



The Living Link?

The orangutan might supplant the chimp as the best living model of human origins

By WRAY HERBERT

Ever since the nineteenth century anatomist Thomas Henry Huxley suggested a resemblance between man and the African apes, there has been a tendency to imagine the ancestral animal as something vaguely chimpanzee-like. Based on this presumption, scientists have interpreted unique human characteristics as specializations, adaptations that took place since early humans, or hominids, split from chimps and gorillas millions of years ago. New fossil fragments from Africa are now forcing a reconsideration of this view: Scientists may have to think again about what is primitive and what is the evolved, or "derived," condition, and we may all have to start picturing our ape ancestor as something less akin to the chimp than to the red-haired Malaysian ape, the orangutan.

The newly discovered fossils — parts of upper and lower jaw bones and teeth — come from Buluk, a desolate region of northern Kenya. They were discovered last summer by a group of anthropologists directed by Richard Leakey, head of the National Museums of Kenya, and Alan Walker, a Johns Hopkins University anatomist. What makes the fossils remarkable is that they appear identical to an ape genus called *Sivapithecus*, previously known only from Asia, and they are 17 million years old, much older than any *Sivapithecus* fossils known.

The confusing and controversial sivapiths had robust jaws and thickly enameled teeth, presumably for grinding nuts and seeds; in that respect they were unlike the African apes, which rely more on well-developed large front teeth for eating. They were more like the modern orangutan and early African hominids, both of which show the mortar-and-pestle type of chewing mechanism. For a long time there were thought to be two different ancestral apes represented in the Asian fossils: The sivapiths were considered ancestral to orangutans, and a sligh- ter — but otherwise very similar — form called ramapith was viewed as a human ancestor.

A few years ago, however, Harvard University's David Pilbeam uncovered a nearly complete skull in Pakistan, and

based on an analysis of that fossil he concluded that ramapiths were actually female sivapiths, thus ancestral only to orangutans. This view is being challenged.

If the Buluk fossils are indeed identical to *Sivapithecus* from Pakistan, as Alan Walker believes, then some reinterpretation must follow. The animal is either an ancestor of orangutans alone, which would mean that the red ape began evolving in Africa 17 million years ago (more than doubling its estimated lineage); or it is ancestral to all apes and humans — the so-called "missing link" between apes and humans. Walker favors the second view: Disputing the idea that heavy teeth and jaws represent an adaptation away from the primitive condition, he argues that such a chewing mechanism was the primitive condition; humans and orangutans have maintained the primitive form — presumably because it was suitable for their habitat and diet — while the African apes have adapted for life in the forests.

When animals don't change much over time, the likeliest explanation is that they stayed in the same habitat, Walker says. Habitats migrate very slowly, and animals can migrate with their habitat; that presumably is what happened with the orangutan. At about 17 million years ago, tectonic plate movement brought Africa and Asia together, allowing some of the primitive apes to drift toward the Far East. Other animals did as well, Walker notes; from Buluk, they have fossils of an alligator and a rhinoceros that today exist only in Malay — which probably has a habitat much like that during the Miocene period in Africa.

What this means, according to Walker, is that the modern orangutan, rather than being a very specialized ape, is something of a living fossil that can be used as a model for the common ancestor. Although it is possible that some of the orangutan's features are derived, relative to the African apes it is the closest thing to the 17-million-year-old sivapiths from Africa.

Walker's interpretation is also consistent with new data coming out of China that point to a clear distinction between ramapiths and sivapiths. Charles E. Oxnard of the University of Southern California in

Los Angeles and Wu Rukang of the Institute of Vertebrate Paleontology and Paleoanthropology in Beijing have analyzed over 1,000 teeth from the eight-million-year-old Lufeng site; ramapiths and sivapiths, they report, are not simply males and females of a single, sexually dimorphic, animal. There are two distinct apes, they say, each with its own pattern of sexual dimorphism. Furthermore, they add, the larger sivapiths have proportionally fewer males, indicating a polygynous sexual structure like that of living apes, while the smaller ramapiths show evidence of a social structure much like the human nuclear family. If the sivapiths were indeed splitting into human and ape-like forms eight million years ago, what preceded the speciation must have been a more primitive animal — something not unlike the new-found ape from Buluk.

Walker's view is receiving enthusiastic endorsement in some quarters. University of Michigan's Milford Wolpoff says that current ideas about human origins must be turned upside-down in order to accommodate an African sivapith. But others disagree. Just this month, for example, Duke University anthropologist Elwyn Simons announced the discovery of fossil skulls from Egypt that argue against Walker's view. The animal, which he calls *Aegyptopithecus zeuxis* (for Egyptian link), lived near modern-day Cairo 32 million years ago, and according to Simons' analysis of dental and facial characteristics, they resembled the African, not Asian apes. The cat-sized primates show individual variation and the beginnings of brain enlargement — characteristics that, according to Simons, put the ape on the evolutionary line that eventually led to *Homo sapiens*.

It is unlikely, Simons argues, that an ancestor resembling African apes would evolve into an orang-like sivapith, then into modern apes and man. As one comes closer in time to the present, Simons says, the chances increase that any given fossil may be on a side branch unrelated to man. The Buluk animal probably belongs on the branch leading to orangutan, he concludes, and is not a human ancestor at all. □