also aroused controversy. Each involves a defense against antisatellite weapons, or ASATs, which may someday be used to assault space-based components of a "Star Wars" system. In one, miniature projectiles will be fired at simulated ASATs by a railgun. (The projectiles are accelerated by a plasma arc that flows between two copper rails.) In the other, small homing rockets will be fired at ASAT targets from a large platform.

The Pentagon maintains that the tests are legal because the projectiles and homing rockets are aimed at ASATs, not ballistic missiles; thus, the weapons will be incapable of acting as missile interceptors. But a number of critics, including Representative George Brown (D–Calif.), Thomas Longstreth of the Arms Control Association, and John Pike of the Federation of American Scientists, maintain that this is a trivial distinction, because the difference between ASATs and ballistic missiles in this context is slight.

In addition, they say, the Soviets might lack the means to verify that either the radars or the space-based rockets and projectiles lack a true capability to kill ballistic missiles. Even Frederick concedes this uncertainty. "I'm not sure how the Soviets will know," he says. "Perhaps there can be some agreed-upon method." But others are less optimistic and fear that advocacy of essentially unverifiable experiments will ultimately come back to haunt the United States. Abram and Antonia Chayes suggest, for example, that "in the case of dual-purpose technologies that might achieve but do not yet have ABM [antiballistic missile] capability, the intention of the party conducting the development will always be in doubt. This is especially so for the U.S.S.R., where weapons decisions are not subject to the requirement of public evaluation and justification."

Rhinelander, like the other critics, is no less worried about recent actions by the Soviet Union, including the deployment of an illegal radar at Krasnoyarsk (*Science*, 22 March, p. 1442). The trouble, he says, is that each side "tends to interpret the treaty strictly with respect to programs of the other, but permissively for its own."

The critics have also urged that in the meantime treaty compliance issues be subjected to review by several agencies, not just the Pentagon. In a comprehensive report released last March, Rhinelander, Pike, and Longstreth recommended in particular that the general counsel's offices at the State Department and Arms Control and Disarmament Agency "should play important roles in the early review of U.S. research and development programs."

Barring this, they suggest that a panel of outside weapons and arms control experts be appointed to monitor continually the treaty implications of "Star Wars" work. Although this idea was endorsed in April by a group of defense experts that included John Foster, a vice president of TRW, and Sidney Graybeal, a vice president of the Systems Planning Corporation, it has been resisted by the Administration and has yet to win congressional endorsement. Its backers have vowed to try again before the budget deliberations have concluded.

—R. JEFFREY SMITH

A $9.5-Billion Plan for Facilities

Efforts by the university community to secure a major commitment of federal funds to upgrade research equipment and laboratories are getting broader attention in the Congress. Representative Don Fuqua (D–Fla.), chairman of the House Committee on Science and Technology has introduced legislation that could pump an estimated $9.5 billion into U.S. college and university facilities between 1987 and 1996.

Fuqua's bill, "The University Research Facilities Revitalization Act of 1985," is not the first of its kind. Senator John C. Danforth (R–Mo.) and Senator Thomas F. Eagleton (D–Mo.) introduced broad-based legislation in June 1983. The series of bills covering university research and development facility needs were meant to serve as a blueprint for Congress to tackle the matter. Until now though, there has not been a strong interest in the House in taking on the issue.

And even with Fuqua now calling for Congress to take action, selling this package during a time when Congress is concerned with budget deficts and tax reform will be difficult. Indeed, Fuqua says he intends his bill just "to be a vehicle to develop consensus within the Congress." On the Senate side Danforth will be following suit with a "sense-of-the-Congress" resolution by late July and with his own legislative package in the fall. Neither Danforth nor Fuqua, however, expect Congress to move on their proposals until sometime in 1986.

Under Fuqua's bill, 10 percent of federal funds devoted to university R&D would be spent on facilities and equipment. This proposal could be explosive if it is perceived as depriving existing university R&D programs of funds. In fact, Fuqua does not propose this. To avoid penalizing research efforts, Fuqua proposes to hike federal spending for university research in 1987 by the following amounts: National Science Foundation, $100 million; Health and Human Services, $200 million; Defense, $100 million; Energy, $25 million; NASA, $20 million; and Agriculture, $25 million.

However, in the second through the tenth year of Fuqua's plan, this incremental funding would be provided only if universities and colleges can secure matching grants from states and the private sector. Under Fuqua's plan the six agencies would be required to reserve at least 10 percent of their university R&D obligations to facility modernization. This percentage could shrink only if university R&D were cut.

To help federal agencies and universities set priorities, the National Science Foundation beginning in fiscal year 1986 would conduct periodic assessments of university and college research facility needs. NSF already is slated to submit a separate report to Congress on university R&D needs by September 1986.

Fuqua's and Danforth's initiatives may help force Congress to focus on the issue of university facilities. "I think the whole thing has come a long way," says a lobbyist for the Association of American Universities (AAU). He notes that it has taken years for federal agencies to recognize that university and college research facilities were severely outdated.

The challenge though will be to shape a package that is acceptable to the Congress, industry, and the educational community. In the House and Senate, the legislation will be subject to the jurisdiction of multiple committees. "It could be a very easy bill to kill," comments the AAU lobbyist.—MARK CRAWFORD