

Congress also pumped up DARPA's \$1.2 billion budget in 1990 by \$360 million, to be spent on "generic," "enabling" and "precompetitive" technologies—this year's faddish buzzwords for research intended to promote the US economy without favoring one industry or company over others. The sum designated specifically for precompetitive technologies in the Defense budget is only half of the \$100 million that Bingaman and Representative Mel Levine, a California Democrat, had sought to enable DARPA to develop consortiums of universities, companies and government labs that would do R&D in critical technologies. Instead, the lawmakers added funds to DARPA for specific projects. Among the winners: high-performance computing, which got \$30 million more than the Administration's request of \$108 million, and x-ray lithography, used in processing the next generation of semiconductors, which received \$60 million, double the original request.

Protection through GATT

As well intentioned as Congress's actions are so far, they do not add up to the all-embracing policy put forward by OSTP. Even when the policy paper includes conventional "motherhood" language, the remarks appear to be restated as national doctrine. Consider this: "US society needs to focus on ensuring a quality work force that is educated, trained and flexible in adapting to technological and competitive change [and in furthering] the translation of technology into timely, cost-competitive, high-quality manufactured products. . . . With its proven human resources and successful tradition of manufacturing, US industry can assert the leadership required to meet the competitive challenges and to capitalize on the opportunities. The principal role of the Federal government will be to provide an environment conducive to long-term economic vitality and not allow special interests to divert attention or resources from this goal."

The policy statement also calls for a legal environment "that removes unnecessary obstacles to innovation," for example, by reducing uncertainties about Federal antitrust actions that could be invoked when firms cooperate in R&D or joint production ventures for new products. If this policy had been in effect in the 1970s, US car makers would have been able to jointly develop catalytic converters to reduce emissions. As it was, they were prohibited by law from pooling their research. The OSTP report recommends that companies produc-

ing technologies and computer software under government contracts be allowed to retain the rights to technical data, protect their trade secrets and market the things developed through the contracts. The policy also seeks better international protection of intellectual property in negotiations of the General Agreement on Tariffs and Trade, in trilateral talks with the European Community and Japan, and in bilateral agreements under provisions of the 1988 Omnibus Trade and Competitiveness Act. It would liberalize US controls on exporting high-technology products such as supercomputers to Eastern Europe now that the "evil empire" is rapidly disintegrating.

Another policy goal is revitalizing education at all levels—"not only the training of scientists, engineers and the technical work force, but also educating our population to be sufficiently literate in science and technology to deal with the social issues arising from rapid scientific and technical change." In this effort, says the paper, the government will need "to define an effective and appropriate role . . . in support of the states, localities and universities as they improve science and technology education to build human capital in the US."

The paper also speaks about the Federal responsibility increase government investment in basic research. It asserts that "private industry does not invest heavily in basic research because the payoffs are so unpredictable and diffuse that individual firms cannot be confident of fully recovering their investments." Clearly, therefore, "the long-term potential benefits of this research are so

large that society cannot afford not to make the investment, especially in university research, which in addition to new knowledge also produces trained scientists and engineers."

The policy document is not without its critics—principally because it lacks an overall plan of attack. Representative Sherwood Boehlert, a New York Republican who sits on the House science committee, complained: "For a partisan of this Administration, it's disappointing that the technology paper is not more imaginative or provocative. It is about as thorough a defense of the status quo as could be imagined."

At the PCAST meeting where the policy was discussed, Packard, a member of the council, said that the statement is "basically a good set of guidelines. Now the Administration will have to work with Congress on specific legislation so this country can move into the 21st century as a strong industrial competitor." For his part, Bromley, the chairman of PCAST, said support for the policy "just wasn't there at the beginning of our exercise. Now there's solid support by the Bush Administration."

After the meeting, Packard told us that the policy statement reminded him of the fundamental revelation that Presidents and their men don't simply issue orders and watch them carried out. Indeed, it was President Truman who once summed up the exercise of Presidential power in two sentences: "I sit here all day trying to persuade people to do the things they ought to have sense enough to do without my persuading them. . . . That's all the powers of the President ever amount to." —IRWIN GOODWIN

SCIENCE ADVOCACY DEALT A BLOW IN ELECTIONS FOR 102nd CONGRESS

For weeks before the 1990 midterm elections, political pundits thought they detected an angry "throw the rascals out" attitude toward many incumbents in Congress. But when the ballots were counted, voters returned 96% of the House members and 97% of the Senate incumbents. Still, two longtime members who served on the House Committee on Science, Space and Technology were unexpectedly defeated, and another committee member lost after giving up her seat to run for the Senate. A possibly more significant loss for science was the defeat of Robert W. Kastenmeier, a crusty Wisconsin Democrat who, when only a sopho-

more congressman, lobbied the House, against President Kennedy's wishes, to create the Arms Control and Disarmament Agency.

