

CHAPTER 8

FINDING FABULOUS FOSSILS

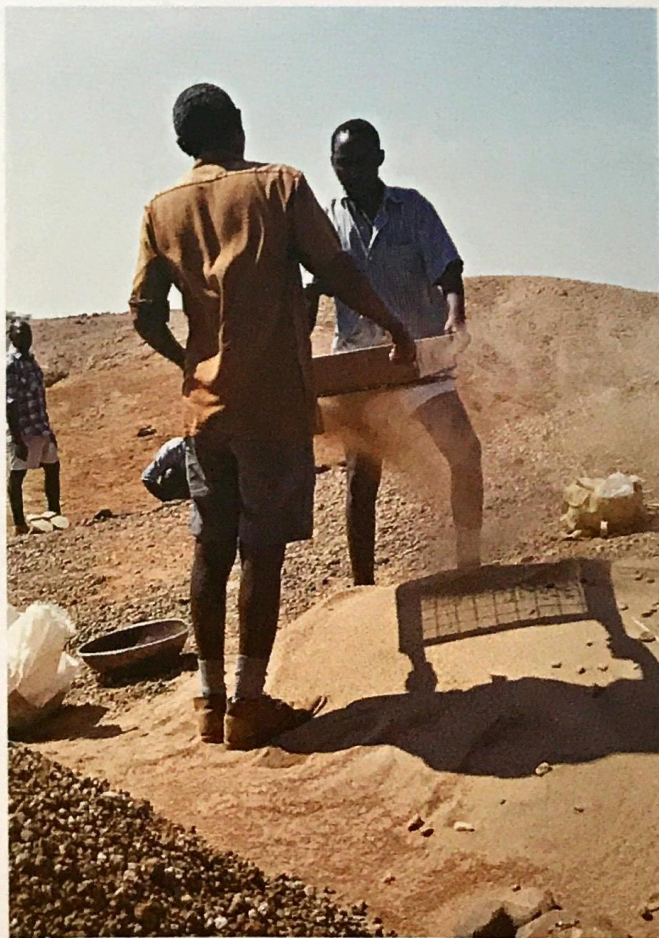
TURKANA BOY

In his book *Origins Reconsidered*, Richard Leakey recalls anthropologist Alan Walker's explanation of what happened nearly 2 million years ago to Turkana Boy after he died. "The boy was lying face down in the shallows, head bobbing in the water. After a few days, or a week at the most, the flesh was putrefying, and the straight rooted teeth began to fall out." Walker speculates that "hippos and other animals wandered by, and the skeleton . . . got kicked about, the lighter bits going closer and closer to the shore. Something must have stood on the boy's right leg, because the fibula snapped in two, one of the pieces being pushed in to the sand."

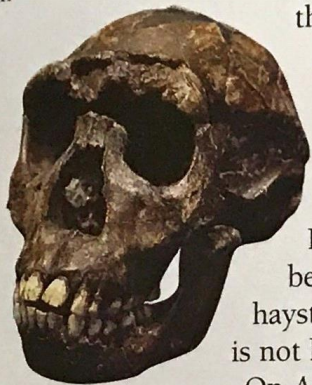
For 1.6 million years, Turkana Boy's bones had lain buried on the west side of Lake Turkana in northern Kenya until a river called the Nariokotome began to wash away the dirt. A foot below the surface, the boy's sand-filled, upside-down skull held water and became the perfect pot to sprout a wait-a-bit thorn seed. Wait-a-bit thorns are hooked or barbed. When you brush past one of these thorn trees, they

Members of the hominid gang sieve sediment to look for small fragments of fossils.

“ H O M I N I D S K U L L
A N D V E R T E B R A
I N K E N Y A



66 *Homo erectus* skull, Turkana region, Kenya, 1.6 million years ago



snag your clothes, which means that you have to wait a bit because you have to carefully free yourself. For 20 years the tree grew. Its roots shot out, snaking between the plates of the braincase. The tree outgrew its pot and the skull burst apart. One small chunk of skull, the size of a matchbook, poked up to the surface. The bone was the same color as the lava pebbles scattered over the tawny dirt. For most of us, finding this bone would be exactly like trying to find a needle in a haystack. But the fossil hunter Kamoya Kimeu is not like most of us.

