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## On a Crocodilian Jaw from the Oxford Clay of Peterborough

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**Notes**

16. *On a CROCODYLIAN JAW from the OXFORD CLAY of PETERBOROUGH.*  
By R. LYDEKKER, Esq., B.A., F.G.S., &c. (Read March 12,  
1890.)

THE symphysis of the mandible of a Thecodont Reptile recently obtained from the Oxford Clay near Peterborough, by Mr. A. N. Leeds, and entrusted to me for description, affords evidence of a species new to the English fauna, and apparently belonging to a genus not hitherto recorded from the Oxfordian.

The specimen, which is represented of one third of the natural size in the diagram (fig. 2), belonged to a comparatively large reptile, and comprises the anterior portion of the splenial and dentary elements; that part of the dentary which still remains including the whole of the alveolar region. The symphyseal portion of the jaw is very broad and flat, with a rugose inferior surface; but the original flatness has been abnormally increased by pressure, which has crushed the oral floor into the dental alveoli, and has thus destroyed the original circular contour of the latter. The splenials enter extensively into the formation of the symphysis, reaching as far forward as the seventh tooth on the left side. No traces of teeth remain, and the empty dental alveoli are thirteen in number on the left, and twelve on the right side. The alveoli, in their original condition, must have been nearly circular; and none of them are markedly enlarged, or separated from one another by spaces in the neighbourhood of the muzzle. On the inferior aspect the dentaries and splenials are completely ankylosed together, this feature, taken together with the rugose surface of the bones themselves, indicating that the specimen belonged to a fully adult animal. The length of the symphysis on the oral aspect is close upon 8 inches, while the length of the alveolar portion of the dentary is some 9 inches.

The thecodont character of this jaw indicates that its owner belonged either to the Sauropterygia or the Crocodilia, and it is necessary, in the first place, to point out why I refer it to the latter Order. I do not, indeed, know what characters there are by which it is possible to say at once whether a given thecodont mandible is Sauropterygian or Crocodilian; and it is therefore necessary to rely upon empirical means of distinguishing between the two. Now it is quite clear that the specimen under consideration does not belong either to *Pliosaurus* or to *Peloneustes*; while in the other Sauropterygians of the Oxford Clay, which I have provisionally included in the genus *Cimoliosaurus*, the mandibular symphysis is very short, and the whole jaw very much smaller than in the present specimen. Compared with Crocodilians, the mandible before us agrees in the rugose character of its outer surface, and also in the relations of the splenials to the symphysis; and since, as will be shown below, it agrees in all essential features with an undoubtedly Crocodilian jaw, I take it for granted that the specimen really belongs to a Crocodilian genus.

Figs. 1-4.—*Mandibles and Teeth of Suchodus durobrivensis and Metriorhynchus Moreli.*

