U.S. CONGRESS

Now Batting for Science: New York's Sherry Boehlert

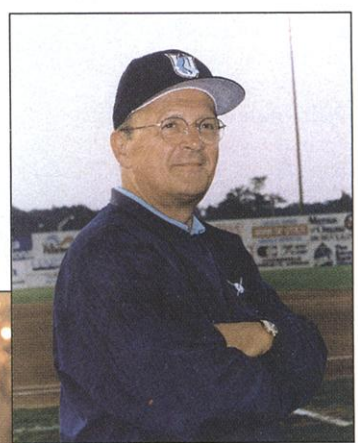
The new chair of the House Science Committee hopes to be a heavy hitter in U.S. science policy debates

As part owner of his hometown's minor league baseball team, the Utica Blue Sox, Representative Sherwood (Sherry) Boehlert has watched hundreds of players chase their dream of moving up to the big leagues. Now it's his turn. As the new chair of the House Science Committee, the 10-term New York Republican wants to transform his panel into a contender. "The Science Committee is going to be a force in this Congress," vowed the voluble legislator shortly after his election in January.

Most scientists are rooting for Boehlert, whose committee oversees all major federal science agencies except the National Institutes of Health (NIH) and the Department of Defense. But even his fans wonder whether an outspoken moderate who routinely clashes with his own party leaders on issues from abortion to climate change—and who leads a committee that lacks the power of the purse—can hit home runs for science. "Realistically, he is not going to generate a lot of headlines," says David Applegate, a lobbyist for the American Geophysical Institute in Alexandria, Virginia. "But he will get the attention of the science agencies—that's important—and he seems to have a good plan for putting the committee on a path to relevance."

After 34 years in Congress—including 15 as an aide—Boehlert, 65, is relishing his new role. In a recent interview with *Science*, Boehlert admitted that his assignment to the Science Committee in 1982 was a setback for an ambitious freshman from a rural upstate district. He was a liberal arts major who hadn't wowed his science professors, and the committee wasn't exactly a center of congressional power. But sitting in his Capitol Hill office—adorned with poster-sized pictures of past baseball greats from his district, autographed baseballs from dozens of Hall of Famers, and two surplus seats from Yankee Stadium—Boehlert says that the panel's hearings soon captured his attention. "I was the perfect guy for this committee," he recalls, "because I would ask all the dumb questions that the others were too embarrassed to ask."

Speaking up has never been a problem for Boehlert, who advocated environmental protection, alternative energy sources, and abortion rights at a time when many in his party were moving in the opposite direction. "I'm a proud, card-carrying moderate," he says. His accomplishments include helping write legislation that has boosted support for higher education, funded research into nonpolluting cars and crime-fighting technologies, and committed the government to restoring Florida's Everglades.



Wearing two hats. Committee chair and minor league baseball team co-owner Sherry Boehlert.

Boehlert's maverick streak, however, has also shown up in debates over specific research projects. He was an outspoken critic of the Superconducting Super Collider, an $11 billion Department of Energy particle accelerator that was canceled in 1993 after massive cost overruns and concerns about its management. But his vote against the project hasn't poisoned his relationship with the physics community, which sees his personality and political style as a marked improvement over the often confrontational approach of his two predecessors, Representatives James Sensenbrenner (R–WI) and Robert Walker (R–PA).

Four months into his reign, Boehlert has done little to disappoint science advocates. After he promised to run his committee "in a way that would make Einstein smile," National Science Foundation (NSF) chief Rita Colwell replied in kind, thanking him for not "playing dice with our universe." Others cheered in March when he publicly bashed President George W. Bush for ignoring scientific findings in backing away from a promise to regulate emissions of carbon dioxide, a key global-warming gas. More recently, Boehlert has routinely chided the White House for holding down nonbiomedical science spending in its April budget request.

"My biggest disappointment was taking a look at the [president's] budget," he told *Science*. But subsequent conversations with White House staff have left him "feeling better," he adds. "The Administration already has signaled that the numbers, particularly for NSF, will be better next year." In the meantime, Boehlert says, "I intend to work with my colleagues to start building up these budgets now."

One way to do that, he says, is to capitalize on connections to House and Senate lawmakers from both parties. Another is superior staff work. "I've always tried to find people [who] are a hell of a lot smarter than I am. … Three of the four staff directors for our subcommittees have [science] Ph.D.s," he notes. His top committee aide, David Goldston, is a longtime staffer whose dry wit and irreverence have made him a popular speaker in science policy circles. Asked at one recent gathering to explain Boehlert's stance on some issue, Goldston duly noted that his boss was out of town. "But this is what I think [he] should say. …"

One of the earliest tests of Boehlert's skills will come this month, when the committee unveils legislation to shape NSF's $800 million education portfolio, including a presidential initiative to spend $200 million a year on math and science partnerships between universities and local school districts. He predicts that by the time the entire House signs off on Bush's overall education blueprint, "our fingerprints are going to be all over it." In particular, Boehlert hopes to win support for his longtime plan to forgive the college debts of students willing to teach science and math in elementary and secondary schools. "The government needs to start sending a stronger signal that teaching is a critical career," he says.

Education is one of three issues that Boehlert has targeted for the committee. The panel has already held hearings on the

CREDITS: (LEFT TO RIGHT) RICK KOZAK; COURTESY OF SHERWOOD BOEHLERT

other two—energy and climate change policy—that featured refreshingly nonpartisan discussion of underlying scientific issues. Boehlert also plans to wade into the growing debate over "balance" between government spending on biomedical and nonbiomedical science. Science funding debates "sometimes seem composed entirely of randomly generated numbers," he said in an 11 February speech to the Universities Research Association, which manages Brookhaven National Laboratory in Upton, New York. "We really need to push for more data."

