weapons laboratories. The question is whether three labs is one too many. (Sandia is focused on weapons engineering and is generally considered safe from any consolidation or closure threats).

As pressure for change mounts, many lab scientists are simply trying to roll with the punches. Craig, for example, is teaching himself biology. Other weapons scientists are spending their time documenting what they and their colleagues know so that their skills will not be lost forever. But many agree with astrophysicist Hugh DeWitt that basic physics and chemistry research outside the weapons program is evaporating. "Los Alamos still has it, but Livermore does not," he says. "It's just fading away." What the Galvin panel must decide is whether DOE should fight that trend both within and outside Livermore's weapons program—or accelerate it.

–Christopher Anderson

ATOMIC BOMB SURVIVORS

Rising Yen Threatens Key Cancer Study

Next year will mark the 50th anniversary of the atomic bombing of Japan, and it may also mark the decline—perhaps even the end—of a unique program to study the effects of radiation on the bomb's survivors. The reason: The U.S. Department of Energy has served notice that its support for a U.S.-Japanese institute called the Radiation Effects Research Foundation (RERF) will no longer keep pace with the soaring value of the yen against the dollar. As a result, the program is heading for a fiscal crisis.

Begun under a different name in 1945, RERF followed 120,000 bomb survivors' medical histories, gathering data on cancer and other diseases caused by ionizing radiation. Japanese citizens regard RERF as a symbol of compassion; researchers view it as a unique source of data on radiation risks. Now, cancer researcher Charles Land of the National Institutes of Health (NIH) worries that, because of the fiscal crisis, "the whole thing could fall apart," cutting short studies of late-developing cancer in people who were children when the bombs fell. To Seymour Jablon, a former NIH researcher who serves as one of three U.S. members on RERF's board, this would be "a disaster" for biomedical researchers interested in the health effects of radiation.

Harry Pettengill, deputy assistant secretary for health at the Department of Energy (DOE), the responsible government official, says cost reduction is necessary because Congress has frozen DOE's overall budget. In the past, the United States has been willing to increase its contribution, currently $18 million, to cover changes in the exchange rate—but not this year. Already, RERF has spent its reserves to accommodate the falling dollar, and now it's surviving from cash supplied month-to-month by the two governments. Pettengill has met with the Japanese government twice since last summer to negotiate a solution, but concedes that "we're still looking for about half a billion yen ($5 million)" to keep RERF afloat in 1994.

> **"We're looking at a train wreck down the road, and it's pretty close."**
>
> **—Charles Eddington**

"We're looking at a train wreck down the road, and it's pretty close," says Charles Eddington, a staff officer at the National Academy of Sciences, which manages the U.S. half of the program. Indeed, Jablon and the two other U.S. board members—Warren Sinclair of the National Council on Radiation Protection and J. Edward Rall of NIH—have written to *Science* warning that the entire institution is "in jeopardy."

Back in 1974, when RERF was created out of the Atomic Bomb Casualty Commission, the United States and Japan signed an agreement to split the costs 50–50. At the time, the dollar was worth more than 300 yen, and RERF was a scientific bargain for the United States; now it has become expensive. Last summer, when the dollar's value dropped to less than 120 yen, Pettengill asked the RERF board to prioritize its programs and consider cutbacks in the 400-person staff. The board delivered a report in October, which Pettengill says "didn't identify much in terms of cost savings."

Since then, the dollar has dropped further, to around 103 yen. The U.S. side suggested that Japan might pick up more of the local operations costs. But the Japanese government has declined, insisting that the 50–50 arrangement is part of a solemn treaty that cannot be changed without negotiations, which take time. Japan says it plans to match any U.S. cut on a yen-for-yen basis. This is making it difficult to deal with the 1994 shortfall, which ranges from 10% (Pettengill's estimate) to 35% (Jablon's).

In addition, says Eddington, DOE doesn't seem to appreciate that under the Japanese system, accelerating the rate of retirement would make the problem worse. In Japan, retirees don't receive a pension, but a single lump sum equivalent to several years' pay. Pettengill has urged RERF to trim its staff, but RERF does not have the funds needed to speed up the pace of retirement. And even if it did, Japanese employers don't like to push employees out the door. The result, says one U.S. observer, is that "people are sitting around with their heads in their hands," unable to find a solution.

While some scientists worry about the impact on specific projects, NIH cancer expert Curtis Harris worries about the "moral issue," saying "it could be front-page news in Japan" if it seems that "we've decided to walk away from this group of people." Pettengill, in response, says he expects the United States to continue supporting RERF for at least another decade—even if its contributions don't keep up with the soaring yen.

–Eliot Marshall