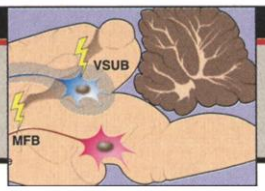


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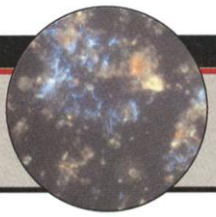
Memories of cocaine



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Rock-eating bacteria

SMITHSONIAN INSTITUTION

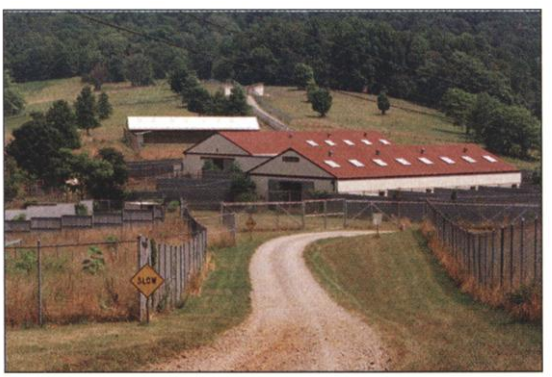
# Shake-Up to Proceed, But Conservation Center Stays Open

The Smithsonian Institution plans to reorganize its research activities—but it's still not quite clear how. On 7 May, Secretary Lawrence Small received a go-ahead from his governing board of regents to consolidate and streamline science at the 155-year-old institution. But one of two facilities slated to close in Small's original plan—the zoo's Conservation and Research Center (CRC)—will remain open, and Small and the regents will set up a commission to advise him on how best to proceed with the rest of his reforms.

Last month Small dropped a bombshell on the Smithsonian's 425 scientists by including the closure of the CRC and the Smithsonian Center for Materials Research and Education in the agency's 2002 budget proposal to Congress. Although Small offered few details about the proposed scientific reorganization, the violent reaction from scientists and the legislators who oversee the Smithsonian's budget attracted national media attention.

For a while Small stuck it out; on 2 May, for example, his office issued a nine-page rationale for closing the conservation research center. But on 6 May, shortly after an informal brunch meeting of the Smithsonian's 17-member governing board and a day before the board's official meeting, Small folded his cards. The CRC was no longer on the chopping block, he announced, because "the proposal was interpreted by many as indicating that the Smithsonian was backing away from science in general, and the biological sciences in particular."

At a press conference held after the regents' meeting, Small tried to put the best face on his about-face. "We have the great possibility to make the whole [Smithsonian] greater than the sum of its parts," Small said. The institution needs to focus on a few strengths, he added, if only to make it more attractive to potential donors.




**Unwanted real estate?** Letter-writing campaigns helped save the National Zoo's conservation center, at least for now.

However, Smithsonian scientists say that they have been left out of the reorganization discussions and aren't sure that their leader, a businessman with no scientific training who took the job 18 months ago, understands or appreciates them. "We've lost academic expertise at the secretarial and directorate level," complains Brian Kensley, a marine biologist at the Smithsonian's National Museum of Natural History (NMNH). Small's top-down management style, they add, could undermine the very reputation that he seeks to bolster. "We are already much greater than the sum of our individual parts," says NMNH paleontologist Anna Behrensmeyer.

The proposed closure of the CRC, which is a rural breeding and study facility for some 80 rare and endangered species, was an especially sharp blow. Small says that closing the center, a 1290-hectare complex 145 kilometers west of the capital in Front Royal, Virginia, would relieve the Smithsonian of the burden of managing a big piece of real estate. Its $2.8 million budget would have been redistributed within science, he said, and some of its research was to move to the National Zoo.

