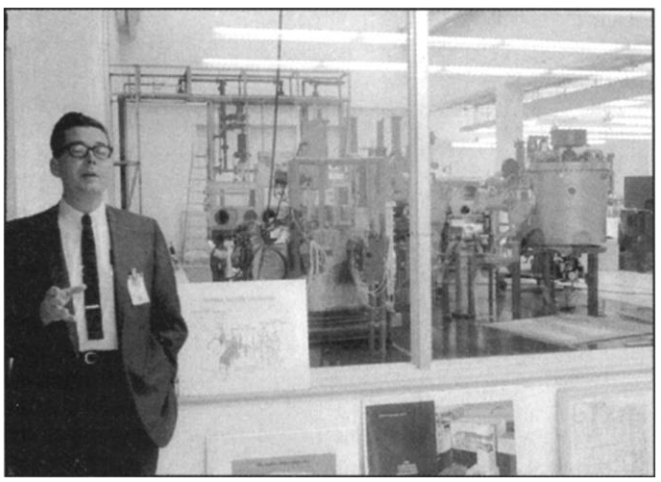
ASTROBIOLOGY

Returning Alien Rocks Right the Second Time

The first time astronauts brought rocks and soil back from the moon, efforts to protect Earth from possible contamination were "a travesty," says meteoriticist John Wood. Exposures to Apollo lunar material meant that if anything pathogenic had come with them, "we'd have been in bad trouble," says Wood, of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. To do it right the next time—when Mars rocks are returned as early as 2014—researchers need to start deciding now how to handle extraterrestrial samples both safely and cleanly, according to a report* released last week by the U.S. National Research Council (NRC).



A flawed first try. The complex vacuum chamber used to contain the first Apollo moon rocks proved unreliable and unnecessary.

The challenge of avoiding infecting Earth with any ET life or dirtying Mars samples with terrestrial materials will require a quarantine facility "unlike any in existence," says Wood, who chaired the NRC committee. "It's not an insurmountable task, [but] we need to get started."

Memories of Apollo's troubles heightened the urgency. At the Lunar Receiving Laboratory (LRL) in Houston, "there was not really enough time to do what needed to be done," says Wood. When samples arrived in 1969, tight schedules and NASA's stress on astronauts' convenience combined to make contamination happen. The hatch was popped open while the Apollo capsule was still bobbing in the Pacific, and a leak in the receiving lab sent 11 exposed people into quarantine with the astronauts. Others fled the area to avoid guards charged with enforcing quarantine rules, according to the report.

Although the first Mars sample return won't have astronauts to contend with, it will require a receiving facility more stringent than any now used to contain exotic killers like the Ebola virus. In biological containment facilities, the chamber containing the biological agent is kept below atmospheric pressure so that the inevitable leaks will let outside air in but prevent anything inside from getting out. In a clean room designed to keep samples pristine, the reverse is true. The room is held at a higher pressure to keep chemical contaminants out. But any Mars sample receiving lab must "simultaneously achieve biological containment and clean room conditions in one facility," says Wood.

The challenge of keeping anything from getting in or out while examining Mars samples mandates 7 years of planning and construction before the samples arrive, the NRC committee concludes, plus whatever time is first required to sort out the technical problems. That means starting now, the committee says, even if the first samples don't get here until 2014. With the LRL's lapses in mind, the committee also recommends that NASA keep it simple this time around—no chilling the samples to Mars temperatures or keeping them at martian atmospheric pressure. NASA welcomes most of the committee's recommendations, says NASA's planetary protection officer, John Rummel. "I would hate to think we'd make the same mistakes" as Apollo workers, he says, "and this report gives us some good guidelines to avoid them." –RICHARD A. KERR

* www.nap.edu/books/0309075718/html/index.html

SMITHSONIAN INSTITUTION

Director of Natural History Museum Quits

The director of the world's most visited museum has resigned to protest a planned reorganization that would separate the museum's scientific and educational roles. Robert Fri, who heads the Smithsonian Institution's National Museum of Natural History in Washington, D.C., said in a memo to his staff on 28 May that he cannot commit to the proposed changes. He plans to step down by October.

About three-quarters of the Smithsonian's 425-member scientific staff are based at the

ScienceScope

Stretching Out India may become the latest outpost for the Massachusetts Institute of Technology's (MIT's) high-tech Media Lab. The Indian Cabinet last week approved $16 million for the Media Lab Asia project, which hopes to join MIT and India's information technology ministry in what could eventually become a 10-year, $1.25 billion technology development push. A new multidisciplinary research center, to be opened later this year in a new facility outside Mumbai, will be a pilot project modeled after the original Media Lab in Cambridge, Massachusetts, and one established last year in Dublin, Ireland.

The Media Lab, founded in 1985, has worked on everything from virtual reality gear to nimble robots. Indian officials hope such creativity will help public-private research teams invent technologies that will be relevant to everyday life in rural areas.

ReFlux Can the Fast Flux Test Facility (FFTF) survive another near-death experience? In 1996 and again this year, Department of Energy (DOE) officials decreed that the research reactor, which has sat idle on Washington state's Hanford nuclear reservation since 1992, be dismantled (*Science*, 1 December 2000, p. 1666). But last month Energy Secretary Spencer Abraham gave the reactor a reprieve, pending a review of its potential uses by physicist Mike Holland of Brookhaven National Laboratory in Upton, New York.

A lengthy review completed just last year concluded that producing medical isotopes for cancer treatment and plutonium for space batteries wasn't worth the $314 million needed to restart the reactor and $58 million annually to operate it. But FFTF supporters convinced Abraham that the study overlooked income-generating possibilities.

Holland's report is due in July, but critics already are furious. "This is essentially a huge illegal waste of money," says Gerald Pollet, director of the Seattle-based environmental group Heart of America. He charges that the turnabout violates DOE contracts and diverts funds from Hanford cleanup projects. If Holland recommends restart, Pollet predicts that DOE will face a gauntlet of lawsuits from environmentalists and Oregon and Washington state officials, who oppose reopening the facility.

Contributors: Wayne Kondro, Jocelyn Kaiser, Constance Holden, Dennis Normile, Robert Koenig, Pallava Bagla, Robert F. Service

CREDITS: (TOP TO BOTTOM) J. A. WOOD; DOE