

3. Description of a Tooth of *Mastodon latidens*, Clift, from Borneo. By R. LYDEKKER, B.A., &c.

[Received August 18, 1885.]

(Plate XLVIII.)

The specimen forming the subject of the present notice was forwarded from Borneo to the Secretary of this Society by Mr. A. H. Everett, C.M.Z.S., who stated that it was found during the early part of the present year by a Kadayan in the jungle in the vicinity of Bruni, on the north-west coast of Borneo. Owing to the country being in a disturbed state Mr. Everett could not visit the locality to make further inquiries; but there seems no doubt that the history of the specimen is a true one.

The specimen is the crown of the last left upper true molar of a tetralophodont *Mastodon*, and agrees so closely with Indian teeth of the Siwalik *Mastodon latidens*, Clift<sup>1</sup>, that it may be safely referred to that species, although it indicates a very small individual. In mineralogical condition the specimen agrees very closely with many Burmese specimens of the teeth of the same species, although its colour is rather darker than is usually the case. The crown carries five low transverse ridges, and a well-marked hind talon (*ta*); each ridge extends straight across the crown, and the intervening valleys are quite open and uninterrupted by accessory tubercles; there is a very small quantity of cement at the base of the hinder valleys. Each ridge is divided into an inner and an outer moiety by a longitudinal cleft, which is placed nearest to the outer border of the tooth. The first two ridges are partially worn, and show dentine islets; the third is very slightly worn, but its enamel is not perforated; while the fourth and fifth, together with the talon, are untouched; the third and fourth ridges show that there are four cusps on the inner and two on the outer side of the longitudinal cleft. The inner moieties of the first and second ridges present dentine islets with a very imperfect trefoil shape; and when more worn the islets of the inner and outer moieties would unite and form transverse bands. On the anterior aspect there is a disk caused by the pressure of an adjacent molar, but the posterior aspect exhibits no such disk; these features, together with the characteristic shape of the crown and the number of ridges, show that the tooth is the last of the true molar series.

Compared with the large series of Indian and Burmese teeth of *Mastodon latidens* figured by the present writer in the 'Palæontologia Indica' (Mem. Geol. Surv. India<sup>2</sup>), the present specimen agrees precisely in all general characters. The only other species to which it presents any resemblance is the Indian *M. perimensis*, of which characteristic teeth are figured in the same work<sup>3</sup>; but it is

<sup>1</sup> Trans. Geol. Soc. ser. 2, vol. ii. pt. 3, p. 371 (1828).

<sup>2</sup> Ser. 10, vol. i. pls. xxxvii.-xxxix (1880).

<sup>3</sup> Vol. i. pls. xl., xlii., and vol. iii. pl. xvi.



readily distinguished by the lower ridges, open valleys, less distinct dentine trefoils, and much smaller quantity of cement. Compared with the large unworn third right upper true molar of *M. latidens* from the Punjab, figured in plate xxxix. of the first volume of the work cited<sup>1</sup>, it will be seen that the Borneo specimen agrees in the number of ridges (although the hind talon is considerably smaller), but is of greatly inferior size, the dimensions of the two specimens being as follows, in inches :—

	Punjab.	Borneo.
Extreme length . . . . .	8·6	6·3
Width of first ridge . . . . .	4·2	2·95

In plate xxxi. figs. 3, 3a, of Falconer and Cautley's 'Fauna Antiqua Sivalensis' there is figured on a reduced scale part of the right maxilla of an example of *M. latidens* from Burma (of which there is a cast in the British Museum) exhibiting two molars, which in the description of the plate<sup>2</sup> are provisionally regarded as the last milk- and the first true molar. This determination was accepted by the writer (who had not then seen the specimen) in the 'Palæontologia Indica,'<sup>3</sup> although it was remarked that the form of the second tooth (which carries five ridges and a talon) must, on this view, be abnormal. A comparison of that specimen with the Borneo tooth shows that the second tooth in the former must be likewise the last true molar; and as its dimensions are 5·6 × 2·9 inches, it indicates an individual agreeing very closely in size with the one to which the Borneo tooth belonged. This Burmese specimen is also figured by Clift in the Trans. Geol. Soc. ser. 2, vol. ii. pl. xxxvii. fig. 1, and is one of the types. There is a very similar tooth in the British Museum (no. 37253) from Perim Island.

