

Ancient Israeli implements: Out of Africa

Situated about 6 miles north of the Red Sea, an approximately 600,000-year-old Israeli archaeological site has yielded a trove of stone tools made in a style generally thought to have existed only in Africa. The new finds support the theory that human ancestors carried African cultural traditions to the Middle East in a series of population movements, according to Naama Goren-Inbar and Idit Saragusti, both archaeologists at Hebrew University in Jerusalem.

Sharp-edged artifacts found at the largely waterlogged site, known as Gesh-er Benot Ya'aqov, share crucial features with stone tools of similar age from Olduvai Gorge and Olorgesailie in East Africa, Goren-Inbar and Saragusti assert.

Moreover, stone implements found at the nearby Israeli site of Ubeidiya, which dates to about 1 million years ago, closely resemble a different, simpler brand of tools found at several African sites of about that same age, the two archaeologists argue.

"The new evidence is a good indication of African affinities at Gesh-er Benot Ya'aqov," holds Ofer Bar-Yosef, an archaeologist at Harvard University and director of the Ubeidiya excavations. "Mental templates for tool making apparently lasted for a long time and were carried from one region to another by ancient hominids [members of the human evolutionary family]."

Homo erectus, whether a single species or a set of distinct hominid lineages, made many treks from Africa to the Middle East and often met death in unfamiliar environments, Bar-Yosef theorizes. But the Israeli sites lie in the Jordan Rift Valley, where the mix of lakes and woodlands would have resembled the African ecology familiar to the ancient travelers, he contends.

Initial excavations at Gesh-er Benot Ya'aqov were undertaken in the 1930s. In the 1960s, investigators at the site first speculated that the stone tools they had found bore signs of African influence.

Renewed work at the Israeli location began in 1989 and has since uncovered enough stone artifacts to make possible a thorough comparison with the African material, Goren-Inbar and Saragusti assert. Their analysis of 105 oval-shaped hand axes and 41 rectangular cleavers appears in the Spring JOURNAL OF FIELD ARCHAEOLOGY.

As many as 40 percent of these tools were chiseled out of large flakes that had been intentionally broken off rocks or boulders, the researchers maintain. These types of tools, plentiful in Africa but absent elsewhere in the Middle East, contain sharp edges and protrusions on both sides produced by the force of blows during tool production. A smaller proportion of artifacts was

struck from lumps of stone, another technique known from African sites of about the same age.

At Ubeidiya, the scientists note, small stones were chipped into triangular shapes and other forms unlike the nearby Gesh-er Benot Ya'aqov material but similar to African artifacts dating to more than 1 million years ago.

These similarities most likely reflect ancient dispersions of cultural ideas out of Africa and into the Middle East as hominid groups left their sub-Saharan homelands because of local climate and environment changes, according to

Goren-Inbar and Saragusti.

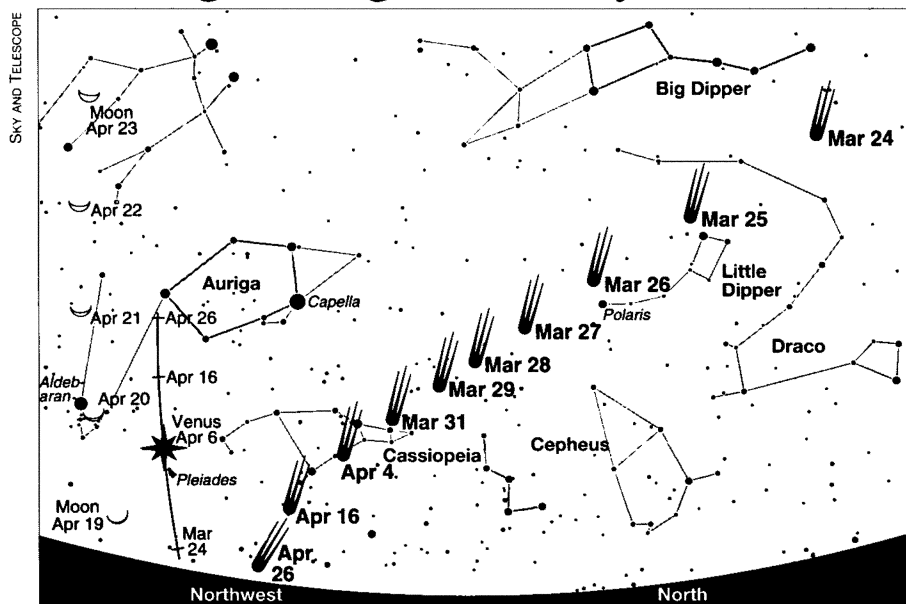
"There certainly appear to be African affinities at the two Israeli sites," says J. Desmond Clark of the University of California, Berkeley. "We may be dealing with several movements of African hominids to the Middle East."

Yet both Clark and Richard Potts of the Smithsonian Institution's National Museum of Natural History in Washington, D.C., caution that other hominid groups with access to the same raw materials could have invented the same types of tools.

"Whatever actually happened, Gesh-er Benot Ya'aqov is so well-preserved that it will provide all kinds of data we never could have imagined," remarks Bar-Yosef.

— B. Bower

Tracking the bright comet Hyakutake



First spied through high-powered binoculars in late January, Comet Hyakutake looked like a faint smudge (SN: 2/17/96, p. 103). Now, it is visible to the naked eye. Astronomers are increasingly confident that by late April, Hyakutake will be the brightest comet seen from Earth in 20 years.

From March 23 through 29, the comet will be visible all night in the northern skies. It will come closest to Earth on the night of March 24, venturing within 15 million kilometers, or one-tenth the distance from our planet to the sun. On March 26, look for Hyakutake near Polaris, the North Star. (To use this map of the sky, hold it upside down, face north, and look upward.)

Even though its overall brightness during this period may rival that of the brightest stars, the comet will be more difficult to spot because its proximity to Earth diffuses the light, says Daniel Green of the Central Bureau for Astronomical Telegrams in Cambridge, Mass.

On April 3, skywatchers in the northeastern United States will have a special treat: A total eclipse of the moon will enhance the view of Hyakutake. The comet is likely to fade in early April as it moves away from Earth, but by mid-April, as it heads closer to the sun, Hyakutake should form a brilliant tail, the trademark of comets. During the third week of April, the comet may appear at its brightest, as dazzling as Jupiter, Green notes.

Beauty is ephemeral, however, and by May 1, when Hyakutake passes closest to the sun, it will be lost in the star's glare. The comet will then veer south, becoming visible only in the Southern Hemisphere. By summer, observers will need a telescope to view Hyakutake. Then, calculates bureau director Brian G. Marsden, the comet won't be back for 10,000 to 20,000 years.

The Hubble Space Telescope will attempt a snapshot of the comet on March 25 and plans to take both pictures and spectra on April 1.

— R. Cowen