U.S. CONGRESS

House Weighs New Science Institute

House Republicans have been talking all year about the need to reduce the federal bureaucracy, and the Commerce Department has been their prime target. But they have been split over what to do with various orphaned programs (*Science*, 22 September, p. 1664). Last week, they finally came up with a single plan. It would preserve the bulk of Commerce's scientific programs by moving ocean and atmospheric research, weather operations, and technical standards work into a new organization called the National Institute for Science and Technology. Although the plan would create another government entity, "this is a consolidation," not a new bureaucracy, says Science Committee Chair Robert Walker (R–PA).

The proposal is a compromise between freshman lawmakers, who wanted to dismantle the department, and committee chairs like Walker, with jurisdiction over it, who wanted to tinker with but preserve most of its programs. The plan will be folded into a bill covering the entire government that Republicans hope to finish next month. But the debate is far from over: The Senate version may ignore the whole issue, while President Bill Clinton has vowed to veto any measure that eliminates the department.

Walker's careful language reflects the difficulty of finding common ground even among his House colleagues. "We're prepared to dig in our heels on this," warns Representative Dick Chrysler (R–MI), the freshman lawmaker who has championed Commerce's demise and won the support of the House leadership on the issue. At the same time, the freshmen have proved themselves unfamiliar with many of the science-related programs within the department. Chrysler, for example, testified at a recent Science Committee hearing that about 90% of all weather forecasting data comes from private sources. Under questioning, he admitted he did not know that most of the information actually comes from satellites operated by the National Oceanic and Atmospheric Administration (NOAA), which makes up half of Commerce's budget.

SAM KITTNER

War of words. Walker says plan would consolidate, not increase, bureaucracy.

Walker and other committee members eventually were able to convince their colleagues that setting technical standards, conducting research, and operating a weather forecasting system are important government roles, and that a new institute was needed to oversee those activities. "We'll end up with a program that is more science-oriented and that has a more defined mission," says Walker. The plan, however, would eliminate the NOAA corps and fleet, as well as the Advanced Technology Program within the National Institute of Standards and Technology. The compromise would turn Commerce's Patent and Trademark Office into a self-sustaining government corporation, reduce the 36,000 Commerce civil servants by one-third, and save $8 billion over 7 years, House lawmakers say.

Commerce Secretary Ronald Brown dismisses the plan as "political trophy-hunting at its worst," saying it would cost billions of dollars rather than save money. And NOAA Administrator James Baker says the current system "works well, so we don't see a need to create new agencies." That opposition, plus a Senate that is reluctant to act, could mean a short legislative life for the proposed institute.

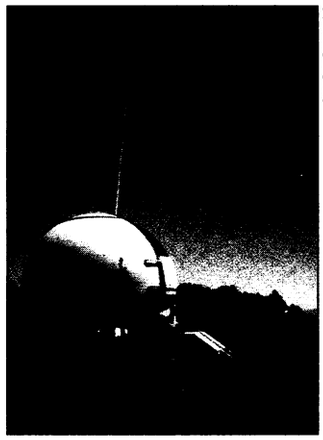
–Andrew Lawler

ASTRONOMY

Laser Takes the Twinkle Out of a Star

Lawrence Livermore National Laboratory scientists Ken Waltjen and Claire Max stood quietly in the intense darkness of the Lick Observatory last week, their eyes straining to peer through the open ceiling into the midnight sky. A 120-inch telescope loomed overhead, with a strange new appendage stretching alongside it like a rifle scope. As 9 October melted into 10 October, a shaft of rich orange light pierced the night sky, and 127 actuators began clicking away at the base of the telescope, constantly adjusting the instrument's focus. The two colleagues beamed. "It's a day that I thought we'd never see," sighed Waltjen, an electrical engineer.

The reason for the excitement was the first integrated test of a new "adaptive optics" system designed to take the twinkle out of stars. The shaft of orange light was a laser beam shooting straight up from the observatory to a point 100 kilometers above Earth's surface, where it encountered a thin band rich in sodium atoms. By nudging some of those sodium atoms into an excited state, the laser beam created a point of light that acts like a guide star for a new breed of deformable mirrors at the base of the telescope. At first, the guide star appeared blurred by atmospheric turbulence. But a high-powered computer constantly compared the image to a model of what it should look like and sent 1000 signals a second to the actuators, mounted on the back of the 5 1/2 inch mirror, which bring the "star" into focus.



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Guiding light. Laser-generated "star" sharpens Lick's focus.

Once the guide star was crystal clear, astronomers turned their sights to their true stellar target nearby, knowing that the adaptive-optics system had already compensated for atmospheric distortions. In last week's test, University of California astronomers took data from young star formations that could not be seen without the new technology. Although Livermore scientists had created a guide star in 1992, the experiment was the first to use the system in a real observation.

The researchers involved were ebullient. The successful experiment, said project leader Max, means that old observatories like Lick, outside San Jose, California, could be made as good as the best in the world. And the best in the world, she said, could become as good as, if not better than, the $1.5 billion Hubble telescope, sent into orbit specifically to avoid the atmospheric turbulence that scientists now seek to nullify from the ground.

Several observatories are planning to install similar systems. Over the summer, Livermore scientists agreed to design an adaptive optics system for the 10-meter Keck telescope in Hawaii, the world's largest. A laser for Keck is also on the drawing board, and other laser guide star projects are under way at the University of Arizona and at Apache Point, New Mexico. Almost a dozen large telescopes are being planned worldwide, and each could some day sport a laser guide star to show the way.

–Jonathan Weisman

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