Stratigraphic Interpretation of the Omo Shungura and Lake Turkana Fossil Suid Record

White and Harris (*1*) have presented a comparative temporal ordering of African Plio-Pleistocene hominid sites based on suid evolutionary stages. We take exception here to one of the "refinement[s] of stratigraphic interpretations" (*1*, p. 13) in the Shungura Formation (Omo) and comment on certain stratigraphic aspects of the area east of Lake Turkana.

White and Harris (*1*, p. 17) state that a "fault-bounded block" of Omo localities (L. 401 through 415, L. 417, and L. 419) "clearly" represents Member K or above, rather than Member G as the localities were stratigraphically mapped in the field. White and Harris also suggest that other areas of the Omo stratigraphic sequence might be reevaluated in light of such an interpretation.

The description of the localities as lying within a fault-bounded block is incorrect. Only L. 401 is separated in the west from the other localities by a fault and was in any event mapped in Member E (not Member G as White and Harris imply). Furthermore, de Heinzelin and his co-workers (*2*) noted that L. 402 through 419, on facies similarities, only correspond to units in lower Member G.

Four of the localities (L. 402, L. 409, L. 410, and L. 413) preserve single suid fossil tooth-mandibular fragments, largely undiagnostic to species as a result of either breakage or extreme wear (*3*). The two most complete and diagnostic suid specimens in L. 401 to L. 419 derive from L. 418 (L. 418-6 and L. 418-7), excluded from White and Harris's group of "fault-bounded . . . localities." Cooke (*3*) considers these specimens as advanced *Notochoerus*, most comparable to two specimens from lower Member G (L. 611-8 and L. 559-5).

For these reasons it appears far from clear, and indeed unlikely, that these localities in Member G are equivalent in time to Member K or higher. It is even more unlikely that White and Harris's observations in this small, poorly exposed area of the Shungura Formation will effect any changes in Omo stratigraphy.

White and Harris chose not to incorporate radiometric dates into their biostratigraphic framework. Their results correspond well with previously reported African geophysical dates, and indicate that the $^{40}Ar/^{39}Ar$ age determination on the "KBS tuff" at Lake Turkana (*4*) is too old. The K/Ar date of 1.8×10^6 years for the older "KBS tuff" obtained by Curtis *et al.* (*5*), however, fits well into their chronology.

White and Harris, after noting that the lower Lower Member of the Koobi Fora Formation equates well with Shungura Member B, state, "The Koobi Fora Formation apparently lacks fossiliferous horizons equivalent in age to Shungura Members C through F, although there are indications that the Kubi Algi fauna may, in part, fill this hiatus" (*1*, p. 17). This statement deserves comment because every published section of the stratigraphy in the area east of Lake Turkana places the Kubi Algi Formation below the Koobi Fora Formation. The implication of the statement cited above is that the Kubi Algi Formation must be partly equivalent to the Koobi Fora Formation, or younger than the lowest part of the latter. This has not previously been suggested. In addition, $^{40}Ar/^{39}Ar$ dates on tuffs from the Kubi Algi Formation, which range from 3.08×10^6 to 4.95×10^6 years before the present (B.P.) [in (*6*) Fitch and Miller suggest $\sim 3.9 \times 10^6$ years B.P. as a "best age" on the younger of the Kubi Algi tuffs] are inconsistent with such an implied age of $\sim 2.6 \times 10^6$ years B.P. (Shungura Member C).

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1 November 1977; revised 30 May 1978

We are grateful for the comments of Boaz *et al.* (*1*). Aerial photographs and maps of the American Omo Shungura localities kindly made available to us by one of the authors (F.C.H.) show Omo localities L. 401 through 417 and L. 419 to be bounded on the east by a major fault. Locality 418 was not plotted on maps available to us, hence the omission from our article (*2*). The suid specimens from L. 418 represent advanced *Mesochoerus limnetes*. Two independent lineages of suid sampled from the localities in question indicate, metrically and morphologically, that the assignment of Omo localities L. 401 through 419 to Member G is clearly in error. The suids from these localities appear substantially younger and correlate best with Shungura Members K or L.

Radiometric dates should not, of course, be incorporated into a strictly biostratigraphic framework. We are pleased that Boaz *et al.* were able to correctly interpret our conclusions regarding the relative ages of the KBS and Suregei tuffs east of Lake Turkana

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19 September 1978

0036-8075/78/1222-1309$00.50/0