Domesticating an ancient 'temple town'

Many anthropologists have assumed that the vast temples and ceremonial structures attributed to the Olmec society, which flourished in Mexico's gulf coastal lowlands between 1150 and 500 B.C., were occupied by a small group of priestly elites who ruled over farmers in surrounding areas. According to this view, people occasionally assembled in the ceremonial centers for religious functions and to perform labor for the elites.

But the "ceremonial center" model is wrong, at least at one major Olmec site, say William F. Rust and Robert J. Sharer of the University of Pennsylvania in Philadelphia. In the Oct. 7 SCIENCE, they report the first evidence of domestic structures, including house floors and storage pits, amid the temples of an Olmec site.

Excavations at the La Venta site indicate it was a "temple town," Rust and Sharer contend, with a group of civic and ceremonial structures surrounded by permanent housing.

The researchers also uncovered remains of nine settlements near La Venta, lying along the banks of an ancient, twin-channeled river now clogged with silt. Traces of the river, as well as elongated former levees on which the settlements are located, were first noticed by Rust on aerial photographs.

The earliest of the settlements dates to between 1750 and 1400 B.C., before the Olmec civilization arose. Material at other levee sites and some household remains from La Venta fall in the time range from 1400 to 1150 B.C.

But major social and environmental changes occurred between 1150 and 800 B.C., the time of La Venta's rise as an Olmec ceremonial center. A massive buildup of river-borne sediments caused waters to rise, and levees were raised to nearly twice their former height to support settlements. Material from this period, including polished, incised ceramics, polished stone chisels and ceramic figurines, reflects a more complex society and the introduction of ceremonial rituals at La Venta, say the researchers.

At La Venta's peak, between 800 and 500 B.C., two types of levee settlements appear: those with central earthen mounds and a variety of ritual artifacts and food remains; and those without mounds, yielding few ceremonial remains. This is the first direct evidence of a range of social groups in the Olmec culture, Sharer says. — *B. Bower*

Cold cloud may contain unseen solar dust

New astronomical findings show far less dust surrounding the sun than around similar stars, leading to speculation that the sun's "missing" dust actually lies in an unseen cloud encircling the solar system.

At the Jet Propulsion Laboratory in Pasadena, Calif., H.H. Aumann studied 36 of the nearest stars resembling the sun in color and temperature. As reported in the October ASTRONOMICAL JOURNAL, he found they typically emit 500 times more far-infrared radiation than our star apparently does. Aumann used data from the international Infrared Astronomy Satellite (IRAS), the only orbiting spacecraft that has recorded far-infrared emissions from space. Invisible energy that travels in waves less than a millimeter apart, far-infrared radiation usually arises from star-heated dust.

Sun-warmed dust beyond the outer planets theoretically could produce the "missing" energy, says T.N. Gautier of California Institute of Technology in Pasadena. That dust might exist within a cloud of comet nuclei that Dutch astronomer Jan H. Oort in 1950 predicted circles the sun at a distance at least 750 times farther than Pluto. Aumann says IRAS data might manifest Oort clouds around the sun's stellar peers without necessarily revealing one around the sun, because distant sources emit highly focused radiation, while a closer cloud would yield a diffuse signal.

Warmer dust in the solar system also obscures emissions from colder particles beyond the outer planets. Using the IRAS data, Aumann now is "trying to isolate the signal from the hotter stuff in the foreground so we can separate it out to see colder dust beyond."

Astronomers plan to intensify the search with powerful new satellite-based infrared telescopes, the first of which — NASA's Cosmic Background Explorer (COBE) — is scheduled for launch in May 1989. "If a dust cloud is out there," says Michael G. Hauser of NASA's Goddard Space Flight Center in Greenbelt, Md., "COBE will see it." However, distinguishing it from other far-infrared sources may prove difficult because of COBE's extreme sensitivity.

The European Space Agency plans to launch an infrared-observation satellite by the mid-1990s, and NASA hopes to put another into orbit by 2000. But disproof of the dust cloud's existence could emerge earlier, Gautier says, if "theoretical consequences of such an abundance of material are shown to conflict with other observations." — *C. Knox*

Oxygen deficit again hinted as SIDS cause

A new study supports a growing but controversial body of evidence that sudden infant death syndrome, or SIDS, is the deadly culmination of an underlying disease characterized by a chronic oxygen deficit. The finding strengthens the possibility that a biochemical "marker" might be found to identify infants at highest risk.

SIDS — the sudden, unexplained death of an apparently healthy child — is most common among infants 2 to 4 months old and only rarely occurs after 9 months. Although no specific biological mechanism has been linked to the syndrome, some research suggests an association with cardiopulmonary deficiencies, defective central respiratory control or both.

Researchers at the National Hospital in Oslo, Norway, measured levels of hypoxanthine in the eye fluids of 32 infants who had died of SIDS. Hypoxanthine is a breakdown product of the common cellular chemical adenosine monophosphate, or AMP. Increased levels of hypoxanthine indicate low oxygen levels, or hypoxia, in body tissues — especially when measured in eye fluids, which lack hypoxanthine-destroying enzymes. Compared with children who died from trauma and with infants who died suddenly of known causes, the SIDS victims had much higher hypoxanthine levels, the researchers report in the October PEDIATRICS.

While physicians cannot safely measure hypoxanthine levels in the eyes of living infants, other indicators of chronic hypoxia may prove useful. In research reported in the April 30, 1987, NEW ENGLAND JOURNAL OF MEDICINE, Enid Gilbert and her co-workers at the University of Wisconsin School of Medicine in Madison found elevated levels of a particular type of hemoglobin — hemoglobin F — in the blood of SIDS victims. High levels of hemoglobin F had previously been found in infants born to mothers with chronic low oxygen resulting from severe asthma, anemia or heart failure. The Wisconsin team is seeking to confirm that hemoglobin F levels may have value as a marker for some infants at risk for SIDS.

The new study "is exciting to us and it's very important," Gilbert told SCIENCE NEWS. "The report is supportive of our findings."

The Norwegians, led by Torleiv O. Rognum, note that with a hypoxia-induced accelerated conversion of AMP to hypoxanthine, there is a buildup of adenosine. Adenosine is known to inhibit respiration. This added inhibition, on top of an initial hypoxia, may result in a "vicious circle" of oxygen deprivation, they say. — *R. Weiss*