Briefings

edited by CONSTANCE HOLDEN

China Curbs Outflow of Students

The return to a more repressive climate continues in the People's Republic of China. Its target is still students—this time those who wish to study abroad.

The government has announced that it will require university graduates to work for 5 years before they are eligible to study outside the country. Those wishing exceptions will have to repay the state for their university education.

The move, clearly aimed at stemming the outflow of students, follows a decision by President Bush to allow the 40,000 mainland Chinese students now in the United States to remain after their visas have expired.

Since last spring's crackdown at Tienanmen Square, the Chinese government has sought to restrict overseas study by various measures including Communist party approval for exit permit applicants.

Glenn Shive, director of China programs for the Institute of International Education in New York, is quoted by the *Washington Post* as saying that if the new work rule is implemented, it "will eliminate study abroad for a majority of people in their early twenties."

Testing Relativity

Stanford University is preparing to conduct what a space official calls "the most challenging test we'll undertake in this millennium"—the first definitive test of Einstein's theory of general relativity.

This month university physicists received delivery on a $4-million Lockheed space probe that—if all goes well—will be launched in 1996 or 1997. The 10-foot-long probe will carry four precisely engineered gyroscopes whose behavior will tell whether Einstein's theory of general relativity is correct. The whole package will be housed in a Dewar, essentially a large and sophisticated thermos bottle.

Chuck Painter, Stanford News Service

Relativity probe. *Technicians need dust-free environment to work on Dewar.*

Although Einstein's 1916 theory is one of the pillars of modern physics, until now the technology needed to subject it to a definitive test has not been available. In particular, Stanford researchers had to invent several new technologies to produce the near perfect gyroscopes that will be the heart of the experiment.

The idea of using gyroscopes orbiting in space to test relativity theory was originally conceived some 30 years ago by the late Leonard Schiff of Stanford. Einstein theorized that gravity is a curvature in the fabric of space and time. If that is the case, Schiff figured, the axis of an orbiting gyroscope would tilt forward as it spins because it would be moving through that curvature. But if Newton's version—that gravity is a force exerted by one object on another—was right, the gyroscope axis would always point in the same direction, as specified by the gravitational force acting on it.

In 1985, the National Aeronautics and Space Administration awarded Stanford a $108-million contract—the largest of its kind ever granted to a university—to carry out the project. The apparatus will be tested first on the ground and then in a space shuttle flight in 1993 before it is launched as an independent satellite.

And if Einstein was wrong? Says Francis Everitt, the physicist leading the Stanford project, "all hell will break loose."

The NSF and Biodiversity

Until now the National Science Foundation (NSF) has paid little attention to the crisis of biodiversity. But a recently released report by a task force of the National Science Board* argues that completion of a global biological inventory is "urgent" and will only be possible for the next decade or two.

The task force, chaired by Craig C. Black, director of the Los Angeles County Museum of Natural History, includes such conservation luminaries as Peter Raven of the Missouri Botanical Garden and E. O. Wilson of Harvard, who has long championed a global inventory far grander than anything endorsed in the NSF report.

According to the report, "unless current trends are reversed, from one quarter to one half of the earth's species will become extinct in the next 30 years." To counter those trends, the report proposes that the NSF assume an international leadership position in the effort to stem species extinction, and calls for budget increases ultimately amounting to about $60 million a year.

That money would go to support for microbial systematics and ecology, for institutions involved in biotic inventories, and for studies of the scientific basis for conservation biology. Also recommended are an expanded commitment to precollege education in biological diversity, more doctoral training in systematics, studies of the social aspects of the biodiversity crisis, and support for scientists in developing countries.

In spite of the task force's ringing cry, the only new money for biodiversity in NSF's fiscal 1990 budget is $2 million for research on conservation biology. A "modest" increase is anticipated for fiscal 1991, according to W. Franklin Harris of the NSF.

"Loss of Biological Diversity: A Global Crises [sic] Requiring International Solutions," a report to the National Science Board, September 1989 (released January 1990).

Perils of Moderation

For years the government has been telling us about the enormous health and social costs of alcohol abuse, now estimated at about $116 billion a year. Most people probably assume that the bulk of the problem is caused by heavy drinkers. But a recent report from the Institute of Medicine says that light-to-moderate drinkers actually cause more trouble than alcoholics.

About 10% of the adult population is estimated to have "serious drinking problems," according to the IOM report prepared for the National Institute on Alcoholism and Alcohol Abuse (NIAAA). Yet, says the committee, "the 60% of the population that consumes light or moderate amounts of alcohol, by the sheer weight of their numbers, is responsible for the greatest proportion of personal and societal alcohol-related problems."

The report says that although alcoholics and alcohol abusers have the most severe disorders, "moderate drinkers may also be vulnerable to a wide range of physical and social problems, including medical diseases, accidental and intentional violence, unemployment, and family discord."