

## An act of Discovery: On the road again

"Welcome back, Discovery," said "captain" Blaine Hammond from Houston as the shuttle rolled to a stop in California's Edwards Air Force Base at the end of the first U.S. manned space mission in 32 months. "A great start to the new beginning." Elation about the flight abounded, providing perhaps the most appropriate of birthday presents to a long-besieged agency that two days earlier had marked the 30th year of its establishment.

Embodying more than 200 design changes since seven astronauts died in the Jan. 28, 1986, Challenger explosion, Discovery carried its crew of five veteran spacemen on a model mission, highlighted by the successful deployment of NASA's third Tracking and Data Relay Satellite, or TDRS. (TDRS-2 was destroyed with Challenger.) The TDRS network will greatly increase NASA's communications with other satellites and the space shuttles. In addition, results of a dozen scientific experiments conducted during Discovery's flight, ranging from studies of microgravity effects to photographs of lightning in the atmosphere, are reaching their mentors' laboratories.

Less clear, however, is the direction of NASA's "new beginning."

Dale Myers, the agency's second-in-command, spoke of a coming "new era" in the U.S. space program: "The way I look at it, of course, is the priority of getting into the launching of a whole series of important planetary missions that we have had backed up here for two years . . . Magellan to Venus, the Galileo mission to Jupiter, the Mars Observer, all precursors to future activities in space."

Yet Magellan, a scientifically simpler version of a previously planned mission, carries only a single instrument to Venus, a radar to map its surface. Galileo, scheduled (as is Magellan) for launch next year, was begun in the 1970s, so it carries instruments designed more than a decade ago. In addition, its trajectory, radically revised from the original plan, will not get it to Jupiter until 1995. The Mars Observer, whose launch NASA has delayed to 1992, has recently had two key sensors deleted from its payload to cut costs.

Besides interplanetary probes, Myers said, "the establishing of a space station is the new era that we really are moving into." The very day Discovery took off, the United States — after more than two years of negotiation — signed a detailed pact with Canada, Japan and nine European countries covering their participation in the space station program. Yet the station's cost estimates, ranging from nearly \$20 billion to more than \$30 billion, give it tough sledding both in Congress and with researchers who fear it will drain funds



*Discovery took off on Sept. 29 carrying not only five astronauts and a \$100 million satellite, but also renewed hopes for the space program's future.*

from proposed unmanned scientific missions.

Meanwhile, NASA recovered Discovery's two solid-rocket boosters from the Atlantic Ocean and found no problems on first inspection. The boosters will be dismantled and studied in detail by contractor Morton Thiokol in Utah to confirm the reliability of the boosters' revised O-ring joints and other modifications. The next shuttle in line is Atlantis, tentatively scheduled for a Nov. 17 flight with a classified Defense Department payload. Then Discovery will fly again, tentatively on Feb. 18, to orbit another TDRS.

Barely had Discovery reached orbit when Shuttle Operations Director Thomas Utsman of Kennedy Space Center in Florida voiced another view of the envisioned new era at NASA. He did not invoke the agency's specific future aspirations to make his case, nor did he reintroduce the broader but just as thorny question of the U.S. space program's overall sense of purpose. His words more directly represented the elation of the millions of people who had just watched Discovery emerge like a phoenix into the morning sky, evoking energy and life in a program that has so often been accused of lacking either. "We're back out on the trail again," Utsman said, "going towards tomorrow." — J. Eberhart

## Surprising boost for children with AIDS

AIDS tends to show up differently in children and adults. While both suffer frequent infections, children have more visible brain disease. In fact, several studies suggest brain damage will eventually occur in all AIDS-afflicted children. And that's what makes a new National Cancer Institute (NCI) study encouraging.

Aimed at establishing the safety and tolerable doses of the drug zidovudine (also known as AZT) in children, the year-long study quickly — and unexpectedly — prompted reversals in intellectual impairment. Nonetheless, five of the 21 participants died of the disease.

The study was the first to deliver the drug through a continuous intravenous infusion pump. Zidovudine, which is quickly lost from the body and can be very toxic, is usually given by periodic injections or by mouth. Both approaches deliver an initial peak dose that quickly drops. The NCI researchers wanted to see whether lower-dose, continuous-level treatment might improve children's tolerance or the drug's efficacy.

All study participants, aged 14 months to 12 years, carried the HIV virus and showed symptoms of AIDS. "We didn't anticipate that the improvement would be so dramatic," says Philip A. Pizzo, NCI's head of pediatrics and infectious diseases. But the new approach, described in the Oct. 6 *NEW ENGLAND JOURNAL OF MEDICINE*, brought neurologic improvements in every child, beginning in as little as three or four weeks. In one 11-year-old whose IQ had dropped 28 points — to 77 — after HIV infection, IQ returned to 99 after nine months of treatment. Equally significant changes were seen in younger children, who regained the ability to walk, talk or exhibit other lost developmental achievements.

The study included no untreated "control" patients against whom to compare the regimen's effects. However, many of the children appeared to suffer fewer opportunistic infections after starting treatment and showed improvements in appetite, weight gain, energy, lymph node disease, liver and spleen size, and levels of T-4 lymphocytes targeted by the virus.

The neurologic improvements appear to have been independent of — and more dramatic than — these other changes. In fact, even children with no obvious IQ or developmental impairment showed neurologic improvement after treatment. This suggests, Pizzo says, that impaired cognitive function may be among the earliest manifestations of pediatric AIDS. In hopes of limiting AIDS transmission to infants, the federal government is considering treating pregnant AIDS victims with zidovudine, officials say. — J. Raloff