

FELLOWS BRING ENTHUSIASM AND VARIED BACKGROUNDS TO GOVERNMENT

Twenty years ago, the American Physical Society selected its first Congressional Science Fellows. Since that time, we've seen an increased desire to mix the spice of technically trained people into the typical pot of government policymakers. More scientists and engineers feel the obligation to assist in making the difficult decisions that are involved with increasingly complex, technological and expensive projects. And with this growth in complexity, Congress too sees the need for further technical expertise. Between 120 and 150 Congressional offices now consider taking one of the approximately 25 science fellows sponsored by various scientific and engineering organizations.

The American Association for the Advancement of Science coordinates the fellowships. Fellows with physics backgrounds tend to be sponsored by the American Institute of Physics, its member societies or the AAAS. In the newest class, that of 1993–94, six fellows have strong physics backgrounds.

Democracy becomes real

In the class of 1992–93 fellows (see *PHYSICS TODAY*, December 1992, page 74), Mark Goodman was sponsored by AIP, Valerie Lang was sponsored by the American Geophysical Union, and Laurie Fathe was the APS fellow. *PHYSICS TODAY* talked to these fellows to hear their thoughts upon having left the program.

Goodman spent his year working as a legislative assistant for Senator Kent Conrad, a Democrat from North Dakota. "I was the main person on staff responsible for science and technology issues," Goodman says, "and I shared responsibility for energy, environment and defense."

When he arrived in Washington, Goodman had a basic "Civics 101" understanding of the lawmaking process, but little idea of "what goes on behind the scenes, what makes things happen." He got a taste of that last spring working on an amendment to the National Competitiveness Act.



Congressional fellows Winston Tao, Philip Hammer and Carmina Londoño (left to right) discuss battery technologies for advanced vehicles with Congressman George Brown.

Writing the amendment—which would establish a work-study program for engineering students—and then seeing it through involved sometimes delicate negotiations with, among others, Senate staff (who had to be persuaded to accept the amendment), people at NSF and the National Institute of Standards and Technology (who would administer the program) and representatives of national educational organizations (who had to be reassured that the program would not compete with existing cooperative education programs). Eventually, the amendment was incorporated into the bill, which passed the Senate in March.

Since his fellowship ended last September, Goodman has been working in the Congressional Office of Technology Assessment, where he's helping put together a series of reports on civilian remote sensing from satellites. When he applied for the fellowship, he had already decided to leave particle physics and pursue a career in science policy instead. After

a year and a half in Washington, Goodman does not regret his decision. "I feel like I'm doing something a lot more useful than when I was doing physics research," he says.

Valerie Lang, the AGU fellow, began her term in October 1992, working for the Senate Committee on Environment and Public Works. With the new Congress came turnovers in committee chairs, including the one Lang was working for, so she decided in January to join the staff of Congressman Jim Bacchus, a Democrat from Florida.

Because Bacchus's district encompasses Cape Canaveral and the Kennedy Space Center, his constituency includes a large concentration of defense and government contractors. Lang's previous experience at Aerospace Corporation in Los Angeles was directly applicable there, and she spent much of her time on defense "reinvestment" issues: how best to convert defense companies to civilian businesses, scale down the military and handle base closings.

One of the more difficult aspects of

Lang's term involved the space station. She had to put aside her personal beliefs and instead promote Bacchus's agenda. "I personally oppose the space station—there's not much science involved—and AGU's official policy is also against it," Lang says. "But Bacchus could very well lose his seat if the space station goes down. So I had to help 'whip' for it, tallying votes, writing 'Dear colleague' letters."

When Lang's term ended in September she returned to Aerospace, but to a different job. Before her year on Capitol Hill, she had been a member of the technical staff. These days she works in the government and environment programs division. Aerospace is a Federally Funded Research and Development Center of the Air Force, and like many other defense-oriented FFRDCs and national labs, it is struggling to adjust to military cutbacks. In her new job, Lang looks for new business ventures and new funding sources for Aerospace.

Laurie Fathe, APS's Congressional Science Fellow last year, spent the first seven months working for first-term Representative Anna Eshoo, a California Democrat who represents the area encompassing Silicon Valley. Her district contains a high concentration of high-technology firms and research institutions, and so Eshoo selected and was appointed to the House Science, Space and Technology Committee. She sits on three of its subcommittees: science; space; and technology, environment and aviation. Like Goodman, Fathe was one of only a few staff members who came from a science background, and so her views on certain issues often prevailed. Among other things, Fathe advised the congresswoman on funding for the B factory at SLAC and the Superconducting Super Collider.

As it happened, one of Eshoo's priorities coincided with one of Fathe's: getting more women involved in science and in the political process. To that end, Fathe helped Eshoo draw up a list of 16 women scientists as candidates to fill a vacancy on the National Science Board, whose 23-person roster then included only one woman. (Shirley Malcom of AAAS was chosen to fill the empty slot.)

