

Affairs, the government will "encourage any area of scientific cooperation except biotechnology, which remains a sensitive issue."

Under the new rules, US institutions can donate equipment to nongovernment organizations in Cuba, such as scientific societies. The first to take advantage of that opening was the Center for Marine Conservation in Washington, DC, which is sending some basic supplies—insect and herbarium cases, jars and lids—to the Cuban Zoological Society for preserving specimens.

Such equipment transfers also require a license, in this case through the US Commerce Department, explained Michael Smith of the CMC. It pays to do some homework beforehand, he said. "The US government's position is not one of just promoting open scientific collaboration per se. They have some policy goals, and they want to see those policy goals achieved." And so the CMC group used some creative arguing to show how their proposal for basic research in biodiversity is consistent with US policy and interests. Among other things, they cited a 1935 US-Cuba treaty, in which both parties agreed "to respect and protect the cultural monuments of peoples," defined to include museums and educational and scientific institutions.

"In my view, collaboration with Cuba is chilled more by the rhetoric than by the regulations," Smith said. "This week is a good example: Judging by what you read in the newspapers, you'd think that absolutely nothing is possible. The reality is that scientific collaboration with Cuba is still quite open."

Academic exchanges are also permitted under last fall's rules. For example, the physics department at the University of Michigan is now reviewing applications from four Cuban students. Roberto Merlin, a Michigan physics professor, said that he'd like to see more Cuban students come to the US, "to open up the channels of communications, if nothing else."

### Freedom to do physics

The push for greater openness also illustrates how, when the usual diplomatic paths become impassable, science presents an alternate route to international discourse. "I think it's exciting that scientists can have an effect on a larger social issue, establishing some kind of normal interaction between Cuba and the US," Smith said. "But it also means that we have a great responsibility and we'd better do something significant."

As Handy pointed out, "Many other countries are benefitting from the exceptional intellectual drive and professional commitment of Cuban scientists

and students." He hopes that other members of the US physics community will make the extra effort to work with Cuban colleagues, and "continue to push to the fore what I call the defense of the profession—that is, wherever there is good physics being done, to try to remove the barriers that harm or impede it."

JEAN KUMAGAI

## More Students Take Physics, and Teachers Like Teaching Them

The findings in a recent report from the American Institute of Physics refute some commonly held notions about high school physics teachers—that teacher burnout is on the rise, that experienced teachers are leaving the classroom in droves, that many who teach physics have little or no training in the subject. "The reality . . . is quite different," state the authors of *Overcoming Inertia: High School Physics in the 1990s*. More than half of the 2500 teachers who responded to the survey, which was conducted in 1993, said they had taken at least six semesters of physics coursework in college or graduate school, and three-quarters of the public school teachers had been certified to teach physics.

The survey also found "a surprisingly strong sense of elan and satisfaction" among physics teachers. When asked how often they'd like to teach the subject, an overwhelming 92% responded "as often as possible." Only 35% get to teach the subject every year, however, and 56% said that in their current assignment, physics was not the primary subject. Eighteen percent of the respondents said they planned to leave teaching sometime prior to retirement, compared to 23% in a survey three years earlier.

Conducted by AIP's Michael Neuschatz and Lori Alpert, the survey also looked at who takes physics. Over the six years since AIP conducted its first high school survey, in 1987, physics enrollments climbed from 20% to 24% of all high school graduates. This shift parallels a general rise in science enrollments. According to the National Center for Education Statistics, the proportion of US high school graduates who took biology grew from 79% in 1982 to 93% in 1992, while the proportion for chemistry rose from 32% to 56%. Neuschatz and Alpert attribute the increases to the stiffer graduation requirements implemented by more than 40 states since the mid-1980s.

With enrollments expected to grow further over the next several years, the report projected a small rise in the demand for physics teachers, with about 400 positions to be filled by recent graduates each year. But other types of education spending may not be keeping up with enrollments. In constant dollars, the median funding for equipment and supplies per physics class dropped from \$300 in 1990 to \$250 in 1993.

The proportion of girls taking physics has increased steadily, Neuschatz and Alpert observe, "although the percentages drop off noticeably for the more advanced physics courses." In 1993, girls accounted for 43% of the total physics enrollments but only 27% of calculus-based advanced-placement courses.

Single copies of the survey report are available free of charge. Contact AIP, Education and Employment Statistics Division, One Physics Ellipse, College Park, Maryland 20740-3843; e-mail jcabrera@aip.org.

## IN BRIEF

The recently formed LIGO Research Community is a users' group for the Laser Interferometric Gravitational Observatory being built by Caltech and MIT. The group will meet next during the American Physical Society's spring meeting in Indianapolis. To join, send e-mail to [lrc@ligo.caltech.edu](mailto:lrc@ligo.caltech.edu) or write to Syd Meshkov, LIGO Research Community, LIGO Project, Caltech, MS 51-53, Pasadena, California 91125. Additional information is posted on the Web at [http://www.ligo.caltech.edu/LIGO\\_web/ResComm/ResComm\\_home.html](http://www.ligo.caltech.edu/LIGO_web/ResComm/ResComm_home.html).

This month a six-part documentary series profiling African American, Latin American and Native American scientists and engineers will begin airing on public television stations in the US (check local listings). One episode of "Breakthrough: The Changing Face of Science in America" features physicists George Castro of the IBM Corp and James Gates of the University of Maryland and astrophysicists France Cordova of NASA and Neil Tyson of Princeton University. The series was created by Blackside Inc, a film and television production company, which has scheduled various education and outreach activities around the series' broadcast. More information is available by sending e-mail to [jass@blackside.com](mailto:jass@blackside.com); Internet users can access Blackside's home page at <http://www.blackside.com>. ■