

Getting the goods in Ecuador

A written account from the expedition of Spanish explorer Francisco Pizarro tells of a huge trading raft captured in 1525 along the coast of what is now Ecuador. The vessel's rich cargo included gold and silver apparel, strings and bunches of beads, embroidered shirts and tunics, and large seashells venerated by some cultures in that area. According to the historical document, the ship and its booty belonged to a coastal society of merchant traders.

Archaeologists have now uncovered the remains of an extensive workshop that apparently helped to supply the luxury goods those merchants exchanged with kingdoms extending from Mexico to Peru. The find offers a rare chance to supplement archaeological discoveries with a first-hand account of a trading operation that predated contact with Europeans.

"Our investigations . . . provide an illuminating insight into the supply side of the exotic traffic which plied the north coast of western South America from early in antiquity down to the arrival of the Spanish in the 16th century," asserts project director Elizabeth J. Currie of the University of York in England.

Currie and her coworkers excavated a large mound of debris near the remains of structures at a site called López Viejo. Several thousand luxury items turned up; most of them matched closely the type of goods attributed to the captured trading raft. They include mother-of-pearl figures and ornaments, incised ceramic figurines, ceramic stamps for decorating pottery or other surfaces, copper bells and needles, polished bone segments presumably used in jewelry, and a variety of sophisticated stone implements.

Currie estimates that the finds date to between approximately A.D. 700 and A.D. 1534.

The excavated mound lies within or adjacent to a work site where skilled artisans made an array of decorative items that fueled a long-distance trading enterprise, Currie contends in the September *ANTIQUITY*. Future research will explore whether goods were manufactured in small, specialized areas or in a large, all-purpose workshop.

Early Americans: Southern exposure

Regardless of when people first migrated to the Americas, archaeologists have established that humans lived at sites from Alaska to Tierra del Fuego between 11,500 and 10,000 years ago. Ongoing research in southern Argentina, described in the August-October *CURRENT ANTHROPOLOGY*, supports the view that prehistoric hunter-gatherers adapted in sophisticated ways to the southernmost reaches of the New World.

Since 1990, 10 promising rock shelters and a number of open-air occupation sites have been located in a survey of Argentina's Río Chico Basin, according to Hugo G. Nami of the Smithsonian Institution in Washington, D.C. The area contains an abundant supply of plants and animals that prehistoric folks could have exploited, Nami says.

Excavations have proceeded farthest in Don Ariel Cave, the largest of the identified rock shelters. People inhabited both a main chamber at the front of the cave and a small "annex" in the rear, Nami contends. Both parts of the cave have yielded numerous stone tools, including scrapers, knives, and spear points. Microscopic analysis indicates that many scrapers were used in the preparation of leather, Nami holds.

Investigators also found a large assembly of guanaco bones in the cave. The guanaco is a humpless, South American relative of the camel.

Radiocarbon dates place occupation of the cave's main chamber at about 4,000 years ago. Remains in the cave's annex are probably older than that, Nami argues. He suspects people lived there on a regular basis beginning around 11,000 years ago, as previously indicated for nearby sites in Chile.

Farewell to a Pioneer

It ventured within 42,000 kilometers of Jupiter's cloud tops, discovered a new ring and two moonlets of Saturn, and flew high enough above the sun's equatorial plane to detect the true character of the solar magnetic field. Now, after exploring the solar system for nearly 22 years and 6.6 billion km, the Pioneer 11 spacecraft has begun dying a slow death. Hurtling beyond Pluto into the far reaches of the solar system, the craft can no longer power its detectors, explains project manager Fred Wirth of NASA's Ames Research Center in Mountain View, Calif.

Although NASA stopped daily communication with the aging craft on Sept. 30, it will tune in to Pioneer 11's fading radio signals for about 2 hours every 2 to 4 weeks through late 1996. Around that time, the craft's transmitter "will fall silent and Pioneer 11 will travel as a ghost ship in our galaxy," says Wirth. Listening to the craft's swan song, he adds, may enable researchers to prolong by a few months the service of its sister craft, Pioneer 10, which now lies nearly 9.4 billion km from Earth.

Astronomy journals go electronic

One hundred years after *ASTROPHYSICAL JOURNAL* began publication, part of it has gone on-line. On Sept. 23, an electronic version of the twice-monthly *ASTROPHYSICAL JOURNAL LETTERS*, including figures, line drawings, tables, and mathematical symbols, debuted on the World Wide Web. The electronic version, known as *EApJL*, will be available 1 month before the paper copy of the journal at the Web site <http://www.aas.org/ApJ/>. Browsers will have free access until 1997.

The electronic journal has a special feature: Click on any reference cited at the end of an article, and the corresponding abstract appears on the screen—provided the reference was published no earlier than 1967. The browser can obtain a complete copy of the reference electronically if it has appeared recently in a journal published by the American Astronomical Society. Peter B. Boyce, the society's president, says the entire *ASTROPHYSICAL JOURNAL* will appear on-line within a year.

In a related project, the NASA-funded Astrophysics Data System, located at the Smithsonian Astrophysical Observatory in Cambridge, Mass., announced that by the end of the year it will have on-line the last 20 years of the following journals: *ASTROPHYSICAL JOURNAL*, *ASTRONOMICAL JOURNAL*, *PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF THE PACIFIC*, *PROCEEDINGS OF THE ASTRONOMICAL SOCIETY OF AUSTRALIA*, *REVISTA MEXICANA*, and *OBSERVATORY REPORTS OF SKAINATE PIESO* (Slovakia). The Web site for these journals is <http://adswww.harvard.edu/>.

Meteorite from Mars

Researchers have identified another meteorite as a piece of Mars. The 12-gram chunk of rock, found in Antarctica's Queen Alexandra Range last winter and known as QUE94201, ranks as the 12th meteorite identified as having been chipped off the Red Planet.

Researchers base their classification, in part, on the ratio between isotopes of several inert gases found in the rock. That ratio bears a striking similarity to the ratio found in samples of the Martian atmosphere recorded by the Viking spacecraft in the 1970s, notes Linda S. Schramm, manager of the meteorite collection at the Smithsonian Institution in Washington, D.C.

Roberta Score of NASA's Johnson Space Center in Houston and Brian H. Mason of the Smithsonian Institution reported the find in the August *ANTARCTIC METEORITE NEWSLETTER*. Such basic information as the age of the rock and the depth of the Martian surface from which it originated await further analysis, Score says.