On August 22, 1984, Kamoya Kimeu felt restless. He sensed that hominid fossils should be on the banks of the sand river Nariokotome. The men Kimeu personally picked and trained had scoured the gullies for two weeks without finding a thing. They called themselves “the hominid gang” and they were not used to failure. If there were hominid bones to be found, these men would find them. They were the best. But the search so far had been a bust. Their backs ached. Their feet were sore. And their heads throbbed from concentrating for so long and so hard—from staring into the sand and squinting against the sun and heat that reflected back. The next day they would move camp. But Kimeu wasn’t ready to give up. Not yet.

While the others wrote letters home, did their laundry, and boiled water for tea—comforting chores after weeks of little comfort—Kimeu began to walk. Walker tells us in his book *The Wisdom of Bones* what Kimeu remembered about those frustrating days. “You know, to walk continuously two weeks is too much. You go crazy, you can’t think. So while they were resting, I just walked across to see how the country looked.”

The second Kimeu spotted that tiny piece in the pebbles, he knew it was a scrap of skull—a hominid skull. And from the thickness, he knew it was a piece of *Homo erectus*—“upright man.” Kimeu brought the fossil back to camp. The bad-luck streak had been broken.

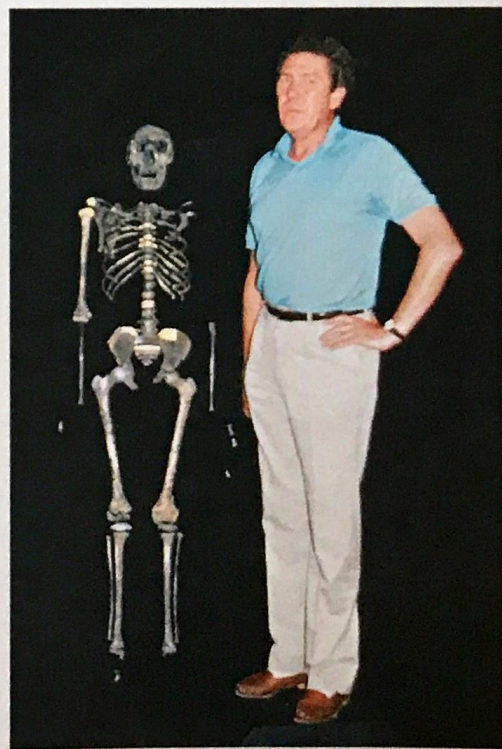
When the anthropologists in charge of the expedition, Alan Walker and Richard Leakey, heard that the hominid gang had found only one tiny piece and nothing more, they assumed there would be no more bones. Alan Walker writes about how they felt, “Our hearts sank when we saw the small fossil, a rectangular piece about one inch by two inches, and the wretched little slope on the opposite bank of the river.”

But archaeologists follow every lead, no matter how discouraging, so the hominid gang began clearing the site of all leaves, twigs, and pebbles and started the dusty, exhausting task of sifting the site. They broke up the top inch or so of packed earth with Olduvai picks. Once the layer was loosened, they shoveled it into wheelbarrows and moved it to the sieve. They tossed shovelful after shovelful of dirt onto the framed mesh and shook it back and forth and back and forth. After two hours of dust billowing and pebbles rattling and no discoveries, they were ready to give up. Just when everyone was convinced that that little piece of bone was all they would ever find, Turkana Boy surfaced.

For the next several weeks, the hominid gang dug up one extraordinary find after another. Walker wrote, “We made a detailed map of the excavation, recording the position of each bone to the nearest centimeter in three dimensions and drawing its orientation in the ground on the map.”

While the hominid gang dug, Alan Walker worked with paleontologist Meave Leakey,

Anthropologist Alan Walker stands beside the skeleton of Turkana Boy. If this five-foot three-inch boy had lived to be an adult he would have been taller than Walker.



WHO'S WHO AMONG EARLY HOMO?

Scientists first found *Homo erectus* fossils in Asia, but the oldest specimens, including Turkana Boy, come from Africa. Some scientists think that these oldest African fossils belong to a different species, *Homo ergaster*, which means “workman.” Turkana Boy is probably a descendant of *Homo habilis* or another species of early *Homo*.

