Kinked cable crimps Dante's Erebus debut

Dante faltered at Hades' door.

Scientists had hoped the eight-legged, tethered robot would wend its way 230 meters to the bottom of the inner crater of Mt. Erebus, Earth's southernmost active volcano, to sample freshly vented gases and examine a lava lake.

But a broken optical-fiber cable forced researchers atop the 3,790-meter Antarctic peak to abandon their efforts late last week after Dante had barely crept over the rim of the volcano's outer crater.

"We are now calling it off, folding our cards, and heading home," a disappointed William L. ("Red") Whittaker of Carnegie Mellon University in Pittsburgh announced from Erebus' upper flank, where the wind-chill factor hovered around −55°C.

Nonetheless, team members viewed their effort as anything but a failure. "I think the project has been an overall success: The robot works," said David B. Lavery, telerobotics program manager for the National Aeronautics and Space Administration in Washington, D.C.

Many doubted Dante would ever make it near Mt. Erebus this Antarctic summer (SN: 6/6/92, p.376). Whittaker, who conceived the project that pushed the limits of robotics, only began developing Dante a year ago with $2 million from NASA. The space agency wants to use such robots someday to explore the moon and Mars.

In Greek mythology, Erebus is a region of the underworld where dead souls go. Dante Alighieri, a 14th century Italian poet, describes visiting this land in his *Divine Comedy.*

After a day's delay caused by a small eruption, Dante the robot succeeded in inching 6 meters down a 55-degree slope inside Erebus' outer crater. There it halted.

The robot has two spools at its rear that play out an optical-fiber cable linking Dante's onboard sensors and motors with its "brain," the computers that provide its depth perception and ability to self-navigate. The first spool successfully laid down cable from the team's control shack to the crater rim.

The second spool, which resembles a ball of twine, was to release cable during Dante's descent. That cable proved to have a kink about every 5 meters and apparently broke at one of these kinks.

NASA

Dante begins its descent.

"The severed nerve cord was enough to bring us down," Whittaker said.

Researchers in the Antarctic did not have the means to repair the break. Team members at NASA's Goddard Space Flight Center in Greenbelt, Md., considered flying a new cable from the United States. But because of the time required — and the limited time their colleagues could remain on Erebus before the onset of harsher weather — the team dropped the idea and began retrieving the robot.

Whither Dante now? Whittaker called the question premature but added, "In my estimation, it's inevitable that we'll be back [at Mt. Erebus]." *— P. Young*

Ancient figurine lifts horses' profile

While excavating an ancient Syrian city last September, archaeologists unearthed a 4,300-year-old clay figurine that stands as the oldest known sculpture of a domesticated horse, according to an announcement this week by the University of Chicago's Oriental Institute.

The discovery suggests that horses played a more important role in the rise of early civilizations than researchers have often assumed, contends Thomas Holland, an Oriental Institute archaeologist. He directed the team that found the skillfully crafted figurine at Tell Es-Sweyhat, about 200 miles northeast of Damascus. Other evidence points to the domestication of horses in central Asia at least 6,000 years ago (SN: 6/2/90, p.340).

The meaning of the horse sculpture to its makers and the predominant function of horses in their culture remain unclear, asserts anthropologist Juris Zarins of Southwest Missouri State University in Springfield. Zarins did not participate in the dig, but he has examined the equine find.

"This is without a doubt the best early example of a domesticated horse sculpture," Zarins maintains.

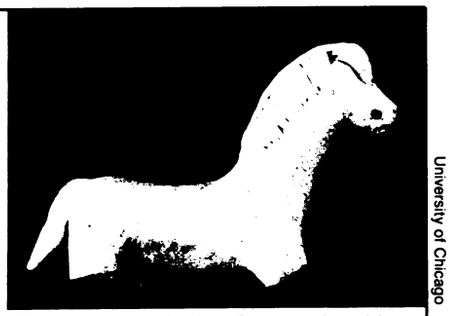
Holland and his associates place the manufacture of the 5-inch-long, 3-inch-high figurine at about 2300 B.C., based on carbon-14 dates and pottery styles at Tell Es-Sweyhat.

Two signs of domestication appear on the pale-green sculpture, Zarins says. A hole bored through the muzzle may represent the position of a bit to hold reins or a nose ring for leading the horse by hand. And the mane, formed by strips of molded clay, lies flat in a manner unique to domesticated horses, he maintains.

The figurine's long, full tail distinguishes it from donkeys, which were domesticated in the Middle East around 3500 B.C., Zarins notes.

Modeled as a stallion with enlarged genitals, the sculpture may have been used in ceremonies to ensure the fertility of horses, much as full-bodied female figurines found at the same site appear to have been intended to promote healthy human births, Holland suggests.

Holland and Zarins agree that residents of the site probably concentrated on breeding horses with donkeys to produce mules, which kings and other royal officials considered most desirable for pulling chariots. Horses also may have pulled chariots, the scientists



University of Chicago

Figurine unearthed in Syria is the oldest known domesticated horse sculpture.

hold. Investigators found several model chariots at Tell Es-Sweyhat last year.

Other finds included a complex of public buildings with wall paintings, bronze tongs, and one-handled storage jars nearly identical to a third-millennium B.C. jar found on Cyprus. This indicates that the ancient city, located in Mesopotamia, traded with Mediterranean peoples, Holland says.

Tell Es-Sweyhat may be either of two cities mentioned in cuneiform writings from the nearby Ebla empire, he notes. The site served as a key trading post between Ebla to the west and the Akkad empire to the east. Previous excavations suggest the city was destroyed around 2200 B.C. by Akkadian warriors. *— B. Bower*