Brief report

Docodont nature of Cyrtlatherium, an upper Bathonian mammal from England

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The upper Bathonian Kirtlington mammal bed of England is one of the rare Middle Jurassic sites in the world to have yielded mammalian remains and undoubtedly the richest. A few taxa have so far been described, among which the genus Cyrtlatherium Freeman, 1979, assigned by its author to the Kuehneotheriidae and subsequently included in the Symmetrodonta. In this note I argue that Cyrtlatherium represents a docodont of which it is possibly a milk premolar.

In 1979, Freeman created the genus Cyrtlatherium on one complete right lower cheek tooth and two fragmentary ones from the Kirtlington mammal bed in Oxfordshire. His brief description was entirely done with reference to the lower molar of Kuehneotherium, without further justification of its systematic placement. His accompanying comments concern only the situation of Kuehneotherium among the Theria. The genus has since been regarded as a member of Symmetrodonta and was classified as such in McKenna & Bell (1997).

Reexamination of the holotype led to the conclusion that the tooth pertains in fact to the Docodonta, of which it presents all the main characteristics. Given the contradictions in the literature concerning the homologies of docodont molar cusps (see Butler 1997 and Sigogneau-Russell & Godefroit 1997 for the most recent proposals), and pending a further study, I follow Kermack et al. (1987: p. 4) in naming 'the cusps... strictly according to their position in the teeth'. In accordance with this method, however, and differently from Kermack et al. (1987), I distinguish the main cusp (which they synonymized with 'disto-buccal') from the disto-labial cusp, which they did not label.

The holotype tooth BMNH M 36511 (Figs. 1, 3B) is very flat transversally, with a central labial dominant cusp (main). Mesially and labially a crest leads to a small cusp (mesio-labial). From the tip of the main cusp but more lingually another crest descends before curving labially to join again the
mesio-labial cusp. More mesially and lingually this crest is doubled by the tooth rim; a basin is delimited antero-lingually, the so-called pseudo-talonid of *Simpsonodon* Kermack et al. (1987), also present, though smaller, in *Haldanodon* Kühne & Krusat, 1972. Distally a crest descends from the main cusp to another cusp situated completely lingually (disto-lingual), the second in importance on this specimen. From this cusp and distally, descends a crest which turns labially to end in a tiny cusp (disto-labial). The posterior faces of the main and disto-lingual cusps are united in one single transverse surface crossed by vertical ridges, as is typical of docodont lower cheek teeth. Contrary to what can be deduced from the stereophotos by Freeman (1979), no cingulum is visible labially; lingually it is essentially limited to an arch under the main cusp, being very faint distally.

As noted by Freeman (1979), this morphology differs from that of *Kuehneotherium* (Fig. 3A) by the relative position of the 'paraconid' (mesio-labial cusp). Other features mentioned above do not correspond either to the simpler kuehneotheriid morphology: completely lingual situation of the second main cusp (disto-lingual), mesial crest, structure of the posterior trigonid face.

From the same locality Kermack et al. (1987) have described the docodont *Simpsonodon* (Figs. 2A–C, 3C). Not only is the holotype tooth of *Cyrtatherium* considerably smaller than the molars of this genus (see below), but it is also much simpler (Figs. 1, 3B), lacking in particular a mesio-lingual cusp. It is, however, equally specialized in presenting an elongated anterior basin and a protruding mesio-labial cusp. A second genus is known by a lower jaw also from the British Middle Jurassic, *Borealestes* Waldman & Savage, 1972 (Fig. 2D–E), which seems to be closer to the Kimmeridgian *Haldanodon* than to *Simpsonodon*, but the material has not been fully described. A tiny docodont ge-
nus was identified in the Berriasian Purbeck Limestone Group, *Peraiocynodon* Simpson, 1928, which was later suspected to represent a juvenile of *Docodon* Marsh, 1881 (Butler 1939, Kermack et al. 1987; but see Krusat 1980), which also needs reevaluation from unpublished material. *Cyrtatherium* resembles most the slightly larger last premolar (d3?) of *Peraiocynodon* (Fig. 3E): on neither tooth is there a mesio-lingual cusp, and on both, the main cusp is relatively high; but the anterior basin is here better defined and the lingual face of the tooth is not obliquely oriented as in *Peraiocynodon*.

It is thus possible that the holotype tooth of *Cyrtatherium* represents a milk premolar, perhaps of *Simpsonodon*: it shows the same ratio of length with the lower molar BMNH J.761 of this genus.
(0.83 mm versus 1.4 mm) than that found between the d3 and m2 of *Haldanodon* VJ 1004-155 (1.3 mm versus 2.3 mm); but it is relatively narrower (0.37 mm versus 0.9 mm for BMNH J.761; against 0.8 mm versus 1.30 mm for d3 and m2 of *Haldanodon*). BMNH M 36511 is also relatively longer and narrower with respect to p3 of *Simpsonodon* than is d3 with respect to p3 of *Haldanodon*. Study of unpublished material of *Cyrtlatherium* (some 15 isolated teeth), also from the Kirtlington mammal bed, should help solve its relationships among docodonts; but its inclusion in this order needs no further delay.

**Abbreviations used.** — BMNH M or J refer to mammalian specimens in the Natural History Museum, London; BRSUG, Department of Earth Sciences, Bristol University, Bristol, UK; SGP, Serviços Geológicos de Portugal, Lisboa.

**Systematics**

**Order Docodonta Kretzoi, 1946**

**Family Docodontidae Simpson, 1929**

**Genus Cyrtlatherium Freeman, 1979**

Type species: *Cyrtlatherium canei* Freeman, 1979, from the Kirtlington mammal bed, in Forest Marble, upper Bathonian, England.

**References**


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