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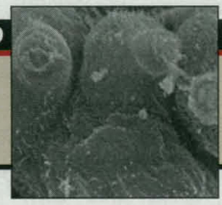
SOHO in trouble



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Suspect in frog deaths

SPENDING BILLS

U.S. R&D Budget Becomes Political Football

Research funding stands at ground zero this year in a bitter fight over who will control the federal budget. So far, the signs for science look good. Last week, for example, key House committees voted a 9.1% increase for the National Institutes of Health (NIH) and an 8.3% increase for research at the National Science Foundation (NSF). But those gains may prove hard to hold on to as a broad struggle over tax cuts and domestic spending priorities plays out over the next few months.

The scene for this struggle was set in February, when President Clinton offered to boost research spending in part by tapping into a proposed tobacco tax. Clinton promised big increases for most civilian science programs, including an 8.4% raise for NIH. But the tax proposal collapsed last month after conservatives attacked the idea and tobacco companies launched a negative advertising blitz. The loss will leave legislators less room to maneuver at a time when Republican leaders are pushing for a large tax cut and taking a hard line on social programs.

As a result, R&D is caught in the crossfire between the White House and conservatives. The NIH funding bill dramatically reflects this contest. It was approved along partisan lines on 23 June by the appropriations subcommittee on labor, health and human services, and education chaired by Representative John Porter (R–IL). The bottom line is a $1.2 billion boost in NIH's budget, now $13.6 billion, an increase that has been praised by champions of biomedical research. "Outstanding," said David Moore, a spokesperson for the Ad Hoc Group for Medical Research Funding. "Spectacular," said Ralph Yount, president of the Federation of American Societies for Experimental Biology. But other programs in the bill were clobbered. The committee sliced some $2 billion, for example, from summer jobs programs and energy subsidies for low-income families.

As a result, Democrat David Obey of Wisconsin, a longtime friend of biomedical research, denounced the measure. The bill, Obey said as he cast his dissenting vote, reflects "a renewed sense of confrontation" from the "hard right wing" of the Republican leadership. "Republicans … decided to pay for NIH and other increases out of the hides of the most defenseless and vulnerable—minority youth and … families and seniors in poverty," he thundered. The bill also alienated moderate Republicans and science advocates like Representative Sherry Boehlert (NY), who said he couldn't support it.

The reception from the White House was no more cordial. President Clinton immediately threatened to veto the bill, which he called "arbitrary" and "extreme." One congressional staffer bemoaned the choices this standoff has created: "This is great—it's science versus poor people." And a White House official made clear who would win such a standoff: "This Administration prefers poor people to scientists when it comes to the hard choices."

Science advocates are left wondering what to do. Neither Moore nor Yount wanted to discuss the $2 billion in cuts that made the NIH raise possible. "We didn't choose to make those cuts," says Moore, who notes that "there needs to be additional money pumped into the system." Yount says: "We have no expertise [on social programs]. Our policy is to make the case for NIH." One congressional aide says, however, that science lobbyists may have to get involved: "If you want big money, you've got to play with the big boys." Other lawmakers and science leaders agree. House Majority Leader Newt Gingrich (R–GA), who says he backs doubling R&D within 8 to 10 years, told *Science* recently that scientists "need to reach out to the general public." Rutgers University President Francis Lawrence, joining a group of senators (see sidebar), warned last

Senate Bill Calls for More Spending

RICK KOZAK

Seeing double. Senators Gramm, left, and Frist have merged bills to double R&D spending.

While 1999 funding for R&D programs is caught up in intense and immediate partisan rivalries in the House (see main text), a group of Senate Democrats and Republicans joined forces last week to make a joint plea for the long-term health of science and technology. Led by Senator Bill Frist (R–TN), the coalition introduced a bill that would boost civilian R&D spending from $38 billion in 1999 to $68 billion in 2010. That amounts to an annual increase of 2.5% above inflation for the next 12 years.

Frist's legislation, which has the strong backing of many universities and research organizations, would not obligate Congress to spend more dollars on R&D. And it requests slightly less than a plan proposed last fall by Senators Phil Gramm (R–TX) and Joe Lieberman (D–CT) which called for a doubling of R&D in a decade (*Science*, 31 October 1997, p. 796). But backers say it raises the profile of science and technology among politicians and should help the R&D community hone a unified message. The bill, entitled the Federal Research Investment Act, would also require the National Academy of Sciences to study criteria for determining the success or failure of government R&D efforts.

Frist declined to say when the bill will be taken up by the Senate Commerce science, technology, and space subcommittee he chairs. That caution may be warranted. After nearly 8 months of effort, supporters of the Gramm-Lieberman measure won only 19 co-sponsors out of 100 U.S. senators. "Part of the problem is the [science] community hasn't made this one of its priorities," Lieberman complained at a 10 June meeting sponsored by the Council on Competitiveness. **–A.L.**

week that "we have to convince people we're not just [another mouth] at the funding trough."

