workers are scarce what with the rise of the yen, which is driving Japanese firms abroad, and the decrease in saving, which reduces money available for capital investment. Pay and promotion policies that favor older workers also make younger ones more attractive to employers. Tadashi Nakamura of the Ministry of Labor said there is only one opening for every ten applicants over 55.

Nonetheless, Japan is very interested in developing new options for older workers in view of the decelerated birthrate and the growing burden of dependents on the working-age population. Nakamura said his country needs lifetime education and training, more flexible and part-time jobs, and lifelong health plans.

Some American firms are reporting efforts to bring back older workers. F. Peter Libassi of the Travelers Companies said, for example, that its Retiree Job Bank is saving the company $1 million a year by reemploying

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Tadashi Nakamura. *The Ministry of Labor says jobs for older Japanese are scarce.*

experienced workers up to their 80s.

Commerce Secretary William Brock pointed out that experienced employees are at a premium now that low-skill and low-pay jobs are being taken over by machines. Yet despite this, he said, "we are continuing to talk about early retirement—which is ridiculous" and not training people over 50.

Themes sounded at the conference—including calls for pension portability, a national health plan, worker retraining, phased retirement, and research on work and aging—will undoubtedly be heard with increasing frequency. Author Betty Friedan predicted that members of the Baby Boom generation, now surging into their 40's, will transform concepts of old age and retirement just as they created new cultures of childhood and youth. Indeed, the confluence of economic and demographic realities seems to make such a transformation inevitable. ■ CONSTANCE HOLDEN

Briefing:

BioTechnica Clears First EPA Hurdle

The Environmental Protection Agency has tentatively approved BioTechnica International's application to field test three strains of the bacterium *Rhizobium meliloti* that have been genetically altered. The organism, which the company has modified to improve nitrogen-fixing capability, would be tested on alfalfa at the company's research farm in Pepin County, Wisconsin (*Science*, 20 February, p. 840). The microorganism is the first subject to regulation under the agency's biotechnology policy. EPA has extended the public comment period by 60 days and will make a final decision on the experiment in early July.

Meanwhile, Steven Lindow, a researcher at the University of California at Berkeley, has proceeded with a test of a strain of *Pseudomonas syringae* that has been genetically modified to inhibit frost formation. The experiment started on 29 April as expected (*Science*, 1 May, p. 511) at the university's research station near Tulelake, California. Lindow has treated seed potatoes with a strain of the bacterium that lacks a gene responsible for producing protein secretions linked to frost formation on plants. ■ **M.C.**

Alcohol Consumption Down, Research Up

Per capita alcohol consumption in the United States has shown a "significant decline" since its peak in 1980–81, according to the *Sixth Special Report to the U.S. Congress on Alcohol and Health*, prepared by the National Institute on Alcohol Abuse and Alcoholism. Consumption has dropped from 2.76 gallons of pure alcohol per person over 14 years of age in 1978 to 2.65 gallons in 1984.

This decline is reflected in a decrease in drunk driving: between 1980 and 1984 the proportion of fatally injured drivers who were legally intoxicated dropped from 50 to 43%. Mortality from liver cirrhosis—most of which is caused by alcohol abuse—has also declined to the lowest level since 1959.

The report, which covers epidemiology, basic research, prevention, and treatment, documents significant advances in research on alcoholism since the fifth special report, issued in 1983. For example, brain wave studies on the sons of alcoholics, conducted by psychiatrist Henri Begleiter of New York's Downstate Medical Center, have indicated that slight neurophysiological anomalies may exist in those genetically predisposed to alcoholism. A new typology developed by psychiatrist Robert Cloninger of the University of Washington at St. Louis suggests that there are at least two types of hereditary alcoholism: "male-limited," which is severe, highly heritable, and associated with antisocial behavior; and "milieu-limited," which is triggered by environmental circumstances.

The number of those in treatment continues to grow, with 0.5 million reported in treatment in September 1984. But alcoholism and alcohol abuse are still underreported and underdiagnosed. The report says that alcohol contributes substantially to all types of accidents, homicides and suicides, and to a wide variety of diseases including some cancers, pneumonia, diabetes, and hypertension. Yet, "only about 3% of recorded deaths are officially attributed to causes directly linked to alcohol." ■ **C.H.**

Academic R&D Costs Will Double by 1996

Annual expenditures on academic R&D will have to double over the next decade just to maintain activities at the current level, according to an analysis by the National Science Foundation.* The total cost of supporting a senior researcher full time, now about $155,000 per year, will climb to $180,000 to $205,000 by 1996. If modest inflation is factored in, the academic R&D budget must rise by 250% in current dollars simply to keep pace with these increases in costs.

The NSF's projections, prepared by the agency's policy research and analysis office, are based on three trends. First, expenditures on facilities and equipment will continue to increase over the next few years to make up for underfunding in the past. Second, salaries and wages will rise, buoyed by an anticipated shortage of scientists and engineers. And third, overhead will increase and take up a larger share of the research budget.

The analysis was prepared for NSF director Erich Bloch, who has advocated a doubling of the foundation's budget over the next 3 years. The White House has promised to ask Congress to double the budget over 5 years. ■ **C.N.**

*"Future costs of research," available from the Division of Policy Research and Analysis, National Science Foundation, 1800 G Street, NW, Washington, DC 20550.