have responsibility to fund an operational system with sufficient capacity to meet non-U.S. government needs once the shuttle technology has been developed," he wrote last summer in a letter to NASA administrator James M. Beggs. In other words, commercial customers would have to fit into whatever leftover shuttle space they could find, because the White House was certainly not going to let NASA build extra orbiters to accommodate them—not even on a pay-as-you-go basis.

Stockman's position was perfectly consistent with his loathing for subsidy. But disgruntled shuttlephiles pointed out that it was also a self-fulfilling prophecy: constraining the space available to commercial users would drive them elsewhere and guarantee a lack of demand for the shuttle. Moreover, OMB was judging the need for a fifth orbiter on very narrow grounds: the demand projections in 1988, when the orbiter would roll off the assembly line. But the orbiter would presumably be in service for a decade or more, and the uncertainty in long-range demand can be interpreted both ways. Historically, argued the optimists at NASA, in transportation networks ranging from railroads, highways, and airlines, to expendable rockets, demand has always risen to fill the available capacity.

(It is worth noting that this same optimism is behind NASA's desire to build a permanent space station. If the demand is high, it makes sense to use the shuttle as a truck, ferrying lots of instruments and supplies to a permanent workshop in orbit; if the demand is low, however, one can afford to do what presidential science adviser George A. Keyworth suggests: leave the shuttle in orbit for weeks at a time and use it as a mobile workshop.)

Be that as it may, it was clear to NASA by late fall that OMB was not going to be persuaded by arguments about demand for the shuttle. So the agency took a different tack, focusing on a more clearly defined White House priority: the fifth orbiter was insurance, said NASA; the agency wanted to be able to meet its launch obligations to the Pentagon if something should happen to one of the first four.

OMB replied, in effect, "Prove you need four."

To which NASA said, in effect: "We're phasing out the expendable launch vehicles. We're tying our entire space program and our entire national security apparatus to the space shuttle. If we shut down the orbiter production line now it's going to cost you a fortune to get it started again. Do you really want to risk that on the chance that demand will *not* rise?"

OMB: "Well . . . no."

It was a standoff. Neither side could prove its point, and OMB, for its part, was unwilling to simply assert its budgetary authority lest NASA appeal the issue higher in the White House and win.

Ironically, the solution only appeared as NASA's planners began to contemplate the consequences of losing. If they were really going to have to live with four orbiters, they were also going to have to think very hard about maintenance and repair. What would happen if one of the four made a bad landing and, say, nicked a wing? It would take 3 years to get a replacement wing and another 18 months to cover it with thermal protection tiles. One relatively minor accident and an orbiter could be out of commission for 5 years. Come to think of it, it would make a lot of sense to start stocking "structural" spares—wings, a midbody, a tail, and so forth—even if the White House relented.

Then, as this idea was discussed internally, it began to dawn on people that here was the answer. Why not just ask OMB for the structural spares in fiscal year 1984? That way, OMB could avoid having to commit itself to the fifth orbiter, but NASA would be able to keep the production lines running. OMB could keep the budget down this year—the structural spares would cost $100 million in fiscal 1984, versus $200 million for a full-scale start on the orbiter—and NASA could preserve the option of putting the parts together in a year or two if demand for the shuttle started to pick up.

As a compromise it was elegant. It fooled no one, yet it appealed to everyone. NASA and a relieved OMB quickly reached an understanding, and in January, the structural spares were in the President's budget proposal.

Congress seems likely to go along with the idea. Indeed, the space committees in both houses have been pushing the fifth orbiter all along. Senator Slade Gorton (R–Wash.), the new chairman of the subcommittee on science, technology, and space, recently named the fifth orbiter acquisition as the "largest and most prominent" of the unresolved issues in NASA's latest budget. And a House committee staffer predicts that approval of the structural spares will be accompanied by language urging the Administration to "make up its mind."

But the fact is, neither Congress nor anyone else knows what the ultimate demand for the shuttle will be.

—M. MITCHELL WALDROP

Soviets Lag in Key Weapons Technology

Richard DeLauer, the Pentagon's top scientist, recently made some uncommonly kind remarks about the quality of U.S. weapons. In a detailed report on research and development in the Defense Department budget proposed for 1984, DeLauer said that the United States is superior or equal to the Soviet Union in 19 of 20 basic technologies that will influence the balance of power during the next 10 to 20 years. In addition, he stated that the quality of U.S. weapons is equal or superior to the quality of Soviet weapons in 27 of 32 separate categories, including land-based nuclear missiles, submarines, and bombers.

DeLauer's assessment is significant because it appears to contradict the statements of other Reagan Administration officials, including Defense Secretary Caspar Weinberger, that the Soviets now lead in many military technologies, and that the United States must spend billions of dollars in order to catch up. "The United States has maintained its lead in most of the basic technologies critical to defense," DeLauer said, "although the Soviets are eroding the lead in some of the basic technologies where the U.S. now leads."

Among the areas where the United States leads are computers, electro-optical sensors, microelectronics, guidance and navigation, optics, propulsion, radars, signal processing, computer software, stealth technology, structural materials, submarine detection, and telecommunications. The Soviets are adjudged equal to the United States only in aerodynamics, directed energy, nuclear warheads, and mobile power sources; they lead only in conventional explosives.

