

Ancient American site identified in Alaska

Radiocarbon evidence pegs a prehistoric hunting outpost situated atop a mesa in northern Alaska as the oldest "well-documented" site of human activity in North America, dating to 11,700 years ago, archaeologists announced last week at a press conference held by the Interior Department's Bureau of Land Management (BLM) in Washington, D.C.

Artifacts at the site, including about 50 expertly sharpened stone spear points, belong to a culture previously unrecognized by archaeologists, contends BLM's Michael Kunz, who discovered the "Mesa site" in 1978. This supports the theory that groups with different cultural heritages crossed a land bridge from Siberia to Alaska around 12,000 to 14,000 years ago and led distinctive ways of life in their new homeland, Kunz says.

His interpretation of the Mesa site enters an often fractious scientific debate regarding when the first people arrived in North America and how they got here (SN: 6/9/90, p.360).

"The Mesa site is important and deserves further investigation," notes Robert Ackerman, an archaeologist at Washington State University in Pullman. "But it's an open question whether it's the oldest human site in North America or contains the remains of a distinctive culture."

Kunz discovered the Alaskan site while conducting a federally mandated archaeological survey of the area prior to oil and gas exploration. Richard Reanier, an archaeologist at the University of Washington in Seattle, joined him for excavations.

Along with the spear points, Kunz and Reanier recovered stone tools associated with the manufacture of hunting weapons. For instance, a "graver" with a sharpened edge was probably used to cut strips of rawhide for fastening spear points to wooden shafts. And hunters may have fashioned spear shafts with stone flakes found at the Mesa site.

"Ancient hunters probably climbed up the 200-foot-high mesa to get a good view of game animals on the landscape and worked on their weapons there," Kunz asserts.

Kunz delayed announcement of the Mesa finds until he received what he calls "bulletproof" age estimates for the site. A series of 13 radiocarbon dates for bits of charcoal found by the researchers, including 11 dates produced by a technique that relies on a high-energy mass spectrometer to separate and count carbon atoms of different mass, range from 9,700 to 11,700 years old.

The latter date exceeds by several hundred years the oldest remains of Clovis hunters, long regarded as the first inhabitants of North America. Spear points at the Mesa site differ significantly from those found at Clovis sites, Kunz maintains, and represent the handiwork of an

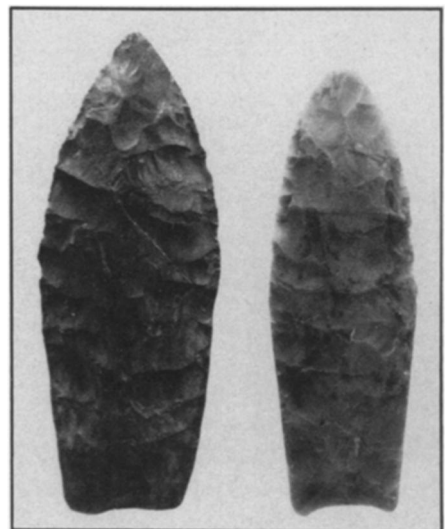
unknown culture.

Several Alaskan sites contain stone tools of the 11,000-year-old Nenana culture; these tools show similarities to implements once used by eastern Siberian peoples. No Siberian parallels exist for Mesa or Clovis remains, Kunz says.

"The settling of the New World was more complex than many archaeologists thought," Kunz argues. "Two very different cultural groups were present very early on, and there may have been more."

Rather than migrating to North America in several waves, as some investigators have theorized, nomadic hunters probably "dribbled" across the ancient land bridge in pursuit of game and ended up on the new continent by accident, Kunz proposes.

However, it remains unclear when people first reached the New World, Ackerman says. Human remains in Pennsylvania and Chile date to 12,000 years ago, and another Alaskan site dates to 11,750 years ago. Ackerman considers these estimates as valid as those for the Mesa site. Even



Spear points found at Mesa site in Alaska.

earlier sites may exist, especially in poorly explored regions of Alaska, he says.

Archaeologists must find more Alaskan and Pacific Northwest sites to determine whether the Mesa weapons hail from a separate culture, Ackerman adds.

— B. Bower

Herpesvirus decimates immune-cell soldiers

Natural killer cells are the foot soldiers of the immune system. These white cells home in on virus-infected cells, lock onto their target, and deliver chemicals that can kill the target cell. If the killer cells malfunction or are killed themselves, an important component of the immune attack is diminished.

Virologists blame herpesviruses for a number of human ills, ranging from cold sores to heart disease (see p.216). Now, laboratory studies by researcher Paolo Lusso and his colleagues suggest that infection with herpesvirus-6 can dampen the body's natural-killer-cell response. In fact, the new findings hint that infection with this herpesvirus may play a role in immune illnesses such as AIDS.

In 1989, Lusso's team showed that herpesvirus-6 attacks another kind of white cell, the CD4 T-lymphocyte (SN: 1/28/89, p.55). AIDS researchers know that such T-lymphocytes are the primary target of the AIDS-causing human immunodeficiency virus (HIV). In the April 1 NATURE, Lusso's team demonstrates that herpesvirus-6 also infects and destroys natural killer cells, which are known to function abnormally in HIV-infected people.

It is the first time that researchers have shown that natural killer cells are vulnerable to any kind of viral attack, comments researcher Anthony L. Komaroff of Harvard Medical School in Boston. The finding suggests that rather than being killed itself, herpesvirus-6 can turn and annihilate its immune-cell attacker, at least in the test tube, says Lusso, who is at the National Cancer Institute in Bethesda,

Md. The team has yet to prove that herpesvirus-6 performs the same way in the body.

Lusso's team also made another surprising discovery: They found that the herpes-infected natural killer cells manufacture the CD4 receptor molecule that provides a port of entry for HIV. CD4 T-lymphocytes express this surface receptor and thus are vulnerable to HIV infection. However, natural killer cells do not normally produce the CD4 molecule and thus are typically impervious to HIV's attack. Yet, when Lusso's group added HIV to cultures of herpes-infected natural killer cells, they found that HIV could infect those cells.

The research raises the intriguing possibility that this type of herpesvirus helps destroy the immune system by making natural killer cells vulnerable to HIV, Lusso says. The findings also suggest that herpesvirus-6 may work in tandem with HIV to produce a more aggressive illness, he says.

Lusso's results fit with previous research on chronic fatigue syndrome, another immune illness in which natural killer cells don't function properly. Harvard's Komaroff speculates that herpesvirus-6 may cause the killer-cell dysfunction observed in people with this syndrome. His research has shown that chronic fatigue patients are likely to exhibit an active infection with herpesvirus-6. Most people carry this type of herpesvirus, but the virus usually remains inactive, he adds.

— K.A. Fackelmann