The descriptive part of this paper may therefore be concluded by observing that the specimen under consideration indicates the occurrence of *M. latidens* in Borneo; and also that a small race of the species existed both there and in Burma. The smaller race was apparently of rare occurrence in the latter country; and it will be extremely interesting if future finds should show that the island form always belonged to this race.

Coming now to distributional considerations, it may be observed that *Mastodon latidens* occurs in Perim Island in the Gulf of Cambay<sup>4</sup>, and thence may be traced<sup>5</sup> through Sind, the Punjab, and the Western Himalaya to Burma; from which point the present specimen extends its range to Borneo. The present writer has already shown<sup>6</sup> that some of the species of Indian Siwalik stegodont

<sup>1</sup> Owing to an inadvertence of the artist the specimen is viewed from the outer instead of from the inner side.

<sup>2</sup> 'Falconer's Palæontological Memoirs,' vol. i. p. 463 (1868).

<sup>3</sup> *Op. cit.* vol. i. pp. 231–232.

<sup>4</sup> Specimens in Brit. Mus.

<sup>5</sup> 'Palæontologia Indica,' *op. cit.* vol. i. pp. 228, 229.

<sup>6</sup> *Ibid.* vol. i. pp. 256 *et seq.*, 268 *et seq.*; vol. ii. p. 289 (in this passage *Elephas bombifrons* is erroneously given for *E. insignis*); and Rec. Geol. Surv. Ind. vol. xvi. pp. 158–161 (1883).



Elephants ranged into China; and Dr. E. Naumann<sup>1</sup> has indicated the occurrence of several of these species in Japan; while more recently Herr K. Martin has described and figured<sup>2</sup> some fragments of molars of a stegodont Elephant from Java, which he thinks may probably belong either to *Elephas insignis* or *E. bombifrons*<sup>3</sup>. At a still later date teeth of Siwalik species of *Elephas* and *Mastodon* have been described by Dr. E. Koken<sup>4</sup> from Western China.

It thus seems that the Pliocene proboscidean fauna of India extended into the extreme east of Asia, where, from its association with *Elephas namadicus* and *E. primigenius*<sup>5</sup>, it probably persisted into the Pleistocene. As much interest will attach to the discovery of other remains of the Order from these regions, the attention of travellers and collectors may be particularly directed to their acquisition.

It may be added that *Mastodon latidens* is an interesting form, since it is one that apparently passes insensibly into other species. Thus the normal number of ridges in the "intermediate" molars is four, but a fifth is occasionally present<sup>6</sup>, in which case there is but one step to the simplest of the stegodont Elephants, viz. *Elephas clifti*, in which there are six ridges. In the opposite direction, by a slightly increased development of accessory columns and the heightening of the ridges, an approach is made to the tetralophodont *M. perimensis*, and although typical teeth of the two species are very distinct, yet there are specimens in the British Museum of which it is very difficult to say to which species they belong. The tetralophodont *M. perimensis* appears again to show indications of passing into *M. pandionis*<sup>7</sup>, in which the intermediate molars have but three ridges. Not only is there, therefore, no real distinction between *Mastodon* and *Elephas*, but it is more than doubtful whether individual species of the two can be always differentiated.

#### DESCRIPTION OF PLATE XLVIII.

The third left upper true molar of a dwarf race of *Mastodon latidens*, in an early stage of wear, from near Bruni, Borneo. The specimen is drawn of the natural size, as viewed from the grinding-surface (fig. 1) and from the outer side (fig. 2); *ta*, hind talon.

<sup>1</sup> 'Palæontographica,' vol. xxviii. art i. (1881). See also 'Palæontologia Indica,' *op. cit.* vol. ii. pp. 65-66.

<sup>2</sup> 'Beiträge z. Geol. Ost-Asiens und Australiens,' in Sammlungen d. Geol. Reich. Mus. in Leiden, no. 10 (1884).

<sup>3</sup> Herr Martin mentions a previous notice by Junghun in 1857 of similar remains discovered by himself in the mountains of Pati=Ajam, near Japara, in Java.

<sup>4</sup> Palæontologische Abhandlungen, vol. iii. pt. 2 (1885).

<sup>5</sup> *Vide* Naumann, *op. cit.*

<sup>6</sup> *Vide* Pal. Ind. ser. 10, vol. i. pl. xxxviii.

<sup>7</sup> *Ibid.* vol. iii. p. 153.



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