The speech alarmed some biomedical backers. "The call ... for a balanced federal research portfolio is not, as I understand it, a call to halt or limit growth in the NIH budget," wrote a worried Nils Hasselmo, president of the influential Association of American Universities, which represents 63 major research institutions, in a letter to Boehlert shortly after the speech. Boehlert says Hasselmo and others misread his message. "I was just saying we need to ask some tough questions before we go to the appropriators with big plans."

Boehlert says such polite tiffs are unavoidable in forging stronger political support for increased research spending. "You can count on me to ask uncomfortable questions," he promises. He also knows that taking a stand on science policy is unlikely to generate the large campaign contributions that are the mother's milk of modern electoral politics. But he was "embarrassed," he says, by the research community's tepid response to a standard gambit by legislators seeking a committee chairmanship—the formation of a political action committee that would make donations to colleagues. "Scientists are tighter than bark on a tree," he says.

Still, Boehlert relishes his chance to be science's champion in the House of Representatives. And it's still early enough in the policy-making season for researchers to think that all things are possible. Indeed, meeting those rising expectations may be the toughest task Boehlert faces.

–DAVID MALAKOFF

MEETING AMERICAN PHYSICAL SOCIETY

'Extreme Science' Fans Have a Capital Time

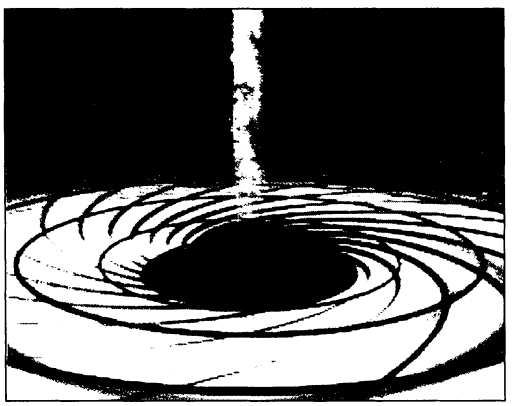
WASHINGTON, D.C.—The April meeting of the American Physical Society (28 April–1 May) was a Mecca for 1050 devotees of the very large or the very small, as cosmologists and astrophysicists hobnobbed with particle and nuclear physicists. Highlights included a spinning black hole and a lunar telescope.

Blips Show Black Hole's Whirl

A furiously blinking x-ray source near the center of the Milky Way has given the best evidence to date that black holes spin, astronomers reported at the meeting. But to say for certain how fast the hole is whirling, theorists must figure out what makes a black hole blink.

The source, named GRO J1655-40, first caught the attention of astronomers with a tremendous blast of x-rays in July 1994. The x-ray intensity fluctuated wildly before fading out 450 days later. Follow-up observations revealed that GRO J1655-40 is a microquasar, a mysterious double fountain of plasma and radiation within our galaxy, thought to come from an ordinary star orbiting a black hole. The black hole's gravity siphons gas off the star into a so-called accretion disk in which it slowly spirals toward the hole, radiating x-rays as it goes. About half the gas eventually falls into the hole; the rest streams outward from opposite sides of the black hole in narrow jets resembling those of quasars, the vastly more distant, more enormous energy sources thought to inhabit the hearts of many galaxies.

Even though they have never seen it spin, astronomers are almost certain that the black hole in GRO J1655-40 rotates. One reason for their confidence is that the black hole probably formed from the implosion of a heavy star. Even if the star starts out rotating very slowly, the collapsing material in the nascent hole must spin ever faster for the same reason whirling figure skaters accelerate as they pull in their arms. Theorists have suggested that spinning black holes power both microquasar and quasar jets.



Whip it. Fast-swirling matter on a close approach writes the signature of a rotating black hole.

CREDIT: NASA

But proving that a black hole is rotating is tricky. Unlike the spinning neutron stars called pulsars, whose thick crusts anchor radio-frequency searchlights that sweep past Earth with a precision that shames any clock, black holes have no hard surface on which to ground a beacon. As a result, astronomers have to deduce the rotation rate of a black hole with other timekeepers.

One of them is called a quasi-periodic oscillation (QPO). Close examination of the 1994 GRO J1655-40 x-ray flare—and a second flare in 1996—revealed a hidden rhythm to the flare's seemingly random intensity gyrations. A small percentage of the x-ray light, within a narrow frequency range, winked on and off about 300 times per second. Theorists speculate that bright blobs in the black hole's accretion disk caused the quasi-periodic fluctuations. In this picture, the orbiting blobs shine a beam of x-ray light in our direction like the headlights of passing cars on a circular racetrack. The disk material circles faster as it approaches the black hole. If the hole is not rotating, the QPO-emitting blobs in GRO J1655-40 must be on the verge of falling into the hole to reach 300 cycles per second.

A spinning black hole, however, puts a slightly different dimple in the fabric of space-time. And the faster it spins, the closer the disk can get without being devoured. So when astronomer Tod Strohmayer of the Goddard Space Flight Center in Greenbelt, Maryland, noticed a second QPO winking even faster, at 450 Hz, in archival Rossi X-ray Timing Explorer data from the 1996 outburst, he drew the obvious conclusion. "The only way to get a QPO that fast is if the black hole is spinning," Strohmayer says. Although single QPOs have been detected in other microquasars, this is the first time two have been seen. And if Strohmayer is right, it marks the first definitive detection of a spinning black hole.

If so, theorists have some work to do. The frequency of the new QPO is "strikingly inconsistent" with the predictions of any of several proposed mechanisms for creating a pair of QPOs, says astrophysicist Fred