During the remaining five months of her term, Fathe worked for the House space subcommittee, where she continued working on issues related to the current and future status of space science.

In January Fathe returned to Occidental College, where she is an assistant professor of physics and, starting this year, department chair. She

admits to missing the pace of Congressional life as well as the incredible access to information. "Coming back was like stepping off the people mover at the airport," she says. Like Lang, Fathe finds that the focus of her work has shifted. "I'm doing less lab work and more policy and education research." She is helping develop three new curriculums, one for a first-year integrated calculus and mechanics course, another for training high school science teachers and a third on science policy. Recently, she and collaborator Elsa Garmire (University of Southern California) received funding from the California Department of Transportation to develop a laser for removing graffiti.

New respect

Goodman, Lang and Fathe came away from their fellowships with newfound respect for the political process. "There are problems on both sides of the conversation between the science community and the government," Goodman observes. "But I think the science community has more to learn." Lang and Fathe chastise those scientists who view politics as somehow "dirty." The irony, Fathe says, is that even as physicists are looking down on those in government, "physicists are viewed in Washington as elitist and self-serving."

Lang notes that although AGU has a public affairs committee in Washington, it's still hard to generate any interest in Federal science policy among researchers outside the Beltway. "They want more funds and they're critical about how they get funds," she says. "But they don't want to learn about the process."

"There's a difference between lobbying and being informative," Fathe says. "Scientists came to see me primarily to complain or to whine or to beg. They never bothered to establish working relationships with their congressmen." Fathe, for one, does not intend to make that mistake. "I'm on the phone with my congressman every couple of weeks," she says. "I let him know what's happening" on various science issues. She also intends to make sure her students understand how science interacts with government and vice versa.

Neither Lang nor Fathe rules out the possibility of someday returning to Washington, and both have toyed with the idea of running for elected office. In fact, one of their fellow Congressional fellows has already taken the plunge: Last year's IEEE-sponsored fellow, LeEarl Bryant, recently won the Democratic primary for district 26 in Fort Worth, Texas;

next November she'll face the incumbent, Republican Richard Armev.

The infusion continues

Of this year's fellows, those with more professional experience in physics also show more prior experience in policy and public affairs. The AAAS fellow, Ruth Howes, received her BS in physics from Mount Holyoke College in 1965, and her MA in 1967 and PhD in 1971 in nuclear physics from Columbia University. Howes has been on the faculty of the department of physics and astronomy at Ball State University, in Muncie, Indiana, since 1976. She has also published articles and book chapters about arms control, military technologies, energy, history of science, women and the military, and education. Education has been a strong interest throughout her career, and now she works in the education office of the Senate Committee on Labor and Human Resources, headed by Massachusetts Democrat Edward Kennedy.

Howes wanted to become a fellow to understand how Congress views science. Now she reciprocates by providing, in addition to specific technical expertise, a working knowledge of how research in academia really takes place. When asked about her first reactions to being on the Hill, Howes replied: "I've been very impressed with how hard people around here work, and how bright they are. It's very encouraging."

The Acoustical Society of America sponsors Elizabeth Cohen, who, in the midst of many other activities—education programs in Headstart centers in Los Angeles, acoustician for the Aspen Music Festival, consultant to two PBS television series on science and math education, to name a few—is a consulting professor of electrical engineering at Stanford, where she received her PhD in acoustics in 1980. She also obtained an MS in electrical engineering from Stanford (1980); her BS is from Bennington College (1975). Cohen is president of Cohen Acoustical Inc, in Los Angeles.

In her position as science and engineering fellow with the National Economic Council, she works closely with the office of Vice President Al Gore. She has been working on telecommunications policy, national and global information infrastructure, and "telecommuting" policy (both long term and in response to January's earthquake in Northridge, California). Cohen told us that this experience is a "unique opportunity," and she feels "truly privileged" to be able to do so much.

Duncan Moore, one of the two APS-sponsored fellows, is known to regular

readers of PHYSICS TODAY as a hardy participant in a recent physics roundtable (March, page 30) and as the vice president of the Optical Society of America (November, page 84). Moore obtained his BS in physics from the University of Maine at Orono in 1969 and his master's and PhD in optics from the University of Rochester in 1971 and 1974, respectively. He is taking a year's sabbatical from Rochester, where he is a professor of optics and the former director of the Institute of Optics. Moore is president of Gradient Lens Corporation.

Recognizing the expanding importance of issues of science and technology, Moore decided that he wanted to learn more about the process of making science policy. He works on the staff of Senator John D. Rockefeller IV of West Virginia, and he, like Goodman, was heavily involved with the National Competitiveness Act passed recently by the Senate. (When told his activities sounded like fun, Moore replied, "It was great!") Moore notes that the training and backgrounds of the nontechnical people in Congress are "fundamentally different" from what one encounters in a typical physics department. These differences motivate a certain adjustment, which Moore summarized humbly: "One of the things you have to learn very quickly is to listen."