A FAMILY AFFAIR

Three generations of Leakeys have caught a bug—the archaeology bug. Louis Leakey was born in 1903 in Africa, the son of missionaries. He and his second wife, Mary Leakey, led expeditions in East Africa, bringing their children along with them. Their son Richard found an important fossil when he was only six years old. Richard married a woman also passionate about fieldwork—Meave. Richard and Meave were the second generation of Leakeys to bring their children with them to the digs in Africa—Louise at only two weeks old. Louise must have caught that family bug, because she studied paleontology in college and then returned to dig in Africa on the west side of Lake Turkana, not far from where her mother put Turkana Boy's head back together again.

gluing the skull pieces back together. The two shared an unusual childhood habit. They both had loved jigsaw puzzles, but found them too easy. To make them more of a challenge, they used to turn the pieces upside down on the table and put the puzzle together without the picture. This turned out to be perfect training for recognizing shapes and a skill that helped them put Turkana Boy's skull back together even though it had been shattered by the roots of a wait-a-bit thorn tree.

Alan Walker writes in *The Wisdom of Bones*, that before long they knew that the find was an adolescent boy. "His browridges were fairly well developed for a youngster, meaning that, had he lived to grow up, he would have had the hulking browridges that decorate male *H. erectus* foreheads."

For the next four years, Alan Walker, Richard and Meave Leakey, Kamoya Kimeu, and his hominid gang spent each field season digging by the Nariokotome River. Turkana Boy's skeleton was so well preserved that they were able to learn more about *Homo erectus* than any scientists before them.

At eight years old, Turkana Boy was already five feet three inches tall. If he had lived to adulthood, he would have stood more than six feet tall. People who live in hot climates tend to be tall, like Turkana Boy. Over generations, tallness evolved in populations living in hot climates because a long body exposes a lot of skin to the air, making it easier to cool off. Height is not the only way Turkana Boy's body had evolved over generations to stay cool. Unlike other animals that pant to cool off, Turkana Boy could sweat. He had lost much of his body hair, and had developed a bit of a nose. Hominids before Turkana Boy had nostrils sunken into their faces. The nose cools and moistens hot air on the way to the lungs. If you can stay cool enough, you can be out and about in the middle of the day, hunting, scavenging, and foraging, when the only thing the other hunters are hunting for is shade. There is no competition for that delicious wildebeest carcass rotting in the sun!

Most animals' brains grow to almost full size before birth. Human brains, however, triple in size after birth. For

this reason, human babies are dependent on their parents for a long time while the brain continues to grow and develop after birth. Turkana Boy's pelvis was small compared to his brain. Since the head must pass through the pelvis at birth and *erectus* had a small pelvis, it follows that there was a lot of brain growth going on after birth. This means that Turkana Boy's parents must have taken care of him and protected him while his brain continued to grow much like a human infant's parents would. And Turkana Boy's bigger brain—a brain half again as big as any hominid before him—gave him super powers compared to the other animals.

The spinal column is made up of a tower of **vertebrae** stacked one on top of the other like building blocks. Nerves run up through holes in the center of vertebrae. This collection of nerves, the spinal cord, controls the muscles in our arms, abdomen, and chest. The holes in Turkana Boy's vertebrae were narrow. He must have had fewer nerves in his spinal column than we do. The nerves that controlled his arms must have been there. The nerves that controlled walking must have been there. What's left? What nerves do we have that Turkana Boy didn't? Scientists think the nerves most likely to be missing were the ones that control breathing for speech.

In other words, Turkana Boy could not talk. At least he couldn't talk in the traditional sense. But in his own way, he's told us a lot. Alan Walker writes in *The Wisdom of Bones*, "for the first time in history, we were able to look at an almost complete skeleton—not just a scrap of skull, a handful of teeth or a portion of an arm, but a bony record of one individual's life."



These vertebrae are from the Turkana boy (left) and a modern human (right). The space for the spinal cord to pass through the vertebra is twice as big in the modern human as it is in Turkana Boy.

Vertebrae are the spool-shaped bones that make up the backbone.

66 *Homo erectus* vertebra, Turkana region, Kenya, 1.6 million years ago