Viking: The coming of the sun

Following the discovery of bacteria, says chief Viking biologist Harold P. Klein, it took 200 years to resolve the question of whether they were living things. The two Viking landers—representing the first attempts ever made at seeking life *in situ* on another planet—have been on Mars for mere months, and it could take more months, or years (though probably not centuries), to explain what their biological and other instruments have reported. Nonetheless, many of the huge project's scientists and engineers are breathing sighs of relief and heading for well-deserved vacations this week, as the sun's intercession between Mars and the earth brings the main portion of Viking's real-time operations to its scheduled end.

The mission is not over by any means. It will resume in late December for a year or more of what is called the "extended mission," with a full roster of exciting plans. Nor are vacations the unanimous reward. Most of the mission scientists have been working so long and hard at collecting their data that they have had little time to sit down and study them. One team, in fact—the radio science group headed by William H. Michael of the NASA Langley Research Center—is just getting into the thick of things, using the various occultations of earth, Mars and the sun during solar conjunction to study a dozen problems ranging from general relativity to a variety of atmospheric, electromagnetic and gravitational characteristics of all three bodies.

The 800-person flight team, however, is well down on its way to the 300-person staff scheduled for the extended mission, which will also run on a monthly budget less than a third the size of its pre-conjunction level. Several of the project's highest officials are moving on to new jobs with other programs and institutions. Numerous scientific and technical "interns" have been returning to former bailiwicks.

The scientific questions, however, continue to loom, most prominently in biology. The three biology instruments on each lander have yielded results that may simply reflect a Martian surface material with a high oxidation potential, hydrogen (presumably from water) for reduction reactions, and certain sensitivities to heat, moisture and catalysis. The project's biologists, together with colleagues from several other institutions, have been able to assemble a general theory that seems to fit their observations. But what they have not yet been able to assemble in their laboratories is a real, physical experimental environment that works that way.

The answer, in other words, could still be life. Mars seems to have at least the requisite raw materials: nitrogen (grist for proteins and nucleic acids), water (a north pole full, together with an atmosphere which, while more arid than that over the driest earthly desert, is hundreds of times wetter than expected), signs of thicker air and running water in the ancient past (the better for life to get a foothold), and surface material that seems to resemble montmorillonite, an iron-rich terrestrial clay recently found to be an excellent catalyst for combining amino acids into still more complex molecules. Solar ultraviolet radiation is intense on the Martian surface, but there could be subsurface creatures or others with hard shells that also retain precious water and resist temperature extremes. No organic molecules were detected, but "cannibal" microorganisms could be consuming their ancestors to leave only a tiny fraction of the organic residue found on earth. The two lander sites seem barren, but there could be "oases" of more favorable conditions elsewhere on the planet. Furthermore, points out Carl Sagan of Cornell University, the biology instruments, though they "ran cool" by terrestrial standards, exposed their samples to "the very highest temperatures ever obtained on contemporary Mars."

There are more mysteries, and a lot of work ahead. "While it's fun to speculate," says Klein, "the important thing is what the truth is." □

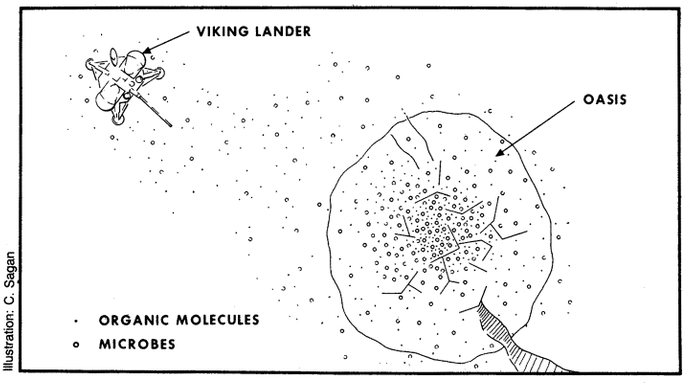

Illustration: C. Sagan

If there are Martians, perhaps they exist in oases of life out of Viking's reach—an argument, some feel, for a mobile lander that can land in the safe spots, then move to the exciting ones.

Of science and the election

When the dust settled from the Nov. 2 election, three scientifically trained people had been elevated to high public office, including the Presidency. Voters had also defeated attempts to curb nuclear power, but they gave additional momentum to the environmentalist drive to strike at littering by means of mandatory deposits on bottles and cans.

Jimmy Carter will become the first President since Theodore Roosevelt to have some scientific credentials, and the first since Franklin Roosevelt to have risen through executive, rather than legislative, experience. His background includes a technically-oriented degree from the Naval Academy, shipboard work in electronics and sonar, and brief but intensive training and experience with nuclear reactors in Schenectady, N.Y., and Chalk River, Canada.

Carter has pledged to upgrade the office of White House Advisor for Science and Technology (SN: 10/9/76, p. 233), and even before the election he created a Science Policy Task Force of 20 distinguished scientists to advise him during the transition period. The task force is headed by IBM vice president and chief scientist Lewis Branscomb.

Former Atomic Energy Commission chairman Dixy Lee Ray won an unexpectedly easy victory as a Democrat to become the first woman governor of Washington. A noted marine biologist, Ray has been particularly active in promoting science education and headed the Pacific Science Center in Seattle before moving to the AEC.

Former astronaut Harrison Schmitt will become New Mexico's new Republican senator, after unseating veteran Democratic senator Joseph Montoya.

Six states had propostions on their ballots that would have subjected nuclear power to local legislative approval, rather than leaving its regulation entirely a federal matter. The proposals were defeated by a nearly two-to-one margin in Ohio, Montana, Colorado, Washington and Arizona, and by a three-to-two margin in Oregon. Following a similar victory earlier this year in California, the nuclear industry is calling the latest decision an "endorsement" of their view that more reactors should be built quickly.

Despite campaign spending reportedly as high as $20 million, the beverage industry will have to swallow two new "bottle laws"—in Maine and Michigan. Similar laws, requiring deposits on bottles and cans to encourage recycling, already exist in Oregon and Vermont. Voters in Massachusetts and Colorado defeated similar proposals. The industry claims jobs will be lost as bottling plants are closed or refitted, but a Federal Energy Administration study projected a net increase in jobs once recycling gets under way. □