Science Fellows in Washington: From Lab Work to Legislation

During the past couple of years, about 30 scientists and engineers have been lured out of classrooms, offices, and laboratories and into Washington, D.C., to work behind the scenes of the national political stage. They are the beneficiaries of variously sponsored fellowship programs that appear to be helping scientists and Washington discover a new relationship with each other. A few of the fellows have recently earned their doctorates; most have well-established careers and have seized on the program as a means to expand their professional horizons.

The scientist as guru—who is called on sporadically to render "definitive" judgments on technically related national policy matters—is a familiar figure. The new programs cast scientists not as advisers, but as workers in the political hive.

The decision of various scientific societies to sponsor scientists in Congress was by no means sudden. They have been pondering for years, in their various science-and-society committees, "how to expand the science and engineering presence in Washington," as one official put it. The collapse of the presidential science advisory structure intensified these ponderings, as did, even more so, the increasingly distressing state of federal funding of research. But it may be more accurate to say that the move toward scientists working on the Hill is part of nationwide trends—the growing need felt by "consumers" (in this sense, everyone affected by actions of the federal government) to know what is going on, why, and how to take a hand in decisions; as well as the trend toward interdisciplinarity and the recognition that no discipline is an island unto itself.

There are two distinctly different operations afoot. One is a collection of 1-year congressional science fellowship programs sponsored by various societies, most of which are being coordinated and monitored by the AAAS. (This group does not include the program of congressional health fellowships sponsored by the Institute of Medicine and funded by the Robert Wood Johnson Foundation.)

The other involves fellowships awarded by the National Academy of Sciences (NAS) that enable academic scientists to work on in-house projects of the National Academy of Sciences–National Research Council or the Institute of Medicine.

The former casts scientists where few have set foot before—in the machinery of Congress. In fact, the program has at least doubled the number of technical people employed there. The NAS program enables scientists to grapple with science policy within the more academic milieu.

While the programs appear to have been successful from the standpoints of the fellows, their employers, and their sponsors, both endeavors are suffering from financial frustrations. This is particularly true of the NAS program, which got a $250,000 grant from the Alfred P. Sloan Foundation, to be used in diminishing amounts over 3 years and supplemented increasingly by academy funds. Six fellows were supported by the grant the first year and three in the year just ended. But because of the academy's inability to attract money from other sources (several foundations have been approached to no avail), the program is now in limbo, and it is possible that only one fellow will be invited to fulfill the third year of the Sloan contract.

For the congressional science fellowships, money is not such a problem, because the societies themselves are willing to foot most of the bill. The Ford, Rockefeller, and Sloan foundations have kicked in to support the AAAS fellows (all receive stipends of up to $15,000 a year), but program coordinator Richard Scribner says that what is needed is a foundation willing to furnish steady support over a period of several years. Such a commitment is not yet forthcoming, which is one reason why the 1975–1976 program (running from September to August) is sponsoring 12 instead of the hoped-for 15 fellows, the same number as in the year now ended.

The congressional science fellowships are modeled on the congressional fellowships inaugurated by the American Political Science Association in 1953. The chief purpose of the APSA program is to give its fellows (mostly nonscientists) a rich and varied educational experience, so they work in several offices in the course of their year-long stints. Scribner says it was decided that keeping the science fellows in the same place all year would make them more valuable to their employers. Each fellow is assigned either to a committee, the office of a member of Congress, or the newly created Office of Technology Assessment (OTA).

The first society to get into the act was the American Society for Mechanical Engineers, which does not come under the AAAS umbrella because, a society official explained, its fellowships coincide with the congressional rather than the academic year. Its man Barry Hyman, the first of all the science fellows, came from George Washington University, spent a year at the Senate Commerce Committee, another year acting as a committee consultant, and has now moved to the University of Washington. Six others from the AAAS-coordinated program—one chosen by the Institute of Electrical and Electronics Engineers, two by the American Physical Society, and three by the AAAS—followed Hyman to the Hill in September 1973.

Twelve fellows were selected for the 1974–1975 year, with two additional sponsors: the American Psychological Association and the American Institute of Aeronautics and Astronautics. This year four of the five AAAS fellows were, for the first time, stationed at OTA.

Reception on Capitol Hill

The visitors' reception on the Hill has generally been warm, as might be expected from an employer who is getting the services of a highly trained, handpicked individual free for a year. An OTA official calls the fellows "something of a godsend." He observes that "you have to dream up ways to entertain" the usual summer interns, but "the fellows are thrown right into the firing line." According to a staffer on the House Committee on Science and Technology, which is probably the heaviest user of scientists on the Hill, there have been a few rough spots, but these have been mainly personality-related and do not bespeak basic flaws in the selection or placement procedures. Representative Mike McCormack (D–Wash.), chairman of the committee's subcommittee on energy, took up a page and a half in the *Congressional Record* extolling the fellows as "highly competent," "unique," and "invaluable."

If the success of a program can be gauged by the number of fellows who are brought onto employers' payrolls after their year is up, the first year was a hit, with five of the six staying for at least an additional year.

