ing for ways to maintain political support for the SSC.

One possibility would be to reschedule the date for announcing the preferred location for the 52-mile race-track shaped collider. Site selection already has been slipped from July, but some project backers believe that it now may be necessary to delay the decision to next year, pushing back the date to help maintain political support for the project. So far, however, Salgado favors proceeding on schedule.

Roe and Senator Jim Sasser (D–TN) of the Senate Budget Committee also want DOE to develop a plan for moving the project forward with less money. How much money the SSC receives in, 1989, they say, could depend on what alternatives the DOE comes up with.

A major portion of the 1989 budget request, $283 million, would go for engineering design, site preparation, and procurement of long lead time collider components and support systems. Another $64 million in operating funds and $16 million in capital equipment are needed to expand the magnet research and development program, which now is funded at $25 million. The aim is to build 30 full-length (17 meters) magnets and to get industry involved in the project.

Funding for the SSC could easily be below $100 million and perhaps run as little as $32 million in 1989. At this level R&D work on the SSC's superconducting magnets would be slowed significantly. House and Senate leaders appear to want to keep the R&D effort on track, but no one can make any guarantees about the outcome of the SSC budget at this point. Says Sasser of the budgetary situation, "We are in a fiscal straight jacket." ■ **MARK CRAWFORD**

Mars Mania and NASA

The drumbeat of publicity surrounding the Soviet missions to Mars has begun. In July, the Soviets plan to launch a probe to Phobos, a small, dark moon circling Mars. In 1992 they hope to send off a more ambitious project that would land a probe on Martian soil. The press, taking note of these bold plans, has begun to make wisecracks about the "red planet." The *New York Times* recently announced in a headline that humans expect to land on Mars soon and asked: "Will they be Russian, American—or both?"

Meanwhile, a different sound echoes through the halls of the National Aeronautics and Space Administration (NASA) in Washington, D.C. It is the regular chop of the budget ax. Like many other agencies, NASA is having a hard time this spring fitting within the tight limits of the budget law. Rather than cancel big projects, it is trying to amputate a bit here and a bit there. Ironically, one of the victims waiting in line to see NASA's surgeon is the Mars Observer. If the prognosis is bad, this project could lose an instrument or two. But Geoffrey Briggs, NASA's director of scientific exploration of the solar system, says he hopes to "beat down the cost" in the next week so that this drastic step will be unnecessary.

Scheduled originally for launch in 1990, then put back until 1992, the Mars Observer is the only existing U.S. project that will be able to revel in the Mars hoopla of the next few years. It is to be a robot satellite, originally designed as one of a series of cheap solar system probes for launch on the shuttle. (NASA's last mission to Mars was in 1976, when the Viking landers photographed the surface and tested the soil.)

The Mars Observer will carry a half dozen instruments to measure the climate, chemistry, and geological features of Mars—all chosen because they will complement the work of other planetary probes, according to Jeffrey Rosendhal, a former NASA scientist now at George Washington University's Space Policy Institute. "Any decision to remove one of them for cost reasons would have a significant impact on the science of the mission," he says.

NASA managers sent out an alarm early this year, warning that the project was heading for a crisis. Costs appeared to be $4 million above guidelines for 1989, and more than $36 million above guidelines through 1992. If the costs of the Mars Observer are added to unexpected costs of other planetary probes—the Magellan vehicle destined for Venus; Galileo, for Jupiter; and Ulysses, for the sun—NASA faces a $44-million crisis in planetary science this year.

Because the Mars Observer is last in the launch queue, it is the least developed and its costs are growing the fastest. For this reason, it may have to make the greatest sacrifice. Project manager William Purdy of the Jet Propulsion Laboratory in Pasadena confirms that "It seems inevitable that we'll have to take something out of the mission." And there is at least "a chance" that an instrument will be eliminated.

The main push in the cost increase came in 1986 when NASA decided to delay the launch 2 years. The delay was triggered in part by the shuttle accident but also by a squabble between NASA and congressional staffers over which was the most appropriate rocket to use (*Science*, 13 February 1987, p. 743). One official says that NASA has not recovered yet from the run-in with Congress and is still unsure of the means of transport. It has ordered that the Mars Observer fit both the shuttle and the Titan expendable launcher—a costly dual capability.

Scientists working on the Mars mission know about the threat to remove an instrument or two, but they hope this is merely a warning. Says Jacob Trombka of the Goddard Space Flight Center, "We're going to look at everything; we hope we can absorb the 5% that's necessary" to keep the project within budget bounds without losing an instrument. "All the working groups are doing all we can to keep the entire range of experiments." The impact of the cooperative penny-pinching will not be known for 6 to 8 months, when a final decision on the instruments for the Mars Observer will come down.

America's Mars enthusiasts may not be able to match the Soviet pace of exploration this year, but they will not be left entirely out of the picture. According to NASA, the Soviets have agreed to install a little aluminum plaque on the Phobos vehicle to commemorate Asaph Hall, the U.S. astronomer who first spotted Phobos and the second Martian moon, Deimos. The image will include a reproduction of a page from Hall's notebook, dated 11 August 1877, in which he noted the discovery of the Martian moons. The plaque was the brainstorm of Hall's great great grandson, Andrew Hyde, who works for Senator John Warner (R–VA). He proposed the idea to NASA, and NASA passed it along to a receptive Soviet Academy of Sciences.

Hyde says that his great great grandfather "in his wildest imagination, never could have imagined" that his name would one day appear on a Soviet plaque on Phobos. ■

ELIOT MARSHALL