



Fig. 1. (A) and (C) Occlusal views of australopithecine maxillary molars. (B) Occlusal view of Olduvai molar. View of the root system (damaged) of an australopithecine maxillary molar (D) and of the Olduvai molar (E). (F) View of root system of an australopithecine deciduous mandibular molar. In all cases the lingual side is to the left. In the upper row the anterior end is at the top and in the lower row at the bottom. In (A) and (B) the high oblique crest links *a* and *b*; the trigon is formed by *a*, *b* and *d*. *a*, Protocone; *b*, metacone; *c*, accessory cusps; *d*, paracone; *e*, hypocone

unlikely that it belonged to the same individual as the deciduous canine. The latter is well worn, and had already lost about half the crown height. At this stage,  $dm_2$  of the individual would already have been appreciably worn, not virtually unworn as is the Olduvai molar. Furthermore, at that stage permanent molars with fully formed crowns would also have been present. On the other hand, while the deciduous canine is only very slightly larger than the observed range of the very small collection of australopithecine equivalents, the molar is appreciably larger than the largest australopithecine  $dm_2$  known, but is well within the observed range for permanent molars.

I believe, therefore, that the Olduvai molar is neither deciduous nor mandibular, but is a permanent upper tooth, probably australopithecine.

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<sup>1</sup> Leakey, L. S. B., *Nature*, **181**, 1099 (1958).

<sup>2</sup> Leakey, L. S. B., *Illus. Lond. News*, **232**, 1104 (1958).

In my original paper I was at pains to point out that of a number of dental surgeons and anatomists to whom I had then showed this tooth, no two were agreed upon what its place was in the dental series. Since that time I have had many other views put to me in letters and also verbally. Clearly, the tooth is so aberrant there is little hope of agreement.

It seems to me to be immaterial, at the moment, as to which opinion is correct. What is certain and important is that it is: (a) a very large hominid molar; (b) that it was found within a few inches of a small deciduous canine tooth and within a few minutes; (c) that it comes from the base of Bed II, Olduvai, associated with Stage I of the Chellean culture, and was found on a living floor; (d) that the

relative size of the molar to the canine is comparable to that seen in *Zinjanthropus*, and to a lesser extent in *Paranthropus* and *Australopithecus*.

I still retain my opinion that, in spite of its unusual form, it is a lower deciduous molar, and the fact that I have now three modern hominid lower deciduous molars (taken from mandibles) that similarly have three roots and not two, and set in just this manner, shows that Robinson's reliance on the number of roots, to clinch his argument, is not realistic. Similarly, while I agree (and also stressed in my original paper) that if the tooth is, as I believe, a lower molar, it does not show either of the two common types of cusp patterns, the cusp pattern which it does exhibit is, nevertheless, one

which does occur in Hominids, both recent and extinct, as I showed before.

Since that article was written, I have found that the same pattern occurs in many other modern mandibular molars, and we must indeed now regard it as a third fairly common pattern, since I found it in 15 per cent of a random sample of mandibles.

Among the many anatomists who have now seen the fossil tooth in question, there are some who agree wholly with me; there are others who agree with Robinson, and there are yet others whose views do not agree with either of us. Everything depends upon what weight one gives to the number and disposition of the roots, as compared with the disposition of the cusps and their interpretation.

It appears that Robinson, from his study of the cast, is clearly not aware that what he refers to as "the ridge" linking the two cusps is divided by a very clear fissure, and is not a continuous ridge at all. This fissure shows very clearly in the photograph which I published and which was taken of the original tooth, but does not show in the photograph used by Robinson, which is apparently taken of a cast.

Finally, let me say that since the molar teeth of *Zinjanthropus* exceed the molar teeth of *Australopithecus* or *Paranthropus* in size, it is not unlikely that the deciduous molars of a descendant of *Zinjanthropus* should also be much larger than the deciduous molars of the known South African Australopithecinae, and since Chellean Stage I is a direct derivative of the Oldowan culture, it is reasonable to expect that the makers of Chellean Stage I will prove to be more advanced descendants of *Zinjanthropus*; heading in the *Homo* direction.

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