According to DeLauer's estimate, the Soviet Union has improved its relative position during the last year in only one weapons category, that of intermediate range ballistic missiles. Soviet superiority in four other weapons categories persists, he says. These include antiballistic missiles, antisatellite weapons, and chemical warfare munitions. Although Congress rejected the Administration's request for new chemical munitions last year, DeLauer says that the request

will be renewed this spring: "We will seek the smallest possible retaliatory stockpile consisting of modern binary munitions such that an adversary would not perceive significant advantage from initiating chemical warfare."

Elsewhere in the report, DeLauer said that research funds will be funneled increasingly to industry, at the expense of work by universities, contract research centers, and in-house laboratories.—**R. Jeffrey Smith**

Minimizing the Risk of Contracting AIDS

The U.S. Public Health Service has recommended that individuals at high risk of developing the severe new immunodeficiency disease called AIDS (for acquired immunodeficiency syndrome) refrain from donating blood because of the possibility that they might transmit the disease to the recipients of the blood products. The high-risk individuals affected by the recommendation include those homosexual and bisexual men who have had a large number of partners, Haitians, and users of intravenous drugs. The recommendations also suggest that individuals not have sexual contact with AIDS patients and minimize the number of their partners.

So far more than 1200 people have come down with AIDS, which may have a mortality rate of 70 percent. It is spread primarily by intimate contact and contaminated needles, but within the past several months the Centers for Disease Control has reported that blood products may be a source of an as yet unidentified infectious agent. Hemophiliacs, who must take clotting factor preparations to prevent uncontrollable bleeding, are especially at risk, according to the CDC. There is also some suggestive, but not conclusive, evidence that other types of blood products, including whole blood, might transmit the condition.

The Public Health Service recommendations are less stringent than those recently made by the National Hemophilia Foundation, which call for manufacturers of clotting factor preparations to stop collecting blood in areas with large homosexual populations and to exclude high-risk individuals by direct questions about their membership in a high-risk group.

The Public Health Service requests that blood collection centers inform potential donors of the recommendations but leaves compliance up to the individual. There are no plans to screen donors by asking them about their sexual practices, by taking their medical histories, or by means of blood tests. As yet there is no direct test for the putative AIDS agent, although there may be indirect tests that could identify individuals at high risk for AIDS.

The Food and Drug Administration has already taken steps to minimize the AIDS risk of hemophiliacs. Producers of blood products have agreed to use no blood from high-risk individuals to prepare nonsterilizable products such as clotting factor. A new method for inactivating viruses in these products is expected in about 3 months.—**Jean L. Marx**

Gardner Appointed UC President

David Gardner must have seemed the obvious choice when the board of regents at the University of California met on 2 March to appoint a new president. Gardner, 49, presently serves as president of the University of Utah, where he is well liked and has a reputation for prudent management and successful fund-raising. During his tenure, according to a university spokesman, faculty salaries were appreciably increased, the student/faculty ratio improved, federal grants increased, and the departments of mathematics, biology, and chemistry were substantially upgraded.

Thus it came as no surprise when the regents unanimously approved Gardner's appointment. Apparently, the only reservations stemmed from his membership in the Mormon church, which opposes the Equal Rights Amendment and bars blacks from the priesthood. A relative shortage of women and minority faculty members has long been a sore subject at the university. Gardner swept these objections aside when he promised explicitly to recruit "persons whose race or sex are less fully present in the university than one would both expect and hope to find."

Gardner, who previously served as a vice president of the California system and a vice chancellor of UC–Santa Barbara, will take office on 1 July. He succeeds David Saxon, 62, who is to be chairman of the Massachusetts Institute of Technology Corporation.—**R. Jeffrey Smith**

Psychology Today in APA's Tomorrow

The American Psychological Association (APA) has joined the ranks of scholarly organizations seeking rapport with a wider audience by taking over the monthly magazine *Psychology Today*.

An APA spokesman says that the association since the mid-1970's has pondered adding a publication with broader appeal than its 17 scholarly journals. In 1977, APA gave up well-developed plans for such a magazine to be called *Psychology*.

Serious negotiations for purchase of *Psychology Today* began last fall after APA learned that its owners, Ziff-Davis Publishing Company, might be amenable to bids. Announcement of the sale was made on 22 February. The terms of the purchase have not been revealed.

Psychology Today was founded in 1967 by Nicholas Charney and John Veronis and became a resounding success in a period of decline and fall for traditional general-audience magazines such as *Look*, *Life*, and the *Saturday Evening Post*. In recent years, although *Psychology Today* circulation topped 1 million, the effects of the slumping U.S. economy reduced the magazine's profitability. A planned reduction of circulation to 850,000 is in progress to "strengthen demographics" to appeal to advertisers, said a Ziff-Davis spokesman.

Founding editor Charney rejoined the magazine last summer as editorial director with a mandate to revamp it.

An APA spokesman says that no changes in personnel or policy are contemplated at this time and that there are no plans to move PT editorial offices from New York City. APA, whose membership of about 50,000 makes it the largest psychology organization in the world, is headquartered in Washington.—**John Walsh**