provided "an unparalleled opportunity for networking," he says.

AIP 1998–99 fellow Lowell Ungar learned about wielding power behind the scenes while in the office of Representative Edward Markey of Massachusetts. Working for the Democratic minority, Ungar found that "there's a lot one can do that's not legislative. Much of the power of Congress is the ability to get information to the press." His own publicity and letter writing campaign was instrumental in restoring a counterterrorism program at US nuclear power sites—a program Ungar says is unique in testing whether plants could respond effectively to threats of sabotage. AIP 1997–98 fellow Kathryn Clay, who worked in the office of Senator Daniel Moynihan (D–N. Y.), discovered her physics training was useful in unexpected ways as she calculated the costs to New York dairy farmers of lost milk production due to severe winter storms. "I was the only one in the office who was comfortable taking the diverse components of the problem and putting them into an equation," she recalls. "Once I got into it . . .my background did let me make a contribution."

Earth scientist David Hunter, who was the AGU fellow in 1998–99, says he became fascinated by the parliamentary maneuvering he encountered while working on an amendment for Senator James Jeffords (R–Vt.) to increase solar and renewable energy appropriations. Even though the amendment, which was supported by 54 senators, was defeated on the Senate floor, Hunter plans to continue policy work, possibly remaining on Capitol Hill. Materials scientist Merrilea Mayo, on the other hand, returned to the Pennsylvania State University as an associate professor after taking a year's sabbatical to work for Lieberman. Mayo, a 1998–99 fellow sponsored jointly by OSA and the Materials Research Society (MRS), saw language she drafted, asserting the importance of R&D to the military, end up in the fiscal 2000 Defense Authorization Act that was passed by both the House and Senate. Mayo says the experience gave her "a much better feeling than the average academic as to what issues, fields, and subfields are likely to receive funding, and from whom, over the next five years." The fellowship is a great opportunity for faculty "to use the sabbatical system," says APS 1993–94 fellow Duncan Moore. "It should be one of the things faculty members, particularly midcareer, think about doing."

To Apply

Information about AIP, APS, AGU, and OSA's congressional fellowships, including how to apply, is available on the Web at http://www.aip.org/pubinfo (AIP); http://www.aps.org/public_affairs/fellow.html (APS); http://www.agu.org/sci_soc/policy/congress_fellow.html(AGU); http://www.osa.org/aboutosa/policy/news/intro.htm (OSA). Application deadlines for the 2000–2001 term will fall early in 2000.

He says that recipients of federal research grants, like himself, "have a moral obligation" to get involved in public service. Moore, who holds an endowed chair at the University of Rochester, is now serving as associate director for technology in the White House Office of Science and Technology Policy.

A broad perspective

Past congressional science fellows have a solid track record in societal and policy issues, as well as in research. This year's crop is no exception: Arriving in Washington with the new class of fellows in September, AIP's Jaczko came equipped with experience in collective bargaining for the graduate employee union at the University of Wisconsin—Madison, in high school physics teaching as part of an Upward Bound program, and in research done in four countries. AGU's new fellow, Bryan Hannegan, an Earth system scientist from the University of California, Irvine, has been president of several student organizations, including the boards of the University of California Student Association and the National Association of Graduate-Professional Students. This year's OSA/MRS fellow, Arun Seraphin, holds a PhD in electronic materials, has been an official in various professional societies, and before starting his fellowship was a policy researcher at the Institute for Defense Analyses.

AUDREY T. LEATH

Search for Extraterrestrials Is This Planet's Largest Computing Project

The number of data crunchers for SETI@home, a project that sifts radioastronomy data looking for signals from extraterrestrials, passed the one million mark in August—less than three months after it got started.

SETI@home looks at data in a 2.5 MHz–wide band centered on the 1420 MHz hydrogen line. The data are collected around the clock by the 300-meter telescope at Arecibo Observatory in Puerto Rico, and sent in batches to the University of California, Berkeley, where SETI@home and other projects in the search for extraterrestrial intelligence (SETI) are headquartered.

That's where the one million—and counting—data crunchers come in. Small chunks of data, sorted by frequency and sky position, are sent to them over the Internet, and their computers use a previously downloaded program to calculate the power spectrum. The analysis can run when the computers would otherwise be idle; typically, people set the program to run as a screen saver. The results are sent back to SETI@home headquarters, and the remote computer is automatically assigned a new set of raw data. At press time, SETI@home boasted participants in 224 countries. Says project director David Anderson, "It's the world's biggest supercomputer—it's much more powerful, and much cheaper, than anything that existed before." Applications for this type of distributed computing will be found in many areas of science, he predicts.

How would a signal from extraterrestrials be recognized? If extraterrestrial signals are leaked from another civilization, "it would be impossible to guess what frequencies to look for," says SETI@home science chief Dan Werthimer. "But if a signal is sent deliberately, I think it would be easy to figure out." Since all known astrophysical signals are spread over a broad frequency range, he continues, "we are looking for a spike in the spectrum. We compare signals from the same part of the sky at different times—multiple detection would really get our attention."

"We've been doing SETI for 20 years," says Werthimer. "So far, no signals have made us jump up and down. All of the strong signals have turned out to be satellites." But this doesn't worry SETI enthusiasts. "I'm still optimistic because the technology is growing so fast," says Werthimer. And if the search for extraterrestrial life happens to turn up a new astrophysical phenomenon, he adds, "that would be exciting. It wouldn't bother me."

