

Earliest *Homo* not proven

SIR — A closer look at the morphological evidence on which Hill *et al.*¹ assert that the temporal bone KNM-BC 1 from the Chemeron formation near Lake Baringo in Kenya represents the earliest member of the genus *Homo* casts serious doubt on their claim. The specimen was originally identified by Martyn and me as that of a hominid of indeterminate genus and species², because, on the evidence of this temporal bone alone, it was impossible to assign the specimen firmly to either of the most widely recognized genera of the Hominidae, *Australopithecus* or *Homo*. Although most features of the Chemeron temporal suggested australopithecine affinities, a good proportion suggested an affinity with *H. habilis*².

Hill *et al.*¹ conclude that the Chemeron temporal shares two features which “appear to be unique to members of the *Homo* clade”. For the first feature, “medially situated temporomandibular joint fossa”, they offered no metrical or topographic statement as to how far medial the fossa lies. The marked variability in medial or lateral positioning of the mandibular fossa was noted by Weidenreich³ and me^{4,5}. The trait appears to reflect both the degree of expansion of the brain (ref. 3, pp 50–51) and the size of the mandibular condyle (ref. 5, pp 110–111). In great apes and robust australopithecines, the medial half or less of the articular tubercle is fronted by infratemporal surface; the lateral half or more of the fossa lies beyond the plane of the side wall of the calvaria. In these forms the frontal part of the brain is little expanded, but the mandibular condyle is large. In *A. africanus*, which has a relatively slightly expanded frontal part of the brain, but a smaller condyle, a greater proportion of the fossa is fronted by brain-case. This proportion is two-thirds to three-quarters in Transvaal *A. africanus* crania such as Sts 5, Sts 19 and MLD 37/38, and the same proportions apply in the Olduvai *H. habilis* crania OH 24 and OH 13. In other words, the fossa is just as far medially situated in *A. africanus* as in *H. habilis*⁵. A still greater proportion of the fossa is medial in *H. erectus* and *H. sapiens* (80–100%)⁵. Thus, the medial position of the mandibular fossa must be removed from the short list of temporal features which have been said to distinguish between *Homo* and *Australopithecus*.

This leaves only what Hill *et al.* call (erroneously) the sharp petrous crest. The petrous or petrosal crest is Weidenreich's name for a feature of the tympanic plate on the basis cranii externa³; what Hill *et al.* mean is the superior

margin of the petrous pyramid^{4,6}. Originally it was pointed out that this feature in the Chemeron temporal resembles those of Olduvai hominid 5 (*A. boisei*), Sts 5 (*A. africanus*) and modern man, and contrasts with that of *H. erectus*, including OH 9 (ref. 2). Falk and Baker in their Scientific Correspondence⁷ have correctly reminded us of the resemblance of KNM-BC 1 to OH 5, and at the same time have ingeniously devised a method for the metrical expression of the form of the petrous pyramid as a whole; and Rightmire has confirmed the “blunt and flattened superior margin of the petrous pyramid” in OH 9 (ref. 6, p. 70). The form of the superior margin in some hominid taxa can be summarized as follows (see ref. 5, p. 767): *A. africanus* acuminate, *A. robustus*?, *A. boisei* acuminate, *H. habilis* acuminate, *H. erectus* blunt, *H. sapiens* acuminate. This feature is thus variable within the genera *Australopithecus* and *Homo* and, despite the claim of Hill *et al.* that a sharp margin appears to be unique to the *Homo* clade, the trait in fact fails to distinguish between the two genera.

In sum, neither of the two anatomical features distinguishes between the *Homo*

clade and some other hominids of the genus *Australopithecus*. Therefore the claim of Hill *et al.* that the Chemeron temporal represents the earliest *Homo* is disconfirmed and the bone must remain, as we originally concluded², a hominid specimen of indeterminate genus and species. Although other evidence^{8,9} points to the probable existence in East Africa of the genus *Homo* by 2.4–2.2 Myr before present, it is certainly invalid to claim that the Chemeron temporal extends the origin of the *Homo* clade “more surely by about half a million years”.

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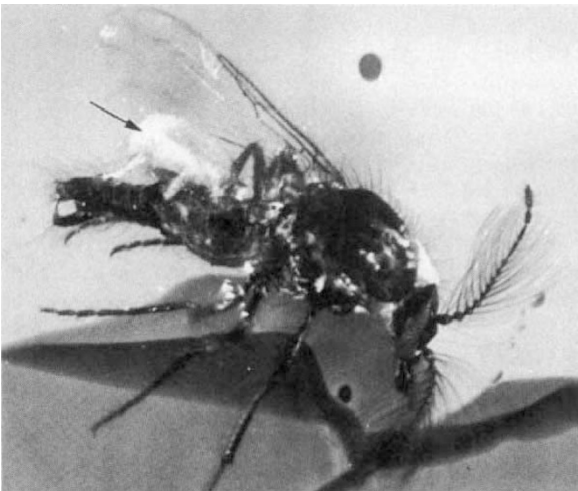
Animal–animal parasitism

SIR — Parasitic mites found on the dorsa of their biting midge hosts in Cretaceous Canadian amber (70–80 million years old) constitute the earliest fossil evidence of terrestrial animal–animal parasitism. The mouthparts of the parasites are still attached to the integument of their hosts, leaving little doubt as to their parasitic nature.

Examples of actual parasitism in the fossil record are rare. We have ob-

served four examples (of a total of 81 specimens) of mite parasitism of biting midges (Ceratopogonidae: Diptera) in Canadian amber collected from the Foremost formation (Judith River group) near Grassy lake, Alberta. Radiometric dating indicated an age of 70–80 million years for these deposits².

The four biting midges all belong to extinct genera in the subfamily Ceratopogoninae. They are all quite small, ranging from 896 to 1,540 μm in length. The mites are all larval stages and ranged from 158 to 391 μm in length. Three of them are still attached to the backs of their biting midge hosts. The mite in the fourth specimen is detached from its host and probably had only recently become associated with the biting midge. The other three mites are clearly in the act of feeding on the midges, since not only are their mouthparts still in contact with the hosts, but their bodies are partly engorged (see figure). Three of the mites belong to the family Erythraeidae, while



Partially engorged mite of the Phalanx Trombidia (arrow) in feeding position on the back of a biting midge (Ceratopogonidae) in 70–80 million-year-old Canadian amber.