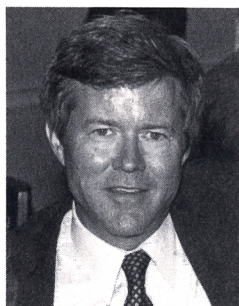
The casualties on the science committee are Doug Walgren, a Pennsylvania Democrat who was seeking his eighth term, and Jack Buechner, a feisty Missouri Republican in quest of his third term, both dedicated defenders of basic research programs at the National Science Foundation, Department of Energy and NASA. Walgren, who last year gave up his chairmanship of the Subcommittee on Science, Research and Technology, though he continued as a member, to take on the leadership of the Subcommittee on

Commerce, Consumer Protection and Competitiveness of the House Energy and Commerce Committee, lost his seat by some 4500 votes to Rick Santorum, a lawyer with an MBA. Buechner, who serves on the House budget committee as well as the science committee, lost by a margin of 52 votes to Joan Kelly Horn in an election in which 188 500 ballots were counted. Because some irregularities showed up in the tally, the ballots were audited, and at the time this magazine went to press a recount had not been ordered.

Citing the 'Golden Fleece'

In both cases, prolonged wrangling over the fiscal 1991 budgets had kept the congressmen in Washington, out of touch with the nasty campaigns waged against them at home. Although Walgren represents middle-to-upper-income suburbs of Pittsburgh, only 250 miles from Washington, he had spent only ten days in the last two months of the campaign in his district, and he had canceled more than a dozen speaking engagements so that he could take part in budget discussions. His opponent painted Walgren as "out of touch" with his constituents because he lives in northern Virginia and doesn't own a home in the district he represents. Walgren also was attacked for his pro-choice views on abortion, for accepting contributions from political action groups and for his support of basic science, which Santorum ridiculed by citing examples of "Golden Fleece Awards"—research projects faulted as a waste of tax money by William Proxmire when he was a senator. Walgren's membership on the science committee came in for criticism as a conflict of interest because his wife had once worked for Cassidy and Associates, a group of Washington lobbyists who make a specialty of helping universities get "pork barrel" appropriations for research facilities—a practice that has drawn howls of protest from the academic science establishment.

Buechner was targeted for championing a higher budget for the National Endowment for the Arts, which was embattled for months over charges of supporting obscene art and pornographic photographs. He also was challenged for favoring President Bush's proposals to reduce taxes on high-income earners and to cut the capital gains tax. Buechner is known as a skeptic of such megascience projects as the Superconducting Super Collider and the space station. His district in suburban St. Louis includes many workers at McDonnell Douglas,



Defeated in their bids for election in November were three members of the House science committee: from left, Doug Walgren of Pennsylvania, Jack Buechner of Missouri and Claudine Schneider of Rhode Island.

the giant aerospace manufacturer that would stand to gain by building the space station.

Another House science committee member, Claudine Schneider, gave up what most people considered a safe seat in Rhode Island to run against Claiborne Pell, chairman of the Senate Subcommittee on Education, Arts and Humanities and father of the Pell grants in higher education, who was seeking his sixth term in the Senate. Although Schneider put up a valiant fight, Pell won 62% of the votes in Rhode Island, a drop of 11% in popularity from his previous election in 1984.

The defeat of Kastenmeier, who represented a district that includes the Madison campus of the University of Wisconsin, was not only an upset but unsettling to many scientists and inventors. He spent 21 of his 32 years in the House as chairman of the House judiciary subcommittee that oversees courts, patents and copyrights. Although neither he nor the legislation he backed got much public notice, he pushed through dozens of technical bills on intellectual property issues, always displaying a deep commitment to the balancing of public interests and private incentives. He read widely in science and technical publications, including *The Bulletin of the Atomic Scientists*, *Science* and *PHYSICS TODAY*. His opponent, Scott L. Klug, a former television news anchorman, portrayed him as a career politician whom voters should boot out of the House for having stayed too long.

Perhaps the most surprising outcome was in Minnesota, where a maverick, Paul Wellstone, a political-science professor at Carleton College, ousted Republican Rudy Boschwitz, who had seemed assured of a third term as US senator. Wellstone will be one of the few university professors

brandishing a PhD in the Senate. (Others include Daniel Patrick Moynihan of New York, who taught economics and political science at Cornell, Syracuse and Harvard, and Phil Gramm of Texas, who was a professor of economics at Texas A&M.) Wellstone has already said in press interviews that he will battle for higher budgets for education at all levels and more grants specifically for small science.

Running on his own money

Another hard-fought election, to represent Oregon in the Senate, involved Harry Lonsdale, a physical chemist, of all things, who had never run for public office. In the end he was narrowly defeated by Mark Hatfield, in quest of a fifth term. As the senior Republican on the Senate appropriations committee, Hatfield could be counted on from time to time to send Oregon some stately gift, such as a new Federal building, medical facility or water project. Nevertheless, Hatfield seemed vulnerable this year. During the campaign Lonsdale criticized him for his positions on tax benefits for the wealthy and logging concessions in Oregon forests.

Lonsdale, who earned his PhD from Pennsylvania State University in 1957 and has worked at General Atomics in San Diego and as a visiting scientist at the Max Planck Institute for Biophysics and the Weizmann Institute, didn't use physics at all in his campaign. What he used instead was much of his own money, derived from his company, which makes medical instruments. He refused to accept money from political action organizations and special interest groups. Hatfield, it bears noting, once was dean of students and taught political science at his Oregon *alma mater*, Willamette University.

—IRWIN GOODWIN ■