Successor to Weidenreich

Eric Delson

Koobi Fora Research Project. Volume 4: Hominid Cranial Remains. By Bernard Wood. *Oxford University Press: 1991. Pp. 466. £95, $220.*

THE fossil hominids (or more precisely hominins) recovered by Richard Leakey and colleagues from the northeast shore of Lake Turkana have been an important source of data and controversy in human palaeontology since 1969. The Koobi Fora deposits have yielded specimens allocated to the East African 'robust' australopith *A. boisei* and tentatively to the generalized *A. afarensis*, as well as to *Homo habilis* and *H. erectus*, whose definitions in fact are a main focus of this work. Although the specimens were usually briefly described after their discovery, it is only here that further details of their morphology and a comparative overview of their relationships are presented. Palaeoanthropological monographs on human fossils are rare, but in the past two years G. P. Rightmire has perhaps too succinctly reported his worldwide survey of *H. erectus* (*The Evolution of* Homo erectus, Cambridge University Press, 1990), while P. V. Tobias has perhaps too verbosely detailed the fossils from Olduvai Gorge, Tanzania, attributed to *H. habilis* (*Olduvai Gorge IV*, Cambridge University Press, 1991). Wood's treatise is the best of these monographs and is a worthy successor to F. Weidenreich's series of reports on the Zhoukoudian remains (see, for example, *Palaeontol. Sinica, New Ser. D.* **10**, 1; 1943), long the standard of comparison in the field.

F. H. Brown and his collaborators have recently surveyed in detail the chronology and palaeoenvironments of Koobi Fora, leaving Wood to concentrate on morphology. After listing all cranial (including dental) fossils by specimen number, Wood reviews previous analyses of early hominin taxonomy with a dozen tables of features distinguishing hominin species from one another. The meat of the book lies in Part II, three chapters providing descriptions and comparisons of the 126 Koobi Fora fossils. This section is organized by body part, but the breakdown makes it slightly hard to use. Wood first discusses the eight well-preserved crania and their attached teeth, followed by less-complete cranial fragments; the mandibular remains are treated similarly. But the isolated teeth are described separately, which may hinder direct comparison. All the metric data, however, are presented in 30 tables in Part IV, with nearly 400 measurements provided, each carefully defined and readily reproducible. The descriptions here are also useful, although Wood generally avoids transforming his data into verbal characters of the form listed and compared in Part I.

Each fossil, no matter how fragmentary, is well illustrated, and most are allocated to one of the recognized species: the majority (53, plus six recovered after 1981 and not detailed here) to *A. boisei*, but also 24 to *Homo* sp. (something like *H. habilis*) and 17 to *H.* aff. *H. erectus*. Two specimens were recovered from deposits older than 2.5 million years and have previously been allocated to *A. afarensis*, but Wood is more cautious about their affinities.

The interpretation of the 'robust' australopith sample is widely accepted. But since the recovery of the cranium KNM-WT 17000 on the western side of Lake Turkana, there has been argument about whether it and other early specimens are members of the species *A. boisei*: Wood treads lightly but removes the early (and morphologically conservative) group of fossils from this species' hypodigm (the list of fossils allocated to the species) and seems to treat the group as part of a separate lineage if not as a full species. He also comes down firmly but not unequivocally in favour of monophyly (descent from a single ancestral group) of all 'robusts' (rather than an independent derivation of South African *A. robustus* and resulting facial and dental convergence) and the resuscitation of *Paranthropus* as a full genus for these species. In his sparkling foreword, F. Clark Howell applauds the first two decisions and suggests the use of *Paranthropus* as a subgenus of *Australopithecus*.

Even more argument surrounds the interpretation of the earliest species allocated to *Homo*. The general view in the mid-1980s was that an earlier *H. habilis* was succeeded in Africa by *H. erectus*, which later spread into Eurasia and eventually gave rise to *H. sapiens*. Then several workers, including Wood, began to question whether the variation in *H. habilis* was too great for a single species, as well as whether the African members of *H. erectus* are so morphologically conservative that they should be placed in a species separate from the East Asian archetypes of that taxon.

Wood proposes and tests several alternative hypotheses to explain the distribution of 'gracile' specimens at Olduvai and the Turkana basin between about 2.1 and 1.6 million years ago. He first rejects a single-species solution, and eventually suggests the occurrence of a single species (*H. habilis*) at Olduvai, found also at Turkana alongside a form with larger brains and teeth, termed "*Homo* sp. indet." In a review article in *Nature* (**355**, 783; 1992), Wood formally applies the name *H. rudolfensis* (Alexeyev, 1986) to this taxon. As Wood notes, however, various authors have proposed alternative hypodigms for the two forms; Tobias in fact subsumed all these specimens into *H. habilis*. My own concern is that one model seems not to have been fully evaluated: this would allow for the presence of both species at Olduvai, with the partial skulls OH 7 (the holotype of *H. habilis*) and OH 16 as possible specimens of the larger form. Moreover, Figure 6.9 in the book reveals that two crania from Koobi Fora, KNM-ER 1470 and 1813, are more distinct than male and female crania of humans, gorillas or chimpanzees; but Wood does not comment on the near conformity of the relationship between the two fossils and that between the sexes of *Pongo pygmaeus*. Nonetheless, the presence of *H. rudolfensis* alongside *H. habilis* at least in the Turkana Basin now seems well established.

Wood's assessment of the later specimens of *Homo* at Koobi Fora is less satisfying. Although he accepts that the sample is closely similar to *H. erectus*, he argues that it is sufficiently different from the Indonesian and Chinese populations for these to be classed as a distinct species. Wood terms this taxon *H.* aff. *H. erectus* but notes that *H. ergaster* Groves and Mazak, 1975, is probably the valid name. Yet to me the differences between the African and Asian samples are less clear than those between any of the taxa discussed previously; their real distinction rests mainly on the conservative morphology of the earlier African forms as compared to the distinctive features, or autapomorphies, of the generally younger Asian fossils. Rightmire, and A. Turner and A. Chamberlain (*J. Hum. Evol.* **18**, 115; 1989) have made the strongest recent case for the global unity of *H. erectus*, and I find their arguments more convincing.

Clearly, palaeoanthropologists are difficult to please and to convince, but this work should go a long way towards appeasing them. Wood's care and desire for usefulness has resulted in a monograph that epitomizes comparative biology: a source of well-illustrated, reproducible data followed by reasoned assessments of serious alternatives. The volume deserves a place on the shelf of every active researcher and advanced student of human palaeontology. □

Eric Delson is in the Department of Anthropology, Lehman College and the Graduate School, City University of New York, Bronx, New York 10468, USA.