SETI@home is funded by the Planetary Society (which was

cofounded by the late Carl Sagan), the University of California, and several businesses, including Sun Microsystems and Paramount Pictures. To find out more about SETI@home and how to participate, visit the project's Web site at http://setiathome.ssl.berkeley.edu.

TONI FEDER

More US Students Take High School Physics

US high school enrollments in physics have reached their highest level in the post–World War II era, according to a recent report from the American Institute of Physics. The report, *Maintaining Momentum: High School Physics for a New Millennium*, found that over the last decade, the proportion of high school students who take physics rose from about 20% to 28%, which translates into about 800 000 students now enrolling in physics each year. Based on a 1997 survey of high school physics teachers, the report is the fourth in a series begun by AIP in the mid-1980s; the response rate was 75%.

According to the report, written by AIP's Michael Neuschatz and Mark McFarling, "The gains are not simply the result of physics being made more widely available" but rather the fact that a broader range of courses is now offered. Although traditional algebra-based courses still make up two-thirds of enrollments, so-called conceptual physics courses, which use little algebra or trigonometry, have also become popular over the last decade, accounting for one-fifth of physics course enrollments. And among students with the strongest math abilities, the proportion taking advanced placement or second-year physics has doubled since 1987.

More high school girls are taking physics: In 1997, they made up 47% of physics course enrollments, compared to 39% ten years earlier. However, the report notes, girls are still underrepresented in advanced placement physics, and women still comprise only one-fourth of high school physics teachers. Asian–American students continued to have the highest enrollments of all racial and ethnic groups, with 44% taking physics. And, although slightly higher proportions of African–American and Hispanic students now take physics—16% and 15%, respectively, compared to 10% for each group in 1990—they remain severely underrepresented, the report notes.

The survey also compared, for the first time, physics enrollments based on socioeconomic levels. Not surprisingly, enrollments in public schools deemed "much worse off" economically based on their locations were less than half those of the richest schools—20% versus 44%. And only 10% of the poorest schools offered advanced placement courses, compared to 35% of the wealthiest schools. "There is some indication that the gap is, if anything, growing worse," the report notes. For example, when asked about the preparation of their entering students, 26% of the respondents at the richest schools said that there had been some improvement over the past four years, while 20% said student preparation had fallen. At the poorest schools, however, only 18% reported improvement, while 33% reported a decline.

And despite the recent enrollment gains, the report notes, physics still draws the lowest enrollments of all the high school sciences, with levels about half those of chemistry. What's more, only a little over 1% of high schoolers have taken two years of physics by the time they graduate, far fewer than their peers in many European and Asian countries.

The full report, which also looks at the demographics and professional backgrounds of high school physics teachers, can be downloaded as a PDF file from the AIP statistics division's home page, http://www.aip.org/statistics/trends/hstrends.htm. A printed summary of the report is available free of charge from AIP, Education and Employment Statistics Division, One Physics Ellipse, College Park, MD 20740; phone 301-209-3066.

JEAN KUMAGAI

IN BRIEF

Articles archive. PubSCIENCE is a new on-line database of physical sciences publications, launched this month by the Department of Energy's Office of Scientific and Technical Information. The database is starting out with some two million articles from more than 1000 peer-reviewed journals. For some journals, listings go back two decades or more, and the database will be continuously updated. PubSCIENCE is modeled on the National Library of Medicine's PubMed. Citations can be searched for free on the Web at http://www.osti.gov/pubsci/, but the cost and availability for accessing the full articles vary, depending on the publisher and whether the user is a subscriber to the particular journal.

On-line geoscience journal. The American Geophysical Union (AGU) and the Geochemical Society have created an on-line journal dedicated to interdisciplinary research in geochemistry and geophysics. One aim of *Geochemistry, Geophysics, Geosystems*—or *G-Cubed* for short—is to keep publication costs and subscription rates low; for example, the editorial and review process will be handled electronically, thereby eliminating the mailing costs involved in working with reviewers and authors, says Cornell University's William White, one of the journal's three editors (along with the University of Cambridge's Harry Elderfield and Harvard University's Richard O'Connell). Another reason for going all-electronic, White says, is "to enable authors to publish very large data sets, which paper journals could never afford to print." Access to the journal will be free for at least the first year. The first issue is set to be posted on the journal's Web site, http://www.g-cubed.org, in early December, prior to AGU's fall meeting, and the journal will be updated weekly.

Physics moratorium. The University of Wyoming's trustees have approved an academic plan that includes mothballing the physics and astronomy department's graduate programs. Reinstating them will be conditional on the department's swelling its undergraduate ranks and making its Wyoming Infrared Observatory financially independent (see PHYSICS TODAY, June, page 53). The uncertain future of the department has contributed to the recent departures of three faculty members, and at least two of the remaining six professors are considering outside offers, says physics and astronomy chair Paul Johnson. On the upside, the university has allocated about $60 000 toward repairing the department's planetarium, and has given the green light to recruiting two new faculty members this year, and two more next year.

Beam physics degrees. Michigan State University's new graduate program in beam physics is now accepting applications. Many of the courses for the master's degree and PhD are self-paced and offered through the Web. Transfer credits are allowed, and courses can also be taken at the university and at the US Particle Accelerator School (which, in conjunction with Indiana University, sponsors its own beam physics master's program; see PHYSICS TODAY, June 1997, page 74). PhD candidates