Congress could avoid a fiscal train wreck by passing a budget resolution that gives appropriators more to spend in 1999, or it could negotiate with the White House to make use of the growing budget surplus. But the White House has said surpluses should be used to shore up Social Security, while key Republican leaders favor tax cuts. Both sides could also agree to budget gimmicks—such as one tried unsuccessfully last week to make spending on the year 2000 computer problem an emergency appropriation that wouldn't require cuts to other programs. Or they could use accounting changes to make more money available in 1999, as the House Appropriations Committee did last week in approving a funding bill that covers NSF, NASA, the Environmental Protection Agency, and several other programs. (The committee earmarked for science the additional revenue expected to be generated by raising a ceiling for federal housing loans—adding $70 million to a previously planned $200 million increase for NSF's $2.5 billion research program and $10 million for research at the Veterans Administration.)

Conservatives oppose such gimmicks, but even they may be desperate for a way out of the budget impasse by September as the November elections concentrate the minds of all politicians. "This is like a basketball game—it will all be decided in the last 4 minutes," says one White House aide. Referring to the president's power to veto any spending bill, the aide adds, "and Clinton holds the passes for these guys to go home."

–ELIOT MARSHALL AND ANDREW LAWLER

GLOBAL CHANGE

Signs of Past Collapse Beneath Antarctic Ice

Glaciologists have long been casting a worried eye on the West Antarctic ice sheet (WAIS). Its bed is below sea level, which in theory makes it far less stable than the larger East Antarctic ice sheet. And the western sheet is plenty big. If it melted away in a greenhouse-warmed world, it would raise all the world's oceans by 5 meters. Your favorite beach would be underwater—as would New Orleans, Miami, and Bangkok. Now the worries may deepen. A paper in this issue of *Science* (p. 82) confirms suspicions that in the recent geologic past, at a time perhaps not much warmer than today, the WAIS wasted away to a scrap and flooded the world's coasts.

That implication comes from holes drilled through kilometer-thick ice near the edge of the ice sheet. Reed Scherer and his colleagues at Uppsala University in Sweden and Slawek Tulaczyk and his colleagues at the California Institute of Technology in Pasadena report that the muddy bed of the ice sheet yielded fossils of microscopic marine plants along with isotopes showing that the fossils were deposited under open waters. The age of the fossils shows that the ice was gone, making way for open ocean, sometime in the last 1.3 million years, presumably during a warm period between ice ages, like the present. "Can this ice sheet change a lot?" asks glaciologist Richard Alley of Pennsylvania State University, University Park. The answer, he says, is yes: "It is a high-impact, low-probability event, but it could happen."

Scherer's new analysis backs up a claim he made 8 years ago, after the first hole was drilled through the thin edge of the sheet 700 kilometers inland from the open sea. Scherer had sorted through the microscopic remains of diatoms—single-celled plants that grow in the ocean's sunlit surface waters—in the mud from beneath the ice. He found mostly diatoms that lived in the open sea more than 5 million years ago, when a cooling climate first fostered the growth of the WAIS. But there was also a smattering of species that appeared in Antarctic waters more recently, since 1.3 million years ago. Scherer took their presence as evidence that the ice had retreated at least 700 kilometers sometime within the past 1.3 million years. And as glaciologist Robert Bindschadler of NASA's Goddard Space Flight Center in Greenbelt, Maryland, points out, after a retreat of that scale, "there wouldn't be much room left for an ice sheet."

Not long for this world? Greenhouse warming could destroy the Ross Ice Shelf. The ice shelf may help buttress the West Antarctic ice sheet, whose bed is mainly below sea level (map).

Other researchers pointed out a loose end in the claim: The diatom fossils might have blown onto the ice sheet from marine sediments exposed on land and then—through crevasses and ice flow—gotten carried down to the base of the ice. To rule out that possibility, Scherer and his colleagues have now analyzed sediments from the bottom of nine holes spread over 10 kilometers of the ice sheet. Four of them had young, marine diatoms. These sediments had none of the Antarctic lake diatoms that would accompany marine diatoms if they had been carried to the base of Antarctic ice, which implies a different source for the marine diatoms.

The diatom-containing sediments were also the only ones that contained significant amounts of the radioactive isotope beryllium-10. Beryllium-10 is a hallmark of sediments recently deposited beneath an open sea, says Scherer. Made in the atmosphere by cosmic rays, it attaches to particles in seawater that sink to the bottom; far too little beryllium-10 was found in the overlying ice for windblown beryllium to have been the source. Scherer's analysis of the diatoms and beryllium make it "highly, highly unlikely there is any windblown" contribution to the samples, says Alley. "I feel that Scherer has addressed almost all the criticisms," adds diatom specialist John Barron of the U.S. Geological Survey in Menlo Park, California.

From the diatom species in the sediment, Scherer argues that the area was ice-free and underwater as recently as the last 600,000 years. The most likely time, he adds, might be the brief but exceptionally warm interval between ice ages 400,000 years ago. But Barron doesn't think the diatom species allow the retreat of the ice to be pinned down