

Hamster love: Attraction to CH_3SSCH_3

It is not her big dark eyes, her little pink ears or her soft golden fur after all. Although it may strike some as offensively mechanistic, hamster mating turns out to be little more than an irresistible attraction to dimethyl disulfide.

The search for "active ingredients" in mammalian sex attractants led six Rockefeller University scientists to the golden hamster. The male of this species relies heavily on his sense of smell when it comes to mating, and the female produces copious amounts of vaginal secretions. The odor of these secretions, previous research shows, drives the male into frenzied sniffing, digging, mounting and intromission. The secretions themselves are so effective, in fact, that the female need not be present at all.

The Rockefeller team, headed by chemist Alan G. Singer, collected vaginal secretions on filter paper, then let the odors rise into males' cages through "odor ports." The males dug and sniffed at these odor ports, as predicted. The team purified the secretions, the volatile fractions and identified them as dimethyl disulfide (CH_3SSCH_3) and dimethyl trisulfide ($\text{CH}_3\text{SSSCH}_3$). The males responded to dimethyl disulfide at stimulus intensities such as those found in female secretions. Consequently, the team concludes in the March 5 *SCIENCE*, this substance is a bona fide hamster sex attractant.

Parroting primates in Siberut

Nothing warms an anthropomorphizing heart more than an animal that will walk on its hind legs, ride a horse, dance or repeat human words. The popularity of trained circus animals and talking birds is testament to this. The belief that wild birds such as the mynah will only mimic other species when confined by humans is perhaps more evidence of this homocentrism.

An American biologist working in the jungles of Siberut, an island off the west coast of Sumatra, now reveals a different truth about the mynah. Richard R. Tenaza of the University of the Pacific in Stockton, Calif., reports in the Feb. 19 *NATURE* that hill mynahs mimic the alarm trill of Kloss's gibbon and the panting-like call of the pig-tailed langur. The imitations sound much like the originals, Tenaza observed, but are distinguishable from them just as mynah imitations are distinguishable from human words. The mimicry almost always follows the original monkey call within seconds.

Loud primate calls made by gibbons and langur monkeys fill the forest each day, Tenaza says. But the hill mynah only mimics the alarm trill and pig-tailed langur call, even though these sounds rarely occur in the jungle. This suggests, Tenaza says, that perhaps only infrequently occurring vocal signals of other species are mimicked by mynahs.

Tips for surviving the cold

Plant cells and embryos have been frozen to temperatures as low as -196°C and later successfully thawed and grown into whole plants. The techniques, though, are difficult, and few of the plants survive. The idea behind such work is to preserve specific cells and tissue lines unchanged for extended periods. Michael Seibert of GTE Laboratories, Inc., at Waltham, Mass., reports a new, more successful plant freezing technique in the March 19 *SCIENCE*. He used carnation shoot apex cultures (meristem and two-leaf primordia removed from the tips of growing plants and grown in nutrient media) rather than plant cells or embryos. Shoot apices from two carnation varieties showed survival rates of 15 and 33 percent after freezing to -196°C , and Seibert was able to grow plants from them.

CO over Venus, Mars, Earth

Carbon monoxide has been observed in the upper atmospheres of Venus, Mars and earth by a group of California scientists. Although CO had previously been identified at lower altitudes for all three planets by means of infrared techniques, its detection at loftier levels, based on ground-based microwave measurements, is claimed to be a first.

The data, according to Joe W. Waters and Ramesh K. Kakar of Jet Propulsion Laboratory in Pasadena and William J. Wilson and Fred I. Shimabukuro of Aerospace Corp. in El Segundo, reveal a drastic increase in CO concentration between 80 and 110 kilometers in the atmosphere of Venus and between 50 and 80 km over earth. (The Martian measurements, most recent in the series, are still being analyzed.) The data show a relative CO abundance of about 1,000 parts per million 100 km above Venus and 20 parts per million at an 80 km altitude over earth. By comparison, says Waters, the CO relative abundance at earth's surface but away from pollution sources, is only about 0.1 part per million.

The earth and Venus measurements were made with the 4.6-meter radio telescope at Aerospace Corp., while the 11-meter instrument of the National Radio Astronomy Observatory on Kitt Peak, Ariz., was used for the fainter Martian signals. More detailed Martian measurements, covering a range from about 100 to 300 km above the surface, will be made by the upper-atmosphere mass spectrometers aboard the two Viking landers as they descend toward the planet's surface this summer.

No dust rings for Jupiter

Although the micrometeoroid counter aboard the Pioneer 10 spacecraft barely noticed its passage through the asteroid belt on the way to Jupiter, it did record a greater concentration of tiny particles as it passed by the giant planet itself, thus giving rise to the notion that there might be extremely low-density "rings" or at least trapped dust particles in Jovicentric orbits. A detailed analysis of the instrument's design and data, however, now indicates that this is unlikely.

"We see no evidence for particles in permanent Jovicentric orbits," report S. Fred Singer and John E. Stanley of the University of Virginia in Charlottesville. "The measurements made by Pioneer 10," they write in *ICARUS* (27:197), "can be adequately described by particles in heliocentric orbits being gravitationally drawn into a one-time 'encounter' with Jupiter."

In fact, they point out, the absolute concentration of particles near the orbit of Jupiter is about the same as it is near the orbit of earth. The spectral index of the particles is also similar to, or only slightly greater than, that of dust near the earth.

Self-navigating satellites sought by USAF

Satellites that can orient and guide themselves without instructions from earth are being sought not only by the National Aeronautics and Space Administration (SN: 2/8/75, p. 90), but now by the U.S. Air Force, which has just awarded contracts for prototypes of two different "autonomous navigation" systems for earth-orbiting satellites.

Martin-Marietta Corp. uses an accurate "space sextant" aboard the satellite to measure angles between selected stars and the limb of the moon, comparing the result with preprogrammed lunar ephemeris information for position determination. The IBM Corp. system depends on angle measurements to known surface beacons such as air-traffic-control and coastal-search radars. Heart of the device is a passive interferometer, which would provide angle and ranging data to the satellite's computer.