Unexpected Anatomy in *Homo erectus*

A joint U.S.–Kenyan expedition has unearthed the virtually complete skeleton of a 12-year-old male *Homo erectus* who died about 1.6 million years ago. Before this discovery was made, *Home erectus*, which is widely regarded as being antecedent to *Homo sapiens*, was known principally from cranial material found in Africa and Asia, with elements of the postcranial skeleton being only sparsely represented and sometimes disputed. An enormous volume of new knowledge will come from study of the new skeleton once the bones have been cleaned.

The discovery was made by Kamoya Kimeu, who heads the National Museum of Kenya's hominid hunting team under the direction of Richard Leakey, during the first major foray to the fossiliferous deposits on the western shore of Lake Turkana in northern Kenya. The East Turkana region, whose deposits range between 1 million and 4 million years, with a significant "gap" toward the older end, has been an important source of hominid fossils since 1969. Deposits on the western shore cover a similar time range but are more complete.

Alan Walker of The Johns Hopkins University School of Medicine describes the overall impression of the skeleton as being essentially human from the neck down. He points out, however, that preliminary examination of the individual bones reveals subtle but interesting anatomical differences from modern *Homo sapiens* in many regions of the body.

For instance, the overall architecture of the upper region of the thigh bone is unlike anything in other hominids, extant or extinct. In *Homo sapiens* the head of the femur, which fits ball-and-socket-like into the pelvis, is large and is attached to the shaft of the femur by a short neck. The pattern in *Australopithecus*, the ancestor of *Homo*, is of a small femoral head on a long neck. These differences have been explained in biomechanical terms that have to do with mobility of the joint and distribution of forces in an animal that has a broad pelvis, *Homo*, as compared with another, *Australopithecus*, whose pelvis is narrow. It comes as something of a surprise, therefore, to find that the West Turkana boy, whose pelvis is narrow and flared, has a combination of a large femoral head and a long femoral neck. The functional interpretation of this is difficult, not least because the currently favored biomechanical model might now have to be revised.

David Brill, National Geographic Society

New* Homo erectus *skeleton, with Alan Walker

Another interesting difference is in the thoracic vertebrae, in which, unlike the modern human pattern, the laminae are small and do not overlap and the spines project straight out rather than slope down. Functional anatomy of this area of the vertebral column is not particularly well understood in modern humans and so it will not be easy to establish what behavioral nuances might be implied by these differences.

One of the hotly debated issues about the behavior of early hominids is to what degree they are anatomically adapted to arboreality, in addition to being clearly bipedal while on the ground. According to some authorities the putative forerunner of *Homo, Australopithecus afarensis*, had considerable arboreal adaptations. And the same authorities consider that the hand and foot bones of the first species in our genus, *Homo habilis*, continue to display climbing features. Unfortunately, the hands and feet are among the few body elements that are missing from the West Turkana skeleton, so it is not yet possible to extend this analysis to *erectus*. Walker hopes that further excavation next year will uncover these small bones, which might have been carried from the main part of the skeleton by a gentle water course that ran through the small back swamp where the boy's body became buried 1.6 million years ago. Also missing is the left arm and the right arm below the elbow.

The West Turkana skeleton confirms dramatically what had begun to be indicated by other fragmentary finds: that *Homo erectus* was a big animal, bigger than most populations of modern *Homo sapiens*. The lengths of the fossil humerus and femur fall at the means for a sample of 200 modern humans measured some years ago by Adolph Schultz. The Turkana boy stood around 5 feet 5 inches and would have reached 6 feet in adulthood. It is tempting to speculate that this striking increase in stature compared with antecedent hominids was associated with a significant shift in diet and foraging strategy, such as meat-eating through scavenging and hunting. Unfortunately, no one can say with any confidence how tall *Homo habilis* was.

In addition to being much taller than at least some, if not all, of the earlier hominid species, it now begins to seem likely that *Homo erectus* was also different in having relatively little difference in the size between males and females. Increase in stature, reduction of sexual dimorphism, and shift in ecological niche may all have been part of a single evolutionary "package," which included brain expansion.—ROGER LEWIN