SCIENCE

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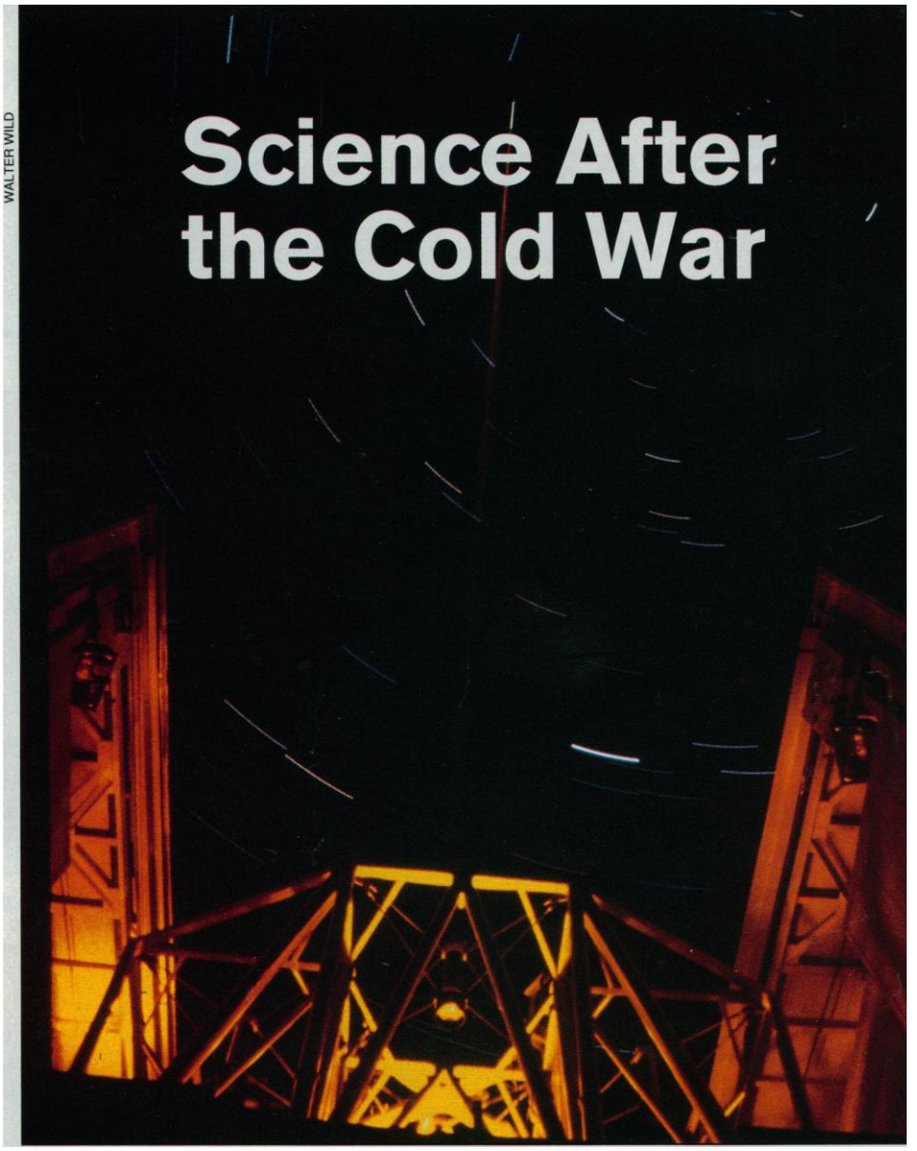
Science After the Cold War



WALTER WILD

Star Wars goes stargazing. A laser beacon based on SDI technology streaks through the atmosphere, creating a sodium guide star for an adaptive optics system at the Multiple Mirror Telescope, Mt. Hopkins, Arizona.

When the Berlin Wall came down 4 years ago, it heralded the end of the Cold War, and the end of an era for U.S. science. Ten years ago, former President Ronald Reagan was calling on scientists and engineers to find ways to shield the entire country from a Soviet missile attack. Today researchers are exhorted to look for "spinoffs" that will secure the country's economic future. In the 1980s the Defense Department had deep pockets for research and development; in real dollars, its spending grew by 84% from fiscal year 1980 through 1988, to 63% of all federal R&D. In the 1990s the military funding bonanza ended. For FY 1994, defense R&D dropped by 7.8% while nondefense funding rose, and the trend is likely to continue.

Behind the shifts in rhetoric and dollars is a mixed and complicated story of change for U.S. science, which *Science* explores in this special report. (The dramatic impacts on researchers in other countries will be explored in forthcoming issues.) As parts of the vast military research apparatus are dismantled and surviving programs seek political support, scientists are sorting a windfall of previously secret data and technologies. The gadgets, many of them devised by the Star Wars program of the 1980s, aren't always useful, however, and adapting them for nonmilitary research can be too costly to fit into the tighter budgets of civilian research (p. 620). The most coveted data, meanwhile—from spy satellites and surveillance systems that paint a detailed portrait of planet Earth—are being released more slowly than researchers had hoped (p. 625).

Another scientific legacy of the Cold War is a human one: a tide of researchers who, anticipating the loss of military funding, are trying to repackage their research to appeal to civilian granting agencies. Many have made seemingly improbable matches of computer and sensor skills honed for military purposes to peaceful applications such as medical imaging. But these researchers are finding that the transition isn't just an intellectual one; like immigrants to a new land, they are also struggling with a new research and funding culture (p. 623).

The surge of data, technologies, and people from military to civilian research doesn't mean that national security has no further need for science, however. The nuclear demon that presided over the Cold War isn't gone; it has just changed form, bringing new research challenges. One is the vexed problem of getting rid of the plutonium from thousands of scrapped warheads (p. 629). Another has given the national laboratories a welcome new mission (p. 627): devising satellite technologies that can keep watch for the first signs of a country embarking on a nuclear arms program, threatening a replay of the Cold War—or worse—in some new corner of the world.

–Tim Appenzeller, editor

A Special Report