Winston Tao is sponsored by the American Geophysical Union. He received his AB in physics (1982), his SM in engineering sciences (1988) and his PhD in geophysics (1992) from Harvard, where he did computer modeling of the subduction of the lithosphere, focusing on interactions between the Earth's surface and deep interior. Tao comes to the program after a short stay at the geological and geophysical sciences department at Princeton. He works in the office of Congressman George Brown of California, who is well known as the chairman of the House Committee on Science, Space and Technology.

Tao told PHYSICS TODAY that he applied for the fellowship partly because of frequent student questions about matters related to human interference in natural Earth processes, such as global warming. Now Tao deals with energy and other issues of the "nonliving" environment. He has already traveled to Yucca Mountain in Nevada to examine the proposed national nuclear waste repository and to Detroit to talk to people working on alternative fuels and electric vehicles. He has been enjoying interactions with engineers and specialists in areas outside his usual academic purview. He said, "That's been a blessing that I did not expect at all."

Unlike Tao, who works directly for an individual congressman, AIP-sponsored fellow Carmiña Londoño works for the House subcommittee on technology and competitiveness, a subcommittee of Brown's science committee. She told PHYSICS TODAY that working at the committee level is similar to being involved in a big science project, and she characterized one of her main tasks as "distilling information." Her first project deals with the research and development subsidies code for GATT, the General Agreement on Tariffs and Trade.

Londoño received her BS in physics from the University of Lowell (1980), her MA in optical sciences at the University of Arizona Optical Sciences Center (1982) and her PhD in electro-optics from Tufts University Electro-Optics Technology Center (1992). She is on leave from her position as an optical engineer at Polaroid Corporation in Cambridge, Massachusetts. Like most of the fellows, she has long been interested in combining politics and science. Londoño doesn't worry about the limited ability of any one individual to make big changes, but hopes that "if you can just make one positive contribution, then a whole bunch of positive contributions will make up a big one."

Philip (Bo) Hammer, the other APS-sponsored fellow, also works for a subcommittee of Brown's committee, the subcommittee on science. Hammer has a BS in physics (1987) from Humboldt State University, in Arcata, California, and a master's (1989) and doctorate (1991) from the University of Oregon. He comes to the program as the holder of an Office of Naval Research postdoctoral fellowship at the Naval Surface Warfare Center, in Silver Spring, Maryland. His academic research has concentrated on experimental nonlinear dynamics, but in his Congressional duties he's enjoyed learning some high-energy physics and some geophysics (in connection with the Northridge earthquake).

Hammer says that "people in general would be surprised by the amount of technical expertise in Congress and in particular on the science committees": Of the seven people on the subcommittee's staff, three have technical PhDs. In considering his political experience so far, this member of the Young Scientists Network (see PHYSICS TODAY, May 1993, page 57) says that "the most important message is that it's OK not to be a working research physicist or a college professor. A PhD in physics is really a useful degree, and you can do a lot with it."

—DENIS F. CIOFFI AND JEAN KUMAGAI

AAS ELECTS NEW VICE PRESIDENT

In the recently held election of the American Astronomical Society, Jonathan Grindlay of Harvard University was elected to a three-year term as vice president. When Grindlay's term begins in June, he will replace James E. Hesser of the Dominion Astrophysical Observatory in Victoria, Canada. AAS has three vice presidents, who serve staggered terms; the other two vice presidents are Donald B. Campbell of Cornell University and France A. Cordova of Pennsylvania State University. (The current president of AAS is Sidney Wolff of the National Optical Astronomy Observatory; in June she will be succeeded by president-elect Frank H. Shu of the University of California, Berkeley.)

Grindlay is a professor of astronomy at Harvard, where he received a PhD in astronomy in 1971. His research involves studies of compact objects, accretion-powered x-ray and gamma-ray sources, and compact binaries in globular clusters. A leader in the development of hard x-ray and gamma-ray instrumentation, he is currently chairman of the Compton Gamma Ray Observatory users committee.

In his candidate's statement, Grindlay urged AAS to facilitate "stronger links between NASA and NSF" and to serve "the public's natural and continuing fascination with our field" by sponsoring more popular lectures and demonstrations at meetings.

In other ballot results, AAS members chose three new councillors: Alexei Filippenko of the University of California, Berkeley; Catharine Garmany of the University of Colorado; and Blair Savage of the University of Wisconsin, Madison.

PHYSICS TODAY GETS A PUBLISHER

Charles Harris has been appointed publisher of PHYSICS TODAY. He has overall responsibility for advertising, circulation, editorial and business operations. Harris comes to PHYSICS TODAY after two years as director of publication of *American Scientist*, published by Sigma Xi, the scientific research society. For six years he was editor and publisher of *Pixel*, a magazine dedicated to scientific visualization. Before *Pixel*, Harris spent 11 years as an advertising manager at *Scientific American*. ■