

Briefings

edited by FAYE FLAM

Signs of Intelligent Life?

There is life on Earth. In case you weren't sure, NASA's Galileo spacecraft has confirmed the fact. Two years ago, knowing that the craft would have to swing by Earth twice on its circuitous voyage to Jupiter, Cornell University astronomer Carl Sagan suggested that Galileo test its instruments by looking for signs of life on the home planet.

NASA got its chance last December, when Galileo swept by Earth on the first of two passes. The results are in, according to a newsletter published by the Planetary Society, and they offer reassurance about the state of both the spacecraft and the planet.

During the hours-long flyby, spectrometers aboard Galileo analyzed the composition of Earth's atmosphere. According to Charles Hord, who heads the project's UV spectroscopy team, the instruments faithfully detected the abundant oxygen and methane in the atmosphere, as well as its nonequilibrium composition—telltale signs of Earth's living inhabitants.

Hord says he and other NASA scientists don't expect Galileo to find any signs of life when it reaches the frigid cloutops of Jupiter in 1995. Still, the flyby was a valuable dry run for Jupiter, where Galileo will seek out heavy hydrocarbons, amino acids, and other simple organic chemicals. "We will do a better job of looking for these kinds of things on Jupiter because we tested out our equipment on the earth," says Hord.

Of course, the instruments will be useless if they can't send their data back from Jupiter—a possibility mission controllers faced last week. The craft's main communications antenna—a 16-foot-wide, high-tech umbrella—failed to unfurl properly on the first try. At this writing, flight

controllers were scrambling to unsnag it.

The flyby also provided a reminder that there's only so much that can be discovered from space. As Hord pointed out in the Planetary Society newsletter, "We have unequivocally discovered life on Earth but we're not sure yet that it's intelligent."

Opening the Mail

A proposal that would make it easier for the government to read private, encrypted computer mail and phone conversations has set off a flap among manufacturers and users of electronic communications systems. The proposal appeared in an antiterrorism bill (S 266) introduced in January by Senator Joseph Biden (D-DE), which has since been referred to the Senate Judiciary Committee.

Section 2201 of the bill, dealing with federal investigative powers, states that it is the "sense of Congress" that "providers of electronic communications services and manufacturers of electronic communications service equipment shall ensure that communications systems permit the government to obtain the plain text contents of voice, data, and other com-

munications when appropriately authorized by law." In short, the government wants to be guaranteed the ability to read coded electronic mail, even if the senders and recipients don't want their mail read.

Manufacturers of computerized encryption systems like RSA Data Security of Redwood City, California, *The New York Times* has reported, are worried that the new law could put them out of business. If commercial data encryption systems, which are now quite effective, were made inherently "crackable," they would lose credibility and customers wouldn't buy them, company officials fear. Chief security officials for financial firms in Los Angeles and Boston told *Science* they are skeptical of the value of this legislation.

"This is not a real bright idea," said one Boston bank official who asked not to be named. The enforcement of such a law would hobble U.S. encryption services, while leaving foreign companies unaffected.

Officials involved in managing federal computer network systems mentioned other grounds for skepticism. "We would be deeply concerned" if this law meant that the government could have access to private mail traveling on the global

system known as Internet, said Vint Cerf, leader of a group trying to develop "secure" electronic mail systems for the Federal Networking Advisory Committee. Like many others, he thinks the bill raises fundamental questions about the rights of personal privacy.

No hearings have yet been scheduled on the proposal, according to Senator Biden's staff.

The Molecule That's Supercool

Every once in a while, science comes across a molecule that reminds one of a straight-A, all-American quarterback with knockout looks: it seems to have, well, too much going for it.

The latest contender for the category is the molecule du jour called buckyballs—those 60 carbon, soccer ball-shaped molecular cages that have been driving chemists and physicists wild. The tiny orbs were intriguing enough (and arrestingly beautiful to the chemically minded) upon first discovery, but now it's come out that under certain processing conditions they can also affect one of the most fashionable behaviors in solid state physics—superconductivity.

Voyage to Inner Earth

NASA scientists have often sought out equivalents of outer-space conditions here on Earth—in deserts, on mountaintops, in Antarctica. Now they are looking inside the earth for a foretaste of the darkness and general sensory deprivation future space explorers may suffer. Their model system: what may be the world's deepest cave.

Next February, four to six members of the United States Deep Caving Team will descend into the Huautla cave system near Oaxaca, Mexico—a steep, dark, damp, and largely unexplored complex of tunnels snaking 46 miles under the highlands of southern Mexico. The team plans to stay underground for about 42 days exploring the tunnels and diving through flooded passages. The explorers' goals are threefold: to map the cave, explore its geological intricacies, and probe their own limits.

Surveys have already shown that the cave could descend past the current record cave depth of 1600 meters. "It could be the world's deepest cave, but we don't know yet," says expeditionist

James Smith, adding in the spirit of an explorer, "that's why we're going down there." Once in the cave, the explorers will do some mapping of local geology. But the main scientific value of the foray may lie in the test it provides of psychological tolerance to physical hardship, says caving team spokeswoman Heather Sloan.

NASA scientists, she says, have enlisted the explorers to gather data on the way small groups of human beings cope with isolated and taxing conditions. Bill Stone, the leader of the group, says the team will go right to the depths carrying NASA's extensive psychological questionnaires—on waterproof paper, of course.



Caveman.

E. Shettle