Energy's (DOE's) basic energy sciences office and high energy and nuclear physics research programs receiving modest increases over 1995 levels—although less than the Clinton Administration had requested.

Industrial research. If NSF grantees believe they have fared badly, they should take a look at the damage suffered by their colleagues funded by federal programs to develop critical industrial technologies. The House eliminated entirely the $323-million Advanced Technology Program in the Department of Commerce—a program funded jointly by industry—and the Senate is expected to give it the same treatment. Walker and House Speaker Newt Gingrich (R–GA) have chosen these programs as prime targets, prompting former Science Committee chair George Brown, Jr., to declare last week: "Walker's philosophy is that technology is not a part of science"

Space program. The House voted to slash NASA's budget by $640 million while providing enough funds—$2.1 billion—to keep the space station alive. In this harsh environment, NASA's astronomy and space science programs fared relatively well, with a $20-million increase over this year's level. Indeed, only one major science program proposed by the Clinton Administration, the Space Infrared Telescope Facility, didn't make it in the final bill. Less fortunate was NASA's Mission to Planet Earth, a major global change monitoring program. It would be cut by about $300 million. Congressional aides say the Senate is unlikely to go along with this cut, however, which could increase the pressure on the space science budget.

Environmental R&D. NASA's global change program isn't the only casualty in this area. The House zeroed out most of the global change research funded by the National Oceanic and Atmospheric Administration (*Science*, 28 July, p. 472). It also voted to dismantle the Interior Department's newly created National Biological Service and transfer its diminished budget to a new division at the U.S. Geological Survey.

When Congress returns on 6 September, all these issues will take center stage. The appropriations bills are supposed to be signed into law before the 1996 fiscal year starts on 1 October. But few observers expect that to happen. Indeed, the White House has already directed federal agencies to draw up contingency plans if President Clinton and Congress do not resolve their differences by the deadline; in the worst case, agencies may have to start furloughing workers and halt the flow of money to researchers and contractors on 1 October. The long, hot summer is likely to continue well into the fall.

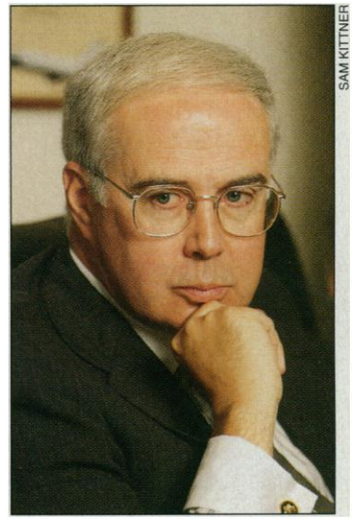
–Colin Norman

Reported by Andrew Lawler, Eliot Marshall, and Richard Stone

SCIENCE INTERVIEW

Robert Walker: The Speaker's Right Hand on Science

When he is back home in Pennsylvania's Amish country, Representative Bob Walker (R) likes to joke that high technology in his district means new grease for the wagon wheels. In Washington, however, he is busy greasing the wheels of science and technology policy as chairman of the Science Committee. Walker has emerged this year as a pivotal player in the funding battles raging in Congress over energy research, space projects, and the proper role of government in science.


SAM KITTNER

It's an exhilarating feeling for a man who served almost two decades in a House of Representatives dominated by the other party, and the last 4 years as the ranking minority member on the panel he now controls. "Committee chairmen have tremendous amounts of power," says the lanky Walker with a trace of awe. "I've learned in recent weeks why Democrats hung around for 30 years to become committee chairmen—you have a chance to dominate the policy agenda." On the other hand, he says, "as ranking member, you are lucky if you can get three science nerds to show up when you speak."

"I've learned ... why Democrats hung around for 30 years to become committee chairmen."
—Robert Walker

Besides presiding over the 50-member science committee, which authorizes funding for most science other than biomedical research, Walker is the number two Republican on the Budget Committee—the powerful panel that earlier this year developed the budget resolution to cut taxes and eliminate the deficit over the next 5 years—and he chairs the House Republican Leadership. He also describes himself as "the closest political ally and congressional friend" of House Speaker Newt Gingrich (R–GA), a connection that gives him extra clout. He enlisted Gingrich's support last month, for example, in persuading the House Appropriations Committee to adopt a budget for the National Aeronautics and Space Administration (NASA) that he favors (*Science*, 28 July, p. 471).