Science talked with all but one—Jessica Tuchman, a biochemist who has become a regular staff member for Representative Morris Udall's (D–Ariz.) environment subcommittee and was in Israel doing advance work for a Udall trip. The other five (including the one who didn't stay) were enthusiastic about their experiences. They found the atmosphere exciting and chal-

lenging, were pleased that they were having an impact on evolving legislation, and were impressed, even surprised, at how hard-working Capitol Hill staffers are. One of these is Elliot Segal, whose leave of absence from an assistant deanship at Yale Medical School turned into a permanent absence as he became increasingly involved in health policy matters while working for Senator Warren G. Magnuson (D–Wash.), who chairs the health appropriations subcommittee. Segal observes that scientists have not only their expertise but their mode of thought to contribute. The Hill is dominated by lawyers, and everyone tends to think like a lawyer. Scientists have a more cautious, systematic, and time-consuming approach to problems. On the Hill, where, as one fellow observed, the "turnaround time is 24 hours," scientists must drop their plodding ways while maintaining their intellectual integrity, a challenge that most find very stimulating.

Experiences of the second year's crop have not been uniformly rosy, but at least half have decided to stay in Washington, either on the staffs where they were placed or in related activities (one would have stayed but for the offer of an irresistible job at the California Energy Commission, to which he says his Washington experience was the springboard).

Next year's batch of fellows (see *Science*, 5 September) will include for the first time a selection by the Federation of American Societies for Experimental Biology (FASEB). He is Arthur M. Silverstein, a physical chemist who is professor of ophthalmic immunology at Johns Hopkins University. The American Psychological Association has also decided to fund a whole fellowship (last year's fellow was half paid for by the AAAS).

The latest organization to independently bring a fellow to Washington is the American Chemical Society (ACS). The emphasis of the society's chemistry and public affairs program, as it is called, is somewhat different from the other programs: the fellow, paid a stipend of $12,500 for the year, is kept on a shorter leash to ensure that his or her experience will be of benefit to the society, and is expected to participate in ACS affairs as well as government assignments. The first fellow, who started last March, in Renee G. Naves, a chemist from American University. She has been given office space and a secretary at the society. After 3 months of going to various hearings and meetings, she spent 6 weeks evaluating energy proposals at the National Science Foundation. From thence she proceeded to Congressman Gilbert Gude's (R–Md.) office, and after that she will spend 6 months at the House Committee on Science and Technology. The ACS plans to sponsor one such fellow a year. James Quigley of ACS says the society believes this is the best format for a four-way benefit—to the individual, the government, to his or her home institution (although there is no promise to return), and to the ACS.

Congressional Science and Engineering Fellows (1973–1974): from left, standing: N. Richard Werthamer, Jessica Tuchman, Elliot Segal, Ronal Larsen; seated, Benjamin Cooper, Barry Hyman, Michael Telson.

The message from societies that have decided to take the fellowship route is that the program is a terrific idea, and that their members are so convinced of its value that they are willing to let part of their dues go for the stipends. The American Physical Society, according to a spokeswoman, has gone on record as being "satisfied, pleased," even "delighted" at the way things are going. From the American Society for Mechanical Engineers we hear it is "the most successful program we ever started. We should have started this 10 years ago." FASEB, which plans to contribute one fellow a year with its own money, says that "this will benefit the biomedical community." Scribner of AAAS says the program has been an "astounding success" except for the part about not being able to get more foundation money.

As for the problem of attracting continuing foundation support, a Sloan Foundation official says that foundations like Sloan (Ford, Rockefeller, and so forth) see themselves as providers of seed money rather than as long-term benefactors. He also says that the Tax Reform Act of 1972 has made them wary of subsidizing any program that might be construed as having a lobbying component. He concedes that the fellowships programs don't fall in this category, but would prefer not to have the matter brought to a test in court. A Ford Foundation officer says that Ford, which is anteing up only for OTA fellows, is not particularly involved in science and that its chief interest in this case is helping a new government agency get off to a propitious start.

It could be asked whether the fellowships are being used for some subtle lobbying in behalf of particular branches of science. But the fellows point out that when they work in Congress they work as staff, and not as society employees. They are there to learn about politics and contribute their expertise, and that is what they want to do.

From the high percentage of fellows staying in Washington, it might also be thought that the societies were acting as recruiting agencies for Congress. But, as one fellow pointed out, it is likely that once Congress, now parched for in-house expertise, has filled the void, more fellows are likely to pass on through Washington and off to where they can spread the benefits of their newly won political sophistication.

The surest thing to be said about the congressional science fellows is that their experiences have significantly affected the careers of all of them, and frequently in ways they never could have predicted. Some planned to go back to teaching and the lab; now that shoe seems to have grown too tight. The complexities and unpredictabilities of politics and policy-making now seem more exciting than research. While aware of the perils of becoming a "superficialist," they find being a generalist more interesting than being a specialist. And those who are taken with Washington have

found Washington equally eager to have them.