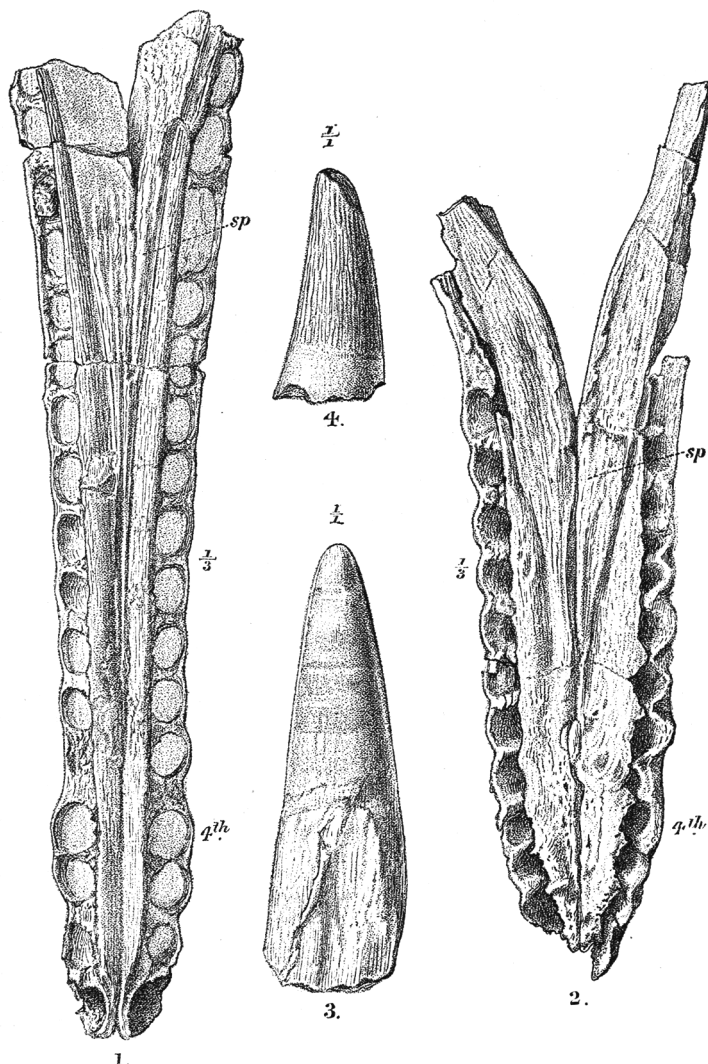


Fig. 1. Anterior portion of the mandible of *Metriorhynchus Moreli*; from the Oxford Clay of Wiltshire. (Brit. Mus. No. 46323.)  
2. Anterior portion of the mandible of *Suchodus durobrivensis*; from the Oxford Clay of Peterborough.  
3. Outer side of tooth of *Suchodus durobrivensis*; from Peterborough.  
4. Tooth of *Metriorhynchus*; from Willesden.

Compared with the Crocodilians from the Oxford and Kimeridge Clays described by Deslongchamps, in his 'Notes Paléontologiques,' under the names of *Steneosaurus* and *Metriorhynchus*, the present specimen differs, among other features, from all those species of which the mandible is known, by the smaller number of teeth, this character alone being quite sufficient to prove its generic distinctness from *Steneosaurus*. In the mandible of a typical species of *Metriorhynchus*, like *M. Moreli* (Deslongchamps, *op. cit.* pl. xxii., and fig. 1 of the diagram illustrating this paper), there are nineteen alveoli, of which the first four are larger than the others, and are separated from one another by considerable intervals, so that the anterior portion of the mandible is quite unlike the specimen before us. In *M. brachyrhynchus* of the Oxford Clay (*op. cit.* pl. xxiii.) the number of alveoli in the upper jaw was less than in *M. Moreli*; but if Deslongchamps is correct in his restoration of the muzzle, the extremity of the mandible must have been similar to that of *M. Moreli*, and in any case the number of lower teeth (judging from the relative number of upper and lower alveoli in the latter) can scarcely have been less than fifteen. It may therefore be safely considered that the specimen cannot be referred to the genus *Metriorhynchus*, and also that it is specifically distinct from all the forms which have been described under that name.

The genus *Teleidosaurus*\* of the Fuller's Earth (which in some respects connects *Steneosaurus* with *Metriorhynchus*) makes a decidedly nearer approach to the present specimen, as is shown by the reduction in the number of the teeth and the great width of the oral aspect of the skull. In *T. Calvadosi* and *T. Joberti* the number of lower teeth is, however, 20 or 21; and the anterior alveoli are spaced, with a very long interval between the 4th and 5th in *T. Joberti*.

If, however, our specimen be compared with the large Crocodilian originally described from the Kimeridgian of France under the name of *Machimosaurus mosæ*†, and to which I have referred ‡ the mandible and part of the cranium from the equivalent beds of Dorsetshire figured by Sir R. Owen § as *Pliosaurus trochanterius*, we shall find a marked resemblance between the two. In both specimens the number of alveoli is very nearly the same, the Kimeridgian one having 14 on each side||, and the present one 13 on one side and 12 on the other. In both the splenial extends as far forward as the seventh alveolus; while the anterior alveoli in both are not separated from one another by longer intervals. The Oxfordian mandible is, indeed, rather more pointed at the extremity of the symphysis, and is perhaps more flattened at the symphysis. The total

\* See Deslongchamps, *op. cit.* pls. xviii., xix.

† See Sauvage & Lienard, *Mém. Soc. Géol. France*, sér. 3, vol. i. pl. xxiii.

‡ *Cat. Foss. Rept. Brit. Mus.* pt. i. p. 104.