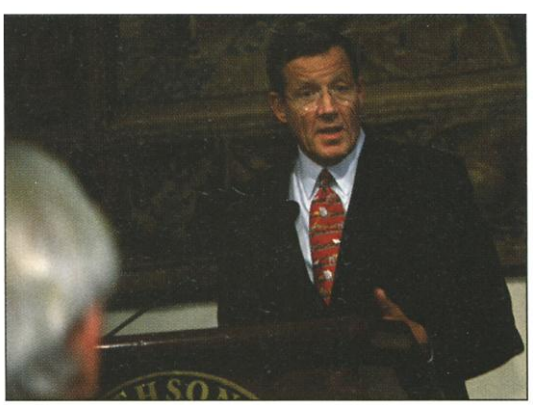
But scientists saw the closure as a vote of no confidence. "We were told that [the] science would be scrutinized objectively, and that decisions would be [made] with sensitivity," recalls Chris Wemmer, the CRC's director. "This particular decision didn't seem to be subjected to [that] process."

Wemmer and his supporters applaud the change in plans. "I am particularly pleased that the outstanding scientists who work there will be able to return to producing quality science instead of worrying about losing their jobs," Representative Frank Wolf (R–VA) said in a written statement.

But scientists are still unhappy with the expected closure by year's end of the materials center. Its analytical equipment and expertise in preserving materials ranging from ancient bones to handmade paper "are core to our mission," says NMNH geologist Brian Huber. More than two dozen staff members may lose their jobs, and conservators already based at individual museums will take up the slack.

Other details of the reorganization and the new advisory commission remain sketchy, however. Still alive is the idea of centers of excellence—administrative, not physical entities—but their themes are still under discussion. Nor is it clear how the themes will be chosen, or even when this advisory group will convene. "We will take all the time necessary to bring together the best people," Small said. Meanwhile, scientists are waiting to see who Small names to the commission. "He could still get people who don't understand the Smithsonian," says Behrensmeyer.

Small insists that he is on the right track. As evidence, he cites a new $10 million gift for basic research from Frank and Wynnette Levinson of Palo Alto, California, and their family. "It's the largest single private donation to basic research in the Smithsonian's 155-year history," says Small, noting that he



**Media moment.** Smithsonian Secretary Lawrence Small reveals plans for a "pan-institutional" review of research.

CREDITS: (TOP TO BOTTOM) LINY KEAST RODMAN/*RICHMOND TIMES-DISPATCH*/AP; RICK KOZAK

soon hopes to announce a second, $4 million donation for science. Such funds are needed, he says, to offset declining support for science by Congress.

Small predicts that the brouhaha will subside once the plan is fleshed out, and that he and the scientists will eventually see eye to eye. "Everybody wants the Smithsonian to do well," he says. **–ELIZABETH PENNISI**

MISSILE DEFENSE

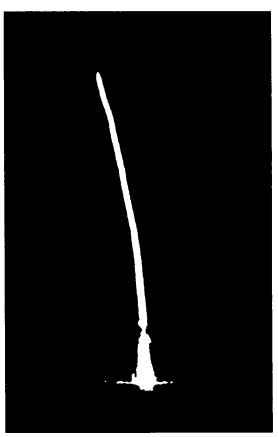
## SDI Redux Has One Element Critics Like

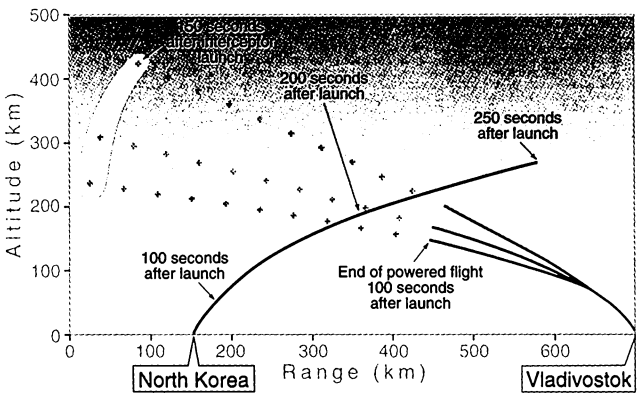
Be careful what you ask for, goes an old proverb, because you may get it. Last week, that warning came true for scientists long skeptical of a Star Wars–style weapons system. President George W. Bush's vision for a nuclear missile defense system, outlined in a speech at the National Defense University, contains a concept they advocate—but only as part of a most costly and ambitious scheme that they vehemently oppose.