Whereas the congressional science fellows are hurled directly into the Capitol Hill meat grinder, NAS fellows are able to continue a more scholarly mode of life—as one fellow said, they are more concerned with "scientific advice from the scientific point of view," in an atmosphere that is a far remove from congressional pressures. NAS fellows, of which there were six last year (one has taken a permanent position on the staff) and three this year, see themselves as getting a fix on the woods after having labored among the trees. One of this year's fellows is Laurie Hendrickson, formerly a systems engineer with Aerospace Corporation in California, who was encouraged to apply to the program by his former dean, Harvey Brooks of Harvard. Hendrickson says he didn't used to think much about science policy, but now finds himself drawn by the complexity of policy analysis in comparison to space systems, where the technical issues are well definable and the means to resolve them identifiable. He is staying on in Washington, having been offered a job as a policy analyst in the Department of State.

Another fellow, Elena Nightingale, who specializes in genetic diseases, has found the NAS position a suitable next step in her career, which has progressed from microbiological research to human genetics to clinical training. Having completed one project in the Division of Medical Sciences, she has started another, on prenatal prevention of genetic disease, and has gotten a 1-year (renewable) appointment to the academy. "Things kept opening up," she says. Lab research now seems too circumscribed, and she welcomes the opportunity to do studies and prepare reports that will influence the whole field by influencing the nature of other peoples' research. The third, Neil Holtzman, is a pediatrician from Johns Hopkins whose special interests revolve around genetic screening. He is the only one going back to his old job.

Almost without exception, the participants in the programs discussed above have been delighted with the network of kindred souls they have been able to plug into; with the influence they believe they have been able to exert in areas they think are important; and, above all, with the new vistas and "options" they see opening before them.

The high quality of the scientists who have been attracted to these opportunities attests to the rarity of the opportunities, for if there already existed encouragements and channels for participation in policy-making, it can be presumed that those interested in such matters would have already found them.

Scribner sees the AAAS-coordinated fellowships as a pump-priming operation, and believes the program will eventually taper off as mutual needs are recognized and better contacts are established directly between scientists and Congress. Meanwhile, judging from the number of other societies—eight, at last count—that have shown interest in joining the trend, it seems likely that the programs will continue to grow.—CONSTANCE HOLDEN

Basic Research in the Air Force: A Tale of Two Laboratories

A year ago viewers of an evening news telecast in Dayton, Ohio, watched a beaming local congressman announce that nearby Wright-Patterson Air Force Base was going to gain 160 jobs, despite a proposed massive Air Force realignment involving the elimination of 23,000 civilian and military positions. At the end of the announcement, however, the congressman mentioned that, in the course of the realignment, the Aerospace Research Laboratories (ARL) at Wright-Patterson was to be "disestablished."

The next day, all work stopped at ARL as angry scientists and technicians besieged their supervisors with demands to know what was going on. The answer was that a major reorganization of the Air Force in-house laboratory structure was under way. The plan called for most basic research to be contracted out to universities and other institutions, and the remaining in-house research to be merged into the activities of so-called full spectrum laboratories that would cover a broad range from basic research to engineering and feasibility testing.

Both ARL and the Air Force's other in-house basic research laboratory, the Cambridge Research Laboratories (CRL) at L. G. Hanscom Air Force Base, near Bedford, Massachusetts, were to be phased out as independent entities. Also affected by the restructuring was the Rome Air Development Center (RADC) at Griffiss Air Force Base near Rome, New York, parts of which were to be moved to Hanscom and to Wright-Patterson.

The dismantling of ARL has now been in process for several months. Some equipment and offices have been moved and scientists are finding places in other laboratories. But politics has blocked the changes at the Cambridge laboratories and at Rome. Under pressure from Massachusetts and New York congressmen, the Air Force delayed the proposed changes in these states until further studies were completed last May. Then, at the end of July, the moves were halted altogether at the direction of Secretary of the Air Force John L. McLucas.

Amidst the uncertainty that followed the news of the reorganization, some Air Force scientists at ARL and CRL predicted the end of in-house basic research, and some have become so disenchanted that they have left or plan to leave the Air Force. Others, however, have adopted a wait-and-see attitude and hope that the new structure will work out in the end.

Air Force observers point out that the restructuring the Air Force was attempting is but the latest in a long series of reorganizations. In a sense, the reorganization represents a return of research to the position it occupied shortly after the Air Force was established as a separate service in 1947, when research was closely identified with product development.

After World War II, there was a steady buildup of research capacity within the Air Force, but it was only in 1961 in the post-Sputnik era that an independent research command, the Office of Aerospace Research (OAR), was created, with ARL, CRL, and the Air Force Office of Scientific Research (OSR) as its main components. OSR is the Air Force's prime research contracting agency. A few years ago, however, OAR was abolished and the research labs and OSR were merged into the Air Force Systems Command (AFSC). This, together with tight budgets, inflation, and (according to some observers) opposition to in-house research within the Air Force, has made the research laboratories more product-oriented.

In the summer of 1974, a laboratory utilization study was commissioned to look at