Walker now is engaged in a fierce struggle to redirect science spending by canceling hundreds of millions of dollars worth of industrial research programs in the Commerce and Defense departments. He says that basic research, not industrial R&D, "is *the* mission of government when we talk about science." He has also changed the way the Science Committee operates. The committee has traditionally authorized relatively generous spending levels for the agencies under its jurisdiction while the appropriations subcommittees—which craft the actual budgets within limits laid down by the budget resolution—have wielded the knife and carved out their own spending priorities. This year, however, Walker held his committee to the same tight spending limits as the appropriations subcommittees, and he and Gingrich have been cajoling appropriators to follow the science committee's lead. As a result, the appropriations bills generally mirror those coming out of Walker's committee. One casualty, however, is traditional bipartisan harmony on the Science Committee: Every bill has been attacked by the panel's Democrats, who have accused the Republicans of damaging the science base.

Walker says he has been enthusiastic about science "since I was a kid, though I was a terrible student when it came to learning theorems and that sort of thing." Trained in education and political science, he was a school teacher and congressional staffer before his election to the House in 1976.

Walker was interviewed by *Science* editors in his committee office shortly before Congress adjourned for its August recess. The following is a transcript of his remarks, edited by *Science* for brevity.

–Andrew Lawler

Q: *Does it depress you that there is so little interest in science in Congress?*

A: It depresses me more that there is a mindless effort to slash funding because something has a title that [lawmakers] don't understand. If I say this is good peer-reviewed science that is important in the long term, or if I can give a simple explanation, sometimes you can turn them around. It gets discouraging at times. There is a need to educate people and convince them that science has as much meaning in policy-making as work in agriculture or labor issues, which dominated the industrial economy. The information economy is going to be dominated by knowledge and the technological applications to use it.

Q: *Some say you were only partially successful in winning Budget Committee support for science programs from Chairman John Kasich [in the budget resolution]. Is this true?*

A: I don't think that is necessarily so. John Kasich is going to support the space station. And we almost fully funded NSF [the National Science Foundation]—and even gave them some [increases] in the years ahead. If you look at our agenda going in, we pretty much accomplished it. It's true there are big hits in so-called science, the single largest being the [Commerce Department's] Advanced Technology Program [which funds joint government-industry projects to develop critical technologies]. But I have a hard time justifying ATP as real science. ...I am trying to preserve budgets that really move us towards good science to develop the knowledge base on which technology can be built. I have great faith in American ingenuity, inventiveness and investment to be able make the right technological applications, rather than the government picking winners and losers.

Q: *Other technologically advanced nations have built government-industry partnerships that have proved successful—witness Airbus or Ariane. Why shouldn't the U.S. follow their examples?*

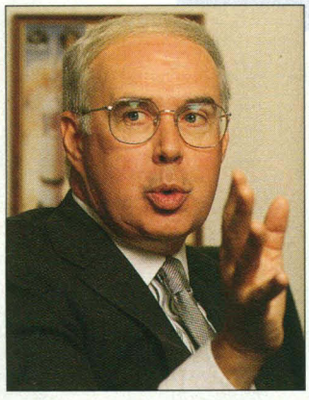
A: Our regulation, taxation and litigation systems have been a hindrance to our aircraft industry. If we got the government off the backs of our industry they would be able to compete. But we've tied one arm behind their back and expected them to compete with people who are subsidized. And having undermined industry's ability to get investments, the government is going to make up for that? That's the wrong formula. The right formula is to reduce the government presence so they can compete on an equal footing. Where industries are not overregulated, you find America very much in the lead.

Q: *U.S companies are spending less on R&D. Will lifting these burdens ensure industry puts more money into research?*

A: We have not given companies many incentives. The R&D tax credit has been on-again, off-again. We have to make that permanent, and use it in more creative ways. It should be made available to companies who invest in research at universities. If there is partnership with universities, that ought to be money they can write off. My guess is that would create a synergism that would result in more R&D.

"I am willing to explore a number of ways to get [to a Department of Science]."