Bush has embraced the idea of shooting down hostile missiles during their initial ascent into space. The approach, known as boost-phase intercept, is based on the fact that the bright flame of a burning rocket, viewed against the cold background of space, provides a much clearer target than would a weapon later in flight. But Bush made it clear that boost-phase defense would supplement, rather than replace, other antimissile weapons. The Pentagon, Bush said, has been instructed to examine "all available technology and basing modes for effective missile defenses that could protect our deployed forces, our friends, and our allies."

It's the broad scope of the president's plans—along with his dismissal of the 1972 Anti-Ballistic Missile (ABM) Treaty and preliminary cost estimates for missile defense that range into the hundreds of billions of dollars—that troubles many scientists. Bush declared that "today's most urgent threat" is posed by a small number of missiles in the hands of "some of the world's least responsible states ... for whom terror and blackmail are a way of life." But the skeptics believe that the Administration has other foes in mind. "They want to counter China and get a start on Russia," says Richard Garwin, a senior science fellow at the Council on Foreign Relations and a member of a 1998 commission on ballistic missile threats chaired by current Defense Secretary Donald Rumsfeld.

According to Garwin, boost-phase defense is far more likely to work than other missile defense schemes. The Pentagon already has satellites in orbit that routinely detect missile launches on Earth, 40,000 kilometers away. The missile's flame would appear 1600 times brighter to a ground- or sea-based sensor linked to a boost-phase interceptor, he notes, while the job of shooting it down would become incomparably more difficult once the rocket stopped firing and the plume disappeared. In addition, nuclear tipped, balloon-shrouded weapons sailing through space are likely to be accompanied by a host of identical-looking decoys. The string of failures in U.S. tests to date of such midrange weapons provides a hint of the difficulty of the task.






**Target practice.** This plot shows a North Korean missile being intercepted shortly after launch, a feat much more difficult for midflight weapons like this failed U.S. test (*inset*).

Paradoxically, the limited geographic range of boost-phase defense renders it even more attractive to Garwin and other arms control advocates. No interceptor could catch up to a ballistic missile launched from a site thousands of kilometers away, because the boost phase of a missile's trajectory lasts only 3 to 4 minutes. As a result, boost-phase interceptors could not reach missiles launched from the interior of large nations such as Russia or China. (Space-based systems are conceivable, but decades away.)

"That's good news, because it means you can be reassuring towards those two countries," says Michael O'Hanlon of the Brookings Institution in Washington, D.C., at a briefing held the day after Bush's speech. In contrast, interceptors could be parked just outside the borders of "rogue states" such as North Korea and Iraq. O'Hanlon believes that such defenses, while banned by the letter of the ABM Treaty, are consistent with its spirit.

The issue's shifting terrain has led some arms control advocates to worry that support for any form of missile defense will help the Bush Administration in its quest for a more ambitious system. "I struggle with that question," says Brookings's Ivo Daalder, who supports a boost-phase defense system but opposes Bush's effort to "junk the ABM Treaty."

However, even boost-phase intercepts are a long way from being a mature technology. Philip Coyle, a former director of operational test and evaluation at the Defense Department, says that the technical limitations of a boost-phase defense will become more obvious on closer scrutiny. One problem is the need to react with extreme speed. "You have got to get warning from a satellite back through a command-control system—Cheyenne Mountain—and then out to a Navy ship or a land-based intercept system in a couple of minutes," says Coyle, who now works for the Center for Defense Information in Washington, D.C. "This is not a process where the president or the secretary of defense is going to be involved. There won't be time for that in the boost phase."

These and other problems are likely to be raised in a report by an American Physical Society (APS) panel now being convened. A 1987 APS panel was very critical of the directed energy weapons—lasers, particle beams, and other technologies—that were once part of former President Ronald Reagan's Strategic Defense Initiative (*Science*, 1 May 1987, p. 509). The panel should finish its work early next year. **–DANIEL CHARLES**

Daniel Charles writes from Washington, D.C.

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