

# Anthropology

Bruce Bower reports from San Diego at the annual meeting of the American Association of Physical Anthropologists

## *Paranthropus* yields mosaic arm bone

Between 1979 and 1983, anthropologists excavated the remains of numerous hominids (the evolutionary family that includes modern humans) in an underground cave complex in South Africa. Most of the 1.8-million-year-old fossils apparently belong to *Paranthropus*, a group of hominids whose evolution paralleled that of direct human ancestors but who became extinct around 1 million years ago.

Hand bones recovered at the site suggest *Paranthropus* had human-like digits as capable of making and using tools as the earliest truly human species (SN: 5/28/88, p.344). A nearly complete lower arm bone — the radius — has now been identified among the cave remains by Randall L. Susman and Frederick E. Grine of the State University of New York at Stony Brook. The bone is in three pieces — two ends and a large section of shaft — found close to one another. They almost certainly represent a single *Paranthropus* radius, Susman says.

The radius contains a mosaic of ape-like and human-like features, he notes. Its head, where the radius attaches to the upper arm bone, is mushroom-shaped with a shallow rim. This pattern occurs in the radii of modern apes but not in those of modern humans.

On the other hand, the shaft and distal end of the *Paranthropus* radius, where it attached to the wrist bones, are clearly more human-like, Susman contends. This is not surprising, considering the previous evidence that the ancient hominid had a "precision grip," he adds.

The mosaic pattern of features in the *Paranthropus* radius is not matched in any modern apes or humans, Susman says.

## A walk back through evolution

Three hominids made some remarkable impressions 3.5 million years ago. They walked across damp volcanic ash that later hardened and preserved their footprints at the Tanzanian site of Laetoli. Since the 1978 discovery of the Laetoli hominid trails, anthropologists have debated whether the footprints belong to *Australopithecus afarensis* — the earliest known hominid species, which includes the famous "Lucy" skeleton — or represent a separate species linked to the *Homo* line.

The argument seems unlikely to be resolved until many more early hominid fossils are found at Laetoli and elsewhere. But the first detailed study of the gaits and footprints of modern people who walk barefooted indicates the Laetoli prints are much like those of *Homo sapiens* and were probably not produced by Lucy's relatives, reports Russell H. Tuttle of the University of Chicago.

Tuttle and his co-workers studied 70 Machiguenga Indians in Peru. The sample included an almost equal number of males and females between ages 7 and 67. The Machiguenga negotiate a rough mountainous terrain without shoes.

Machiguenga individuals usually walk with their feet close together and aligned along a straight line (as opposed to walking with feet pointed out or in). Their feet, broad compared with the feet of people who wear shoes, have prominent arches, Tuttle says. Machiguenga toes fan out, with large gaps between each toe.

The shape of Machiguenga feet and their placement while walking resemble the Laetoli prints, Tuttle concludes.

Further investigations should concentrate on barefooted groups living in relatively flat savannah regions similar to the area traversed by the Laetoli hominids, he adds.

For now, Tuttle says, the possibility remains of a hominid species at Laetoli distinct from Lucy and other *A. afarensis* individuals found at the nearby Hadar site. The few toe bones found at Hadar curve downward in an ape-like manner. Hominids with curved toes could not have made the Laetoli footprints, he maintains.

## Reach out and branch someone

It's early in the morning in the rain forest surrounding the Wamba Research Station in Zaire. A pygmy chimpanzee climbs down from its nest in the trees and methodically searches the underbrush. It soon finds what it's looking for: a tree branch, which it noisily drags between the nesting tree and a nearby tree laden with fruit. The racket awakens another pygmy chimp, which joins its boisterous buddy for breakfast at the fruit tree.

Branch dragging, such as this early morning "wake-up call," is common among pygmy chimps at Wamba, says Ellen J. Ingmanson of the University of Washington in Seattle. Its frequent occurrence in a number of situations demonstrates sophisticated tool use and complex communication skills among wild pygmy chimps, she contends.

Ingmanson observed three groups of pygmy chimps, with a total population ranging between 30 and 40, from September 1987 through January 1988. Branch dragging was performed mainly by adult males, and occasionally by adult females and adolescent males. Chimps choose branches carefully; they are usually 6 to 7 feet long with a leafy end suitable for creating lots of noise in the underbrush.

Branch dragging is likely to take place during the chimps' daily treks through the forest, Ingmanson says. Adult males use the technique to get the group moving, indicate the intended direction of movement, signal a change in direction and hurry stragglers along.

For example, females take more time to eat than males and sometimes fall behind the group. Often, several males drop behind those who dawdle at a feeding site and drag branches in semicircles to herd them toward the main group.

"Very specific information is communicated through branch dragging concerning intention and direction of movement," Ingmanson notes.

## Sex and friendship among baboons

Adult male baboons are built to fight, with muscular bodies and long, sharp canine teeth. But contrary to traditional models of primate behavior, friendship outweighs fierceness as a means of attracting sexually receptive females, according to Shirley C. Strum of the University of California, San Diego.

"Males create friendships with females with later reproductive benefits in mind," Strum says. "Male persistence may outweigh female resistance in baboons as well as in humans."

From 1972 through 1987, Strum studied a large troop of olive baboons living on a 45,000-acre ranch in Kenya. She charted the reproductive behavior of 41 adult males.

Those most likely to mate with sexually receptive females had lived in the troop for three to five years and maintained friendships with their prospective mates. Baboon friends eat together, groom one another and engage in many other daily activities. A friendship between a male and female preceded mating 89 percent of the time, Strum says.

Male newcomers to a troop are often more aggressive than long-term male residents, but are much less likely to attract sexual partners, she notes. Only 25 percent of the time does one male take a receptive female from another male by being aggressive.

Older males are more successful at attracting mates than are younger males who have lived in the group the same amount of time, Strum points out. Social experience and knowledge of fellow group members, in addition to the nurturing of female friendships, are crucial in the baboon mating game.

There is a point of diminishing reproductive returns, however. Males living in the troop more than five years become less successful at attracting mates. This, Strum says, may serve to discourage inbreeding.