§ Reptiles of the Kimeridge Clay (*Mon. Pal. Soc.* for 1868), pt. 3, pl. iii. figs. 3-5.

|| In the British Museum Catalogue it is stated that there are 13 alveoli, but the anterior one is evidently broken away on either side.

length of the Kimeridgian mandible is 52 inches, the portion of the symphysis in advance of the extremity of the splenials being one fifth of the whole length. Calculating the dimensions of the present mandible on these proportions we should have a total length of about 25 inches.

The resemblance to the above-mentioned jaw which I have referred to *Machimosaurus mosæ* is, indeed, so close, that were it not for other evidence, I should have been inclined, in spite of its much smaller dimensions, to regard the present specimen as indicating another representative of the same genus.

In his collection Mr. Leeds has, however, an imperfect crocodilian skull from the Oxfordian of Peterborough, which appears, both to him and to myself, to belong to the same form as the present specimen, and which certainly cannot be referred to *Machimosaurus*. The mandible of that specimen agrees precisely in size with the one before us, and has a symphysis of just the same length; unfortunately, however, it has been crushed in the opposite direction, that is to say, the symphyseal region has been compressed from side to side, so as to render comparison of details almost impossible. Ten alveoli can now be traced in the right ramus, some of which still retain their teeth; and it is quite probable that there may have been two or three more. There is no trace of a long interval between the 4th and 5th alveoli, and I have accordingly little or no hesitation in regarding this skull as specifically identical with the detached mandible. The cranium of the second specimen has the laterally placed orbits characteristic of *Metriorhynchus*, and it approximates in contour to the cranium from the Oxfordian of Normandy, figured by E. Deslongchamps in his 'Notes Paléontologiques,' pl. xxiii. as *Metriorhynchus brachyrhynchus*. The English cranium has, however, a broader muzzle than in the latter, the nasals are relatively shorter and wider, and do not reach the premaxillæ, and the number of teeth was evidently considerably less, although the exact number cannot be determined. If Deslongchamps is correct in his restoration of the missing muzzle of *M. brachyrhynchus*, there must have been at least 20 upper teeth, while in the present form, calculating from the lower jaw, there were probably only some 15 teeth in the upper jaw. The mandible and teeth of *M. brachyrhynchus* are unknown, and since the restoration of the muzzle is conjectural, it is quite possible that it may have differed considerably in these points from the more typical representatives of the genus, as it certainly does in the shortening of the rostrum. The teeth of the skull in the Eyebury Collection (diagram, fig. 3) are distinguished from those of *Metriorhynchus* (*ibid.* fig. 4) by their more compressed and expanded crowns, of which the enamel is nearly smooth, instead of having the strongly marked vertical striæ which are so characteristic of those of the latter. The teeth of the present form are, indeed, more like those of *Geosaurus* (*Dacosaurus*), although readily distinguished by the absence of serrations on the fore-and-aft carinæ. These teeth, it may be observed, agree precisely in size with the alveoli of the figured mandible.

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If, then, I am right in regarding the skull in the Eyebury Collection and the figured mandible as belonging to one and the same species, we have evidence of the existence of a Crocodilian allied in cranial characters to *Metriorhynchus*, but with a shorter and wider skull, furnished with fewer teeth, which have smooth enamel and compressed crowns like those of *Geosaurus*, while the mandible has no long interval between the 4th and 5th teeth, and thus approximates to *Machimosaurus*. In the width of the palate and mandible this form also seems to approximate to *Teleidosaurus* of the Fuller's Earth, although the latter is at once distinguished by the greater number of teeth and the Steneosauroid type of cranium.

The foregoing comparisons indicate that we have to do with a Crocodilian allied to *Metriorhynchus*, but certainly distinct from all named forms with which I am acquainted. The characters pointed out as distinguishing it from the typical species of *Metriorhynchus* seem, moreover, to be sufficiently important to be regarded as of generic value, when we take into account the distinctions on which genera are based in the Crocodilian order. I propose therefore to regard the figured mandible as the type of a new genus and species to be named *Suchodus durobrivensis*, the characters of this genus being those given above.

I have said that the mandible of *Suchodus* differs from that of *Metriorhynchus* by the absence of a long interval between the 4th and 5th teeth, and of a distinct terminal expansion; and the interalveolar portion is also wider than in the typical forms of the latter (diagram, fig. 1). When the mandible was in its original shape, it is, however, probable that the interalveolar portion was raised in the same manner above the level of the alveoli.