23. *On the* Jaw *of a* New Carnivorous Dinosaur *from the* Oxford Clay *of* Peterborough. By R. Lydekker, Esq., B.A., F.G.S. (Read March 22nd, 1893.)

[Plate XI.]

I am indebted to my friend Mr. A. N. Leeds, of Eyebury, near Peterborough, for the opportunity of bringing under the notice of the Society a very interesting, although unfortunately imperfect, Dinosaurian jaw, recently obtained from the brick-pits in the Oxford Clay near the town named.

The specimen comprises the anterior and posterior extremities of the left ramus of the mandible, showing the alveoli of the teeth and the cavity for the articulation of the quadrate. The fractured surfaces are fresh, and it is thus evident that the present imperfect condition of the specimen is due to a blow from the pick of the workman by whom it was disinterred. When entire, its total length was probably about 1 foot. The anterior fragment (Pl. XI. figs. 1, 1 *a*) comprises the greater portion of the dentary bone, with the symphysis entire; while the hinder moiety (*ibid.* figs. 2, 2 *a*) includes the articular, and portions of the angular and surangular elements.

The dentary bone is somewhat roughened and pitted on its external surface, with a broad symphysial channel; while the symphysis itself is oblique, and in life was evidently united by ligament. Superiorly the outer surface is concave from above downwards, while below the concavity it is traversed by a prominent longitudinal ridge, dividing the proper lateral from the inferior aspect. The alveolar margin is characterized by its abrupt deflection near the middle of its length: the deflected portion falling away continuously to the extremity of the shallow symphysis. The whole of the margin in question is penetrated by a series of complete dental alveoli, which extend to the extremity of the symphysis, and thus indicate the absence of any predentary element. The teeth in use at the time of the death of the animal to which the jaw belonged have entirely disappeared from these alveoli, which appear to be 19 in number. Fortunately, however, a replacing tooth is apparent in the first alveolus; while the points of two other replacing teeth may be observed piercing the jaw on the inner side of the alveolar margin of its hinder portion. Indeed, in this part of the jaw a row of small cavities running parallel to the main line of alveoli indicates the presence of a whole series of these replacing teeth. This mode of dental succession—that is to say, the new teeth perforating the jaw internally to those they are to replace, and subsequently breaking into the main alveoli—serves at once to distinguish the specimen from the jaw of a Crocodile, where the replacing teeth come up immediately beneath those in use. The tooth-germ in the first alveolus (Pl. XI. fig. 1 *b*) shows that the

crown was laterally compressed, with trenchant, serrated 'fore-and aft' edges, and a sharp point. The whole crown is somewhat recurved, and its outer surface shows a prominent vertical ridge continuing to the summit. The marginal serrations are relatively large, and set obliquely to the long axis of the tooth. From the deflection of the symphysial region it may be inferred that the premaxillary portion of the cranium was likewise bent downwards. The total number of teeth was probably about 22.

The hinder fragment (Pl. XI. figs. 2, 2*a*) calls for only brief notice. It is of the usual Crocodilian and Dinosaurian type, with the surangular forming only the outer wall of the upper portion; while a short distance in advance of the line of fracture there was doubtless a vacuity. The quadratic cavity is narrower than in existing Crocodiles, while the production of the articular element behind that cavity is also less: both these features being characteristic of the Theropodous Dinosaurs. Moreover, the upper margin of the surangular rises considerably above the plane of the quadratic cavity, which is likewise a feature distinguishing the jaws of the latter group from those of Crocodiles. The outer surface of the angular and surangular elements is pitted in a manner somewhat similar to Crocodilian jaws.

That the specimen is Archosaurian there can be no question; while the features just indicated, together with the declination of the alveolar margin, and the form of the teeth and their mode of succession, serve to differentiate it from the Crocodilians. The absence of a predentary element, together with the form of the teeth, distinguish the specimen from the Ornithopodous Dinosaurs; while the teeth alone are sufficient to distinguish it from the Sauropodous section of the same order. We have, therefore, only the Theropodous group of Dinosaurs to which to refer the specimen; and as its characters are essentially those of that group, the jaw may be regarded as having pertained to an Oxfordian representative of those reptiles.

From the large size of the jaw and its solid structure, we may safely put on one side *Cœlurus*, *Calamosaurus*, and their allies; and its dimensions alone will probably also serve to distinguish the specimen from *Compsognathus*. On the other hand, the jaw under consideration differs from the mandibles of *Megalosaurus* and its allies, not only by its inferior dimensions, but likewise by the greater number of the teeth,[1] as also by the serrations on the latter being set obliquely, instead of at right angles to the long axis of the crown. The latter feature will also serve to distinguish the specimen from *Zanclodon* (*Plateosaurus*) of the Trias and Lias, in which most of the species are also of considerably larger dimensions. Compared, however, with *Thecodontosaurus*, a much closer resemblance will be found to exist. Thus in *Th. antiquus* the number of lower teeth is 21: each of these teeth being characterized by the oblique serrations, and the prominent, vertical, recurving outer ridge, which

[1] Marsh gives 15 lower teeth in *Ceratosaurus*, which is identified by Cope with *Megalosaurus*.

have been already referred to as distinguishing those of the specimen under consideration. It is true that *Th. antiquus* is of much smaller size than the Dinosaur before us; but this difference does not apply to the tooth originally described by Riley and Stutchbury as *Palæosaurus platyodon*, and subsequently referred by Prof. Huxley to *Thecodontosaurus*. I find, however, that in a lower jaw of *Th. antiquus* figured by the last-mentioned writer[1] there is not the deflection of the symphysial extremity which forms so characteristic a feature of the present specimen, and which must assuredly be regarded as of generic value. The same feature is also wanting in the lower jaw of the nearly allied American genus *Anchisaurus*, in which Prