

Martian pebbles tell watery tale

Sojourner, the robotic field geologist on the Red Planet, has found pebble-shaped knobs and lumps embedded in Martian rock. These features, says Henry J. Moore of the U.S. Geological Survey in Menlo Park, Calif., provide additional hints that water once flowed on the planet.

The roundness of the features could have resulted from water flowing over them, he says. Evaporation of the water could then have cemented the fragments into conglomerates held together by minerals such as calcium carbonate. Several watery interludes could be involved, notes Ronald Greeley of Arizona State University in Tempe. An initial flood may have deposited mud, silt, and rock in river beds, and later flows could have molded the material and transported it to Ares Vallis, where Sojourner and its mother ship landed in July. Researchers have not received data from the spacecraft since Sept. 27 (SN: 10/18/97, p. 246).

Moore reported the findings Oct. 8 at a press briefing at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, Calif.

Pathfinder project scientist Matthew P. Golombek of JPL calls the finding "very strong evidence of water-worn conglomerates on Mars." Conglomerates, he notes, "require liquid water to be stable with the atmosphere, and if [they are composed of] old rock, that suggests without question that the environment on Mars was warmer and wetter in the past." —R.C.

Comet Hale-Bopp: Alive and spewing

The comet of the century is finally out of view of telescopes in Hawaii, and David C. Jewitt couldn't be happier.

After faithfully monitoring Hale-Bopp since August 1995, including every weekend for the past 9 months, the University of Hawaii astronomer and his colleagues have gathered a plethora of information on the icy body's submillimeter emissions. The relentless observation schedule, however, drove the team "absolutely nutty," Jewitt says.

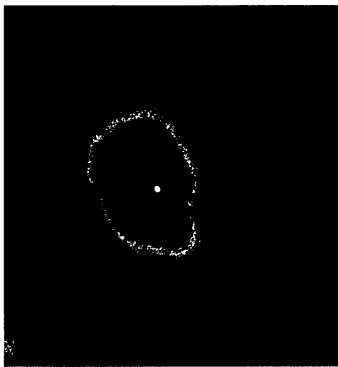
The observations, taken with the James Clerk Maxwell Telescope near the summit of Mauna Kea, reveal the relative proportion of carbon, nitrogen, oxygen, and sulfur isotopes in material ejected by the comet. The group deduces from these data that Hale-Bopp probably coalesced in the frigid outer reaches of the infant solar system.

Researchers believe that comets generally come from either of two reservoirs—the Kuiper belt or the more distant Oort Cloud—but a tiny number may be interlopers from another planetary system. For Hale-Bopp, at least, "we found the boring result," says Jewitt. He and his colleagues describe their findings in the Oct. 3 SCIENCE.

Jewitt told SCIENCE NEWS that the team's long-term monitoring of Hale-Bopp indicates that on its retreat from the sun, the comet is spewing hydrogen cyanide and carbon monoxide as copiously as it did on its approach.

Hale-Bopp is now more than three times farther from the sun than it was at its closest approach, on April 1, and is visible only from the Southern Hemisphere. Observations from the European Southern Observatory in La Serena, Chile, show that the comet, though considerably dimmer than it was last spring, remains active. Jets of dust endow the comet's coma, or shroud of gas and dust, with the same porcupine appearance it had in the latter half of 1996. —R.C.

False-color image, taken Oct. 1, shows dust grains from the coma of Comet Hale-Bopp.



Minor problem for antitobacco laws

Say it ain't so, Joe Camel. Laws that clamp down on cigarette sales to minors elicit compliance from many merchants, but they barely make a dent in teenagers' ability to obtain the forbidden smokes, according to a study in the Oct. 9 NEW ENGLAND JOURNAL OF MEDICINE.

Federal regulations that ban tobacco sales to minors will require near-total cooperation by cigarette retailers to yield their intended effects, argues a research team headed by internist Nancy A. Rigotti of Harvard Medical School in Boston.

The investigators conducted a 2-year study in six Massachusetts communities. Shortly after the project began, three of the communities instituted local laws that barred tobacco sales to minors. Under the researchers' supervision, a total of 20 girls, all 16 years old, tried to buy a pack of cigarettes at every retail tobacco outlet in each community. These "compliance checks" occurred at 6-month intervals.

Rigotti and her coworkers also conducted annual, anonymous surveys of tobacco purchasing and use among high school students in the six communities.

At the outset of the study, about two-thirds of all tobacco retailers sold cigarettes to minors. Two years later, 18 percent of merchants subject to tobacco sales restrictions sold cigarettes to minors, compared to 55 percent of retailers elsewhere.

During that same period, students under age 18 reported only a slight drop in their ability to buy cigarettes and smokeless tobacco, and no change in the extent to which they used those products. Minors' self-reported access to tobacco was approximately the same in communities with and without mandates to restrict tobacco sales.

Of the nearly 20 percent of youths who, at the study's end, said they had bought tobacco in the past month, most reported that their purchase attempts were rarely refused.

Minors intent on buying cigarettes rely on a number of time-honored tactics, the researchers say. These include lying about their age, using false identification, enlisting an older teenager or an adult to make purchases, and patronizing stores known for their lenient sales policies. —B.B.

Losing patience with patients

In England, physicians call them "heart-sink" patients because the sight of their name on an appointment schedule causes the healer's heart to sink. In the United States, medical workers refer to them as "crocks" and "turkeys," among other choice epithets. They are, in fact, patients perceived as frustrating and difficult to treat, often because of their manipulative demands and ambiguous physical complaints.

Physicians express the most frustration with patients who complain repeatedly about unexplained pains and other bodily ailments, who feel powerless to improve their condition, and who at some time have suffered from obsessive-compulsive disorder, according to a rare study of this phenomenon published in the September GENERAL HOSPITAL PSYCHIATRY.

These factors, often combined with interpersonal problems and the experience of adult rape or physical abuse, render some individuals both dependent on medical care and difficult for physicians to deal with, say psychiatrist Edward A. Walker of the University of Washington in Seattle and his colleagues.

The investigators surveyed 68 patients with fibromyalgia or rheumatoid arthritis, as well as the four physicians who treated them at a medical clinic that specializes in these conditions.

Many frustrating patients have no discernible physical explanations for their medical complaints, notes psychiatrist Don R. Lipsitt of Mount Auburn Hospital in Cambridge, Mass., in an accompanying comment. They deserve closer scrutiny, Lipsitt says, as do physicians themselves, some of whom may prove particularly frustrating and difficult for patients. —B.B.