Archaeology

Stone tips on ancient hunting

In the last decade, anthropologists have engaged in a heated debate over the extent of hunting by human ancestors. Some take the more traditional stance that hunting, at least of small animals, extends back nearly 2 million years. Others contend hunting replaced a lifestyle of scavenging and foraging much later, perhaps 40,000 years ago (SN: 6/11/88, p.373).

The traditional view gains ammunition from a new report suggesting that Neanderthals and anatomically modern humans living from 50,000 to 100,000 years ago hunted with stone-tipped spears. The practice may have spread throughout Africa and much of Europe and Asia, asserts John J. Shea, an anthropology graduate student at Harvard University, in the just-released winter 1988 JOURNAL OF FIELD ARCHAEOLOGY.

Shea first analyzed microscopic wear patterns on more than 5,700 stone implements recovered at the Kebara cave in Israel. Kebara has yielded the remains of Neanderthals and is dated at 50,000 to 60,000 years old.

A total of 448 artifacts bear characteristic markings produced by various types of activities, including woodworking, butchery, hide scraping and the working of bone or antler, Shea reports. He identified 50 triangular blades and flakes with small fractures at their tips, suggesting they had been thrown at or thrust into animals. Near the bases of the same artifacts are worn areas where the sharpened stones apparently were hafted to spears, Shea says.

Microscopic study of similar pointed stones found at the nearby Qafzeh cave, which contains the burials of anatomically modern humans dating to more than 90,000 years ago (SN: 2/27/88, p.138), reveals similar traces of hunting and hafting, Shea maintains. If further research confirms this interpretation, then Neanderthals and anatomically modern humans in the Near East used similar spear points for up to 50,000 years.

Wear marks on pointed stones cannot, however, yield estimates of the frequency or the success of hunting efforts, Shea says. Researchers must address these questions through continued study of animal remains at archaeological sites.

Now you see it, now you don't

From around A.D. 1 to 700, the Nasca culture flourished on the south coast of Peru. Scientists exploring the best-known Nasca site, Cahuachi, in the early 1950s found it to consist of large temples, cemeteries, plazas and the remains of mound-shaped dwellings. Since then, many researchers have considered Cahuachi to have been a densely populated city reflecting an emphasis on urban living in the Nasca culture.

But recent excavations at Cahuachi indicate the site did not have a large permanent population typical of a city or even of a smaller town, says archaeologist Helaine Silverman of the University of Illinois at Urbana-Champaign. Cahuachi was a "now you see it, now you don't" city, she reports in the winter 1988 JOURNAL OF FIELD ARCHAEOLOGY. Silverman asserts it was a sacred site inhabited mostly by priests and their assistants, coming to life frequently and periodically as thousands of people made pilgrimages to the spot. The layout of the site and the nature of pottery and other remains indicate that most of the 40-plus Cahuachi "mounds" functioned as temples, housing for the priests and special storage facilities, not as typical domestic residences, she says.

The mounds were built and later modified during pilgrimages, Silverman notes. Construction peaked between A.D. 200 and 350. Plazas became the centers of trading activity, some of it involving religious objects used in rituals. Elaborate ritual performances and religious ceremonies were held in tribute to the priestly elite and the gods they represented.

Cahuachi "was a phantom city rather than a true one," Silverman concludes.

Biomedicine

Kathy A. Fackelmann reports from Washington, D.C., at the annual meeting of the Association of Professional Sleep Societies

Fending off AIDS with deep sleep?

People infected with the AIDS virus (HIV) experience abnormal sleep patterns long before clinical symptoms of the disease erupt, according to preliminary research results. Scientists say such findings eventually may help them unravel the complicated relationship between sleep and a robust immune system.

Suzan E. Norman of the Mount Sinai Medical Center in Miami Beach and her colleagues studied the sleep patterns of 10 homosexual men aged 20 to 46 who felt healthy and showed no signs of early AIDS but tested positive for HIV infection. Researchers have demonstrated that HIV can remain in the body for years before causing overt AIDS symptoms. Norman's team questioned the men about their sleeping history and had them sleep in a laboratory for two nights. They found that the men spent 21.4 percent of the night in the very deep sleep stages called slow-wave sleep — an amount significantly longer than average. Most healthy people in that age group spend about 16 percent of the night in slow-wave sleep, Norman says.

The scientists don't know what to make of their finding, but they speculate that increased slow-wave sleep reflects the body's early attempt to fight off HIV before the virus devastates the immune system. Animal studies show that certain lymphokines — powerful chemicals regulating the body's immune response — promote slow-wave sleep. The longer periods of slow-wave sleep seen in apparently healthy people testing positive for HIV may be connected with a marshaling of the immune system in response to the viral threat, Norman says. She plans to take the research one step farther by drawing blood samples during the night to see if healthy HIV-positives have elevated levels of these lymphokines.

Researchers don't yet understand the connection between the immune system and sleep, but Norman says she hopes these early studies will provide some clues. In the meantime, the researchers are well on their way to proving the adage linking robust health to a good night's sleep.

Body's clock keeps insomniacs wide awake

Scientists have postulated that people who have trouble falling asleep at night may have an out-of-kilter biological clock, the circadian rhythm regulating alertness, sleepiness and many other bodily cycles. Australian researchers now offer hard data supporting that hypothesis.

Mary Morris, Leon Lack and their colleagues at Flinders University in Adelaide studied 13 sleep-onset insomniacs — people who go to bed and can't sleep for at least 42 minutes. They compared the insomniacs, ranging from 20 to 45 years of age, with nine good sleepers who typically fell asleep within 11 minutes. All study participants kept sleep diaries for two weeks, then checked into a sleep laboratory for several days. There Morris and her colleagues monitored participants' endogenous body temperature — a gauge unaffected by activity-related temperature fluctuations and used as a marker of the body's biological clock.

The researchers found that the 13 insomniacs passed through the wake-maintenance zone — a stage in the biological cycle during which sleeping is difficult — about 3.6 hours later than controls. Most people leave the wake-maintenance zone at about 10 p.m., but insomniacs in the study reached the same point in their cycle after 1 a.m., Lack says.

Most sleep-onset insomniacs are people aged 15 to 50 who are desperately seeking a good night's sleep, Lack says. Many go to bed at midnight but toss and turn for hours. The new research suggests their trouble may be related to a delay in the circadian cycle, and offers hope that using bright lights to reset the biological clock — a strategy currently under study (SN: 6/17/89, p.374) — will offer some relief.