

# Rockfest XI: Wherefore Tomorrow?

Vast amounts of information are exchanged via the journal articles, data networks and meeting talks that are the conventional tools of scientific communication. Science also has its share, however, of other modes, born often of uncertainty and sometimes of desperation—the rumor mill and the grapevine. At the National Aeronautics and Space Administration's Johnson Space Center in Houston last week, both were in evidence, as worried scientists sought to find hints about the future of NASA's budget-threatened planetary science program. For many of the researchers, immersed in disciplines dependent for grist on the data returned by interplanetary spacecraft, the outcome would directly affect their very careers.

The occasion was the eleventh Lunar and Planetary Science Conference, a sprawling gathering of more than 600 participants who have met annually since the Apollo 11 astronauts brought their initial samples of the moon back to the earth. As in the past, it was a concentrated five days, with multiple day and night sessions presenting a total of more than 300 reports on moons and planets, asteroids and comets. But where previous years' conferences were typified by scientists in hallway clusters and dinnertime groups discussing aspects of the day's science, this year the budget was the thing. And the effect on the ambience of the meeting was at times almost unnerving.

A proposal to rendezvous with a comet had been effectively squelched by a lack of preliminary funding in President Carter's budget, and a long-sought Venus orbiter to study the cloud-shrouded planet's surface by radar was again deferred. The Galileo orbiter-and-probe of Jupiter faced some congressional opposition, and there was even concern about money to continue studying the moonrock samples already on earth. Then, only a week before the meeting, President Carter asked for still deeper budget cuts — disproportionate amounts of which, the researchers feared, would come from the science portion of NASA's funding, since the space shuttle, accounting for about 48 cents of every dollar in NASA's request, was considered "safe" thanks to the Defense Department's backing.

Visitors arriving at the meeting from Washington were besieged with requests for tidbits of information, most of which went unfulfilled. (One observer compared the frustrated questioners to the fact-hungry families of the U.S. hostages in Iran.) And nature's abhorrence of vacuums seems to include information shortages. A prime example was Galileo, originally conceived as a Jupiter-bound orbiter and atmosphere probe to be

launched from a single space shuttle in 1982. Funding pressures and space-shuttle delays modified it into a pair of separate launches in 1984, but the latest round of cost-cutting cast even that future into uncertainty. At the conference, one could find "authoritative" rumors that the mission was being further delayed, that it was being cancelled, that the probe was being omitted or that it would be sent without the orbiter. Would the Venus radar mapper, not long ago sought for a 1984 launching, make it by 1986? Second-guessing the future was a common game at the conference, and scientists could be heard trying to gauge the congressional reception for launch dates in 1988 and 1989.

As the week progressed, there were hints that the damage might be somewhat less than originally feared. "I have some good news," said one geophysicist in a sardonic tone. "The 36 percent cut in planetary geology may not be that bad." Prior to a Wednesday night talk by chief NASA scientist Thomas Mutch, one of his hosts was repeatedly urged by conference attendees not to let Mutch off the stage until he had shed some light on the situation. "Any rumors you have heard about the demise of space science are without substance," Mutch finally said, but he also apparently felt it necessary to add, "I don't think I'm being Pollyanna-ish when I say this."

His words did seem to ease the mood somewhat, but the final decisions were not yet made. And on the meeting's last day, tensions were re-heightened with reports that a House of Representatives committee had voted for still deeper cuts, including a billion-dollar slash from the Defense Department, leaving some space scientists concerned that nothing in NASA could be considered safe if the money threat reached even into the supposedly sacrosanct military budget. Despite NASA's attempts at reassurance, many of the conference participants took their pre-meeting uncertainties away with them.

Perhaps in response to the accumulating question marks in the U.S. space program, there was considerable interest in a brief, informal meeting on the subject of possible future European planetary missions. Under study by the European Space Agency, for example, is a possible flyby of comet Halley, as well as a Polar Orbiting Lunar Observatory (POLO) that strongly resembles a U.S. proposal that was deleted from three successive budgets before essentially being turned down flat by NASA. Europe has yet to fly any planetary missions, and according to the meeting's host, Kieth Runcorn of the University of Newcastle, the typical Euro-

pean objection to such projects used to be, "If it were worth doing, the United States would have done it." In less fiscally constrained times, similar remarks used to produce proud little smiles from U.S. hearers. This time, with an uncertain future looming, Runcorn drew groans. Cooperation with NASA is being explored, Runcorn said, even in such programs as POLO, which might have been a less likely point of collaboration in past years when the U.S. space agency was pointedly ignoring American scientists' efforts for a similar craft. According to William Quaide, head of NASA's Planetary Geophysics and Geochemistry branch, "It may be the times which make NASA more willing to be cooperative, to be perfectly frank."

There are now plans, Runcorn said, for a September workshop to be held by the European Science Foundation to seek a consensus about suitable goals for European planetary science over the next 20 years. The gathering is expected to evaluate the state of the art in Europe, consider the scientific questions that European capabilities can address and recommend suitable spacecraft missions, following a debate on possibilities for the future.

What Runcorn actually said was a "hopefully constructive debate," acknowledging with a wry smile the competing nationalisms that have often frustrated the European Space Agency's planning. Some researchers, in fact, feel that such conflict within ESA may well keep any grand European planetary plan from reaching fruition. Large-scale efforts, said Alan Binder of the University of Munster, are likelier to stand a chance if they can be initiated by a single nation with the money and technology. Binder is advocating a program called Selene, involving 34 unmanned lunar craft, 18 of which would return samples of the moon to earth. Germany would design and build all 34, including their scientific instruments, although NASA would probably do the launching (consisting of about 14 shuttle flights). A small preliminary study has been funded and conducted by the ERNO corporation, and Binder hopes that the West German government will fund a larger evaluation.

Even within ESA, however, Runcorn says, advocates of planetary missions are now better represented than they used to be. Heretofore, he says, many scientists have become used to relying on "pressure from above" — government-initiated programs that determine what the scientists will be doing — "whereas, in fact, it is pressure from below which gets things moving."

The U.S. participants at last week's conference may finally have gotten Runcorn's message the hard way. □