

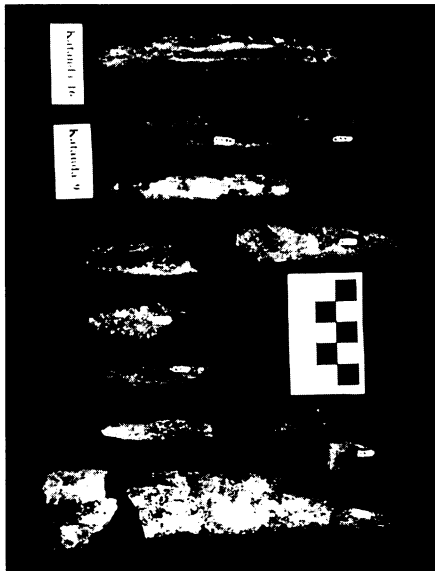
African Finds Revise Cultural Roots

New evidence indicates that people living in Africa 90,000 years ago carved barbed bone points to spear fish and even organized annual fishing expeditions. This discovery challenges the widely accepted theory that the complex thinking and behavior necessary for major cultural changes arose in Europe no earlier than 35,000 years ago.

"What's exciting is that we're seeing strategic planning for subsistence by people who lived so long ago," says Alison S. Brooks, an archaeologist at George Washington University in Washington, D.C. "Humans in Africa invented sophisticated [tool] technologies long before their European counterparts, who have often been credited with initiating modern culture."

Brooks and John E. Yellen, an archaeologist at the National Science Foundation in Arlington, Va., directed excavations between 1986 and 1990 at a location in eastern Zaire called Katanda. Work there yielded eight barbed bone points, three unbarbed bone points, and a dagger-shaped bone, Brooks and her colleagues report in the April 28 SCIENCE. These artifacts were made by grinding a rib or limb bone from a large mammal on a stone anvil or with a stone grinder, the researchers hold.

Prehistoric Katanda toolmakers cut a row of three-edged barbs on one side of



Ancient bone artifacts found in Zaire.

a bone point and carved rings around the base so that it could be fastened to a wooden shaft. Comparable bone implements in Europe date only to 14,000 years ago, Brooks says.

Excavations also unearthed the bones of many animals. Remains of large catfish turned up in particular abundance. These fish spawn in shallow water dur-

ing the rainy season, which is probably when the Katanda people made visits to the area, armed with bone-tipped spears, Brooks argues.

Clusters of artifacts and animal bones at Katanda resemble the debris produced by modern hunter-gatherer families living in the same area, she notes. Current residents still fish, although they now use boats. At other archaeological sites, evidence for organized fishing extends back no earlier than 20,000 years ago.

Brooks and her colleagues assign an age of at least 89,000 years to the Katanda finds, based on analyses of uranium content and breakdown in several mammal teeth and measurements of the stored radiation dose in quartz sand just above the artifacts.

"This is a highly significant discovery," asserts Jack W. K. Harris, an archaeologist at Rutgers University in New Brunswick, N.J., who directs an Ethiopian excavation (SN: 4/15/95, p.237). "Technological innovations that gave people a reliable food source occurred much earlier than we thought — and in Africa rather than Europe."

An early form of sedentary living may have emerged at Katanda around 90,000 years ago, with settlements set up during annual periods of intense fishing, Harris contends. — B. Bower

Hormonal clock predicts premature births

About 6 months into a pregnancy, some anxious parents-to-be stash a suitcase at the front door and nervously wait day and night for that moment when the mother's labor starts and the mad rush to the hospital begins.

Future parents may know better when that dash will begin, if a report in the May NATURE MEDICINE proves accurate. More important, the new work may help physicians understand and prevent premature delivery, which often places the life of the still-developing fetus at great risk.

A team of English and Australian researchers, led by Roger Smith of the John Hunter Hospital in Newcastle, Australia, found that the amount of a particular hormone in the mother's blood can predict, at a remarkably early point in gestation, whether birth will occur prematurely, on time, or late.

The researchers followed the pregnancies of 485 women. At 16 to 20 weeks into the normal 40-week gestation period, they measured the maternal blood concentrations of corticotropin-releas-

ing hormone (CRH), a chemical that the placenta begins to secrete early in the second trimester.

Smith's group compared those early measurements to times of birth. The 24 women who delivered prematurely (defined as less than 37 weeks of gestation) had shown an average of 3.64 times more CRH in their blood than women who gave birth on time (37 to 42 weeks). Those who delivered late had had slightly less CRH than the on-time women, although this case was not as statistically sound.

The authors and John R.G. Challis of the University of Western Ontario in London, in an accompanying editorial, interpret the new data as a ticking "placental clock" that determines the length of a pregnancy. They express surprise, moreover, that this clock establishes the length at such an early stage.

Past research on CRH had shown that its concentration in the mother's bloodstream rises dramatically as a baby's delivery date approaches. For most of a pregnancy, another protein binds to

CRH and blocks its hormonal actions. Smith's team suggests that when CRH concentrations rise high enough to overwhelm the obstructing protein, the delivery process begins.

Puzzling out CRH's role in human pregnancy has proved difficult, notes Hans H. Zingg of the Royal Victoria Hospital at McGill University in Montreal, because the hormone apparently plays no important role during pregnancy in other animals, such as mice.

Zingg also argues that it remains unknown whether CRH or the placenta even starts the clock going. "I think they're looking at the hands of the clock and not the clock itself," says Zingg. He adds that unexpected events, such as infections, may break the rhythm of a pregnancy clock.

Despite those and other outstanding questions, researchers suspect that clinical experiments in which physicians try to lower CRH concentrations to prevent premature labor are not far off. "It's certainly a strategy that merits investigation," says reproductive physiologist Peter W. Nathanielsz of Cornell University. — J. Travis