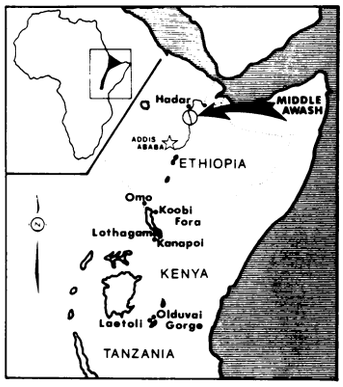
Into the Pliocene gap: 'Awash' with evidence of early hominids



Illustrations: Univ. of Calif.

A 4-million-year-old skull fragment and femur (right foreground), found in the Awash River valley of Ethiopia (above) provide the earliest evidence that man evolved from a bipedal "ape-man."

For students of human evolution, the so-called Pliocene gap is the ultimate challenge and ultimate frustration. It is a period spanning from 4 million to 10 million years ago for which there is no meaningful evidence of man's evolutionary history; and it is the period, most now agree, during which the transition from ape to walking hominid, or "ape-man," must have taken place.

Now, for the first time, scientists have uncovered fossil evidence of human ancestry from the impenetrable Pliocene — evidence consistent with the controversial theory that early ape-men walked upright long before the evolution of the large human brain. Perhaps more important, scientists say, they have uncovered in the Awash River valley of Ethiopia what is perhaps the richest fossil record of the mysterious Pliocene gap ever available — a site that promises future data on the emergence of the first hominids.

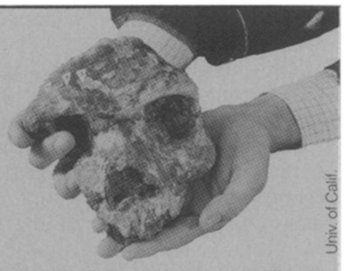
According to anthropologists J. Desmond Clark and Timothy D. White of the University of California at Berkeley, an expedition into the Middle Awash River valley last autumn turned up two fossil bones — a thigh bone and a frontal skull fragment — that, at 4 million years old, provide the earliest evidence of human evolution. Prior to these findings, the earliest evidence of walking hominids dated back to 3.6 or 3.7 million years ago: the famous "Lucy" skeleton, reported by paleontologist Donald C. Johanson in 1979 (SN: 1/20/79, p. 36), provided the earliest (and only) evidence that hominids were walking upright while their brains were quite small. Johanson (now at the Berkeley-based Institute of Human Origins) had, with White, assigned Lucy to a new species of hominids called *Australopithecus afarensis,* characterized by the combination of bipedalism and undeveloped brain. Their claim generated considerable controversy in the late 1970s.

The new data support the controversial claim, according to White and others. While the two new fossils cannot be conclusively assigned to *A. afarensis* without evidence of teeth and jaw development, White says, "they are consistent with a model that shows *afarensis* as a stable, longlasting species preceding *Homo.* What we've done is to push our knowledge of these hominids back another 300,000 years. We've finally broken that 4-million-year barrier."

Kent State University anthropologist Owen C. Lovejoy, one of the world's experts on leg bones, agrees. Although only two bone fragments are available from this earlier period, he says, they couldn't have been two better bones for diagnostic purposes. The femur, he says, leaves no doubt that this 4-million-year-old creature was fully adapted to walking, and the skull fragment shows that it had a brain the size of a chimpanzee's. "What this does is show that those two characteristics were a stable complex. There was plenty of time in a million years [until 3 million years ago] to show some brain expansion, but it just doesn't take place." The idea of a primitive small-brained biped, he says, completely undermines the Darwinian notion that upright walking evolved in response to tool use, which at the same time induced an enlargement of the brain.

At 4 million years old, the new fossils just barely penetrate the elusive Pliocene gap, of course, and the researchers are far more excited by the promise of the Awash. According to Clark (who led the expedition), the research team, without even looking systematically, discovered "an almost continuous fossil record" of animal species for the past 6 million years and a geological "textbook" of rock layers that will reveal the world in which man evolved. The researchers will be returning to the Awash this fall to continue the search for evidence of the ape-man's first upright steps. "They've lifted the blind on the evolutionary era that tells the whole story," says Lovejoy. "That's what's exciting." — *W. Herbert*

Who scalped Bodo, and why?



Univ. of Calif.

Foul doings in prehistoric Ethiopia. Bodo man, a late *Homo erectus* and one of the closest known relatives of *Homo sapiens,* was scalped following his death 300,000 years ago, according to new evidence introduced this week by Berkeley anthropologist Timothy D. White. White has completed an electron microscope investigation of the case, and he is convinced that the jagged cuts he has found on the skull fossil of Bodo provide solid evidence of the earliest known scalping, apparently executed with a primitive stone knife. The weapon has not been found.

Who would scalp Bodo, and why? The motive is less clear than the facts, White concedes. Despite the fact that Bodo belonged to a nearly human species of hominids, he says, very little is known about his behavior — whether he lived with a tribe, for example, or coveted territory. Scalping could have been a mortuary practice or form of ancestor worship, he says, but it is impossible to go beyond speculation without further evidence. However, he adds, butchery is unlikely. "It is very difficult to think of an economic reason for this kind of practice." □