—Robert Walker



SAM KITTNER

Q: *NSF's budget will barely keep up with inflation for the next 5 years [under the spending plan approved by the Budget Committee]. Does this concern you?*

A: Not if you hold that level and try to create some investment opportunities in the rest of the economy. There may be individual scientists who are hoping there are gobs of new money out there, but people I've talked to at NSF and the universities figure they've done pretty well.

Q: *Does it rankle you that the National Institutes of Health (NIH)—which is outside your panel's jurisdiction—is doing so well while other science efforts face cuts?*

A: The work NIH does is very valuable, and we ought to be aggressive in this area. I am worried that the funding is inexactly placed, and I would like to see a lot more peer review rather than political review in the ways in which the money is allocated.

Q: *You are a stern critic of the Earth Observing System [a proposed $8 billion constellation of environmental monitoring satellites that is the centerpiece of NASA's Mission to Planet Earth], and ordered a National Academy of Sciences review of the program a few months ago. Aren't you undermining that study by proposing major cuts in the program [in the NASA appropriations bill] before the study is complete?*

A: I wish science studies could work to the same rhythm that legislatures have to work to. That was one of the problems with OTA [the Office of Technology Assessment, which Congress is preparing to close down]. It's a legislative agency with no legislative rhythm. I have talked to people doing the academy study, and I believe it will not suggest funding figures. I believe it will say there need to be changes in the ground data system, and new generations of technology, and greater consolidation of the data gathering. I believe they will be somewhat sympathetic to the idea of some of this data being sold commercially. We're not doing this blindly—but we had to make some choices now on what those funding figures would look like.

Q: *Is this just a funding issue, or do you have a philosophical problem with global change research?*

A: I want the [Mission to Planet Earth] program to go forward. But if it does not have some reasonable chance for financial stability, it is in danger. My only concern is that it has been descoped by this administration to become strictly a global warming program. I thought what we were funding was a macro-environmental program. The director of the program told me the other week, that no, we're studying global warming now. That is too narrow for the sort of money we're investing. I would like a much broader program that gives scientists outside the global warming realm a chance to participate.

Q: *Many scientists identify the space station as so-called science. How can you oppose ATP as so-called science and approve of the station?*

A: The station itself is not science; it is just infrastructure that will allow us to do science. We're building a unique laboratory in a unique environment. I am absolutely convinced there will be valuable science to be done there. Most of what we will end up doing on the station are things we cannot even think of at the present time.

Q: *Your idea for a Department of Science has not exactly caught fire. Why? [Walker proposed creating a science department earlier this year, but the idea was not endorsed by the Budget Committee and it has been attacked by some leading scientists and government officials.]*

A: [Science Adviser Jack] Gibbons has said I am not for scientific diversity. But it would be helpful for a community that is diverse to coordinate. As [former Science Adviser George] Keyworth said the other day, the community is beginning to lose its credibility with the American public. The public thinks money is being used in wasteful ways. You are always going to have a public misunderstanding of some of what goes on in the scientific community. But I also believe the current lack of coordination is a hindrance to keeping the money flowing rather than a help.

Soon people will see that just cutting loose agencies that now are part of departments [slated for elimination] is not logical. One plan would put NIST [the Commerce Department's National Institute of Standards and Technology] in the Treasury Department! The problem is that a lot of the freshmen don't want to be creating a new department. One way could be to convert the present Department of Energy into a Department of Science. You could add NASA, NSF, EPA [Environmental Protection Agency], NIST, and NOAA [National Oceanic and Atmospheric Administration]. I am willing to explore a number of ways to get there.

Q: *How do you rate the chiefs of the agencies you deal with?*
A: We've had good working relationships. [NSF's] Neal Lane expressed concerns about what we were doing in the social, behavioral and economic directorate, and I gave him more latitude than we originally decided to. That was a sign of respect for the job he's doing. [NASA's] Dan Goldin has been controversial, but I personally find him to be a visionary. He's been an excellent force.

I've had a good personal dialogue with Jack Gibbons, but I think he has undermined the administration by overly politicizing these issues. We've gone out of our way to explain what we're doing. And I have gone out of my way not to name call and not to suggest the president isn't as interested in science as we are. It gets overly political when the science adviser accuses us of being book burners because we have different views of science policy. That has carried the debate a step too far.

Q: *You and the speaker are cheerleaders for basic research. What has the scientific community done—or not done—to help?*
A: We hear more from people who think they are about to be cut than from those getting their funding. The science community seems to think that as long as the money is flowing, I'm okay, you're okay, we're all okay, and doesn't get involved in setting priorities. That ensures that people who are not oriented toward basic research get an upper hand. And basic scientists say, 'What happened?' The fact is they didn't aggressively promote what they were doing—other than when they appear at committee hearings or think their ox is being gored. They need to speak up.

Q: *A group of scientific societies recently made a joint statement warning about cuts to federal research. Is this sort of coordinated effort helpful?*
A: It's always useful to have the scientific societies speak. But it's also important for scientists to go in and visit with their local congressman. They should not just concentrate on whether or not the president of the society has met with the Science Committee chairman. Members of Congress respond most positively to constituents who explain why the basic research work in their own district is valuable to the national interest. My guess is there aren't three members of Congress who read that statement from the societies.

Q: *Why has there been such a complete breakdown in the bipartisan spirit of the Science Committee, and what are the implications of this split?*
A: Some of it is philosophical, and some of it is the two parties trying to find new roles. In the past, one party was always in charge and the Republicans had found a way to accommodate that—and to lose gracefully. Now the agenda is not theirs, it's ours. They haven't accommodated to the fact that we are probably going to win these battles.

GENE THERAPY

NIH Picks Three Gene Vector Centers

Almost 5 years have gone by since researchers conducted the first procedure designed to treat an intractable disease with engineered DNA. But gene therapy has not yet achieved the definitive success that its early proponents hoped for. One reason: It has been difficult to develop good "vectors"—the viruses and other agents that can slip new genes into human cells. Now, the National Institutes of Health (NIH) has decided it's time to make a big investment in tackling this problem. Last week, NIH announced that it is establishing three "national gene vector laboratories" to create and produce high-quality gene transfer agents for use by physicians around the country.

NIH will spend up to $3.5 million on the three vector labs in 1995, and it will follow up with an unspecified amount over the next 4 years. The initial grants have been awarded to well-known experts in gene therapy: Kenneth Cornetta of the University of Indiana, Indianapolis, Gary Nabel at the University of Michigan, Ann Arbor, and James Wilson of the University of Pennsylvania. Wilson says the program is critically important for improving vectors, a technical-sounding task for which "we can never get" adequate funding "through traditional grant mechanisms."

One goal of these labs, according to an NIH policy statement, is to "reduce the cost barrier" that often stands in the way of clinical studies in gene therapy. In particular, NIH wants to make it easier for clinicians to get custom-designed vectors that can be used to treat single-gene defects such as Gaucher disease or adenosine deaminase (ADA) deficiency. Although private companies have provided vectors for many clinical trials already, they are interested primarily in developing therapies for large clinical groups, such as cancer or heart disease patients. After all, it costs about $100,000 to make one batch of vector for an ADA clinical trial, according to Michael Blaese of NIH. Yet there are only tens of ADA deficient patients in the world who might be eligible for therapy. But the centers are being asked to tackle more than just a production task, for researchers agree that every vector type needs refinement. The extent to which the program will support basic studies in such areas as virology remains to be determined.

NIH NATIONAL GENE VECTOR LABORATORIES

University	Investigator	Vector specialty
Indiana	Kenneth Cornetta	retroviruses, adeno-associated virus
Michigan	Gary Nabel	liposomes, naked DNA, DNA-coated pellets
Pennsylvania	James Wilson	adenovirus, DNA viruses

Each center plans to focus on particular vectors. Cornetta says he will continue to concentrate on those derived from retroviruses and adeno-associated viruses. Nabel's center will work on non-viral vectors, including lipid-based DNA carriers and "naked DNA" systems. Nabel also hopes to establish a repository of vectors that have been pretested, for use by any eligible clinician. Wilson's center will specialize in adenoviruses and other DNA viruses.

In an unusual management arrangement, a steering committee composed of at least 10 members will make specific choices about which vectors to study and produce. Each of the four NIH institutes in the project will nominate one member of the panel, and one will come from each of the three academic centers. The academics will choose additional outside members. The group will develop procedures after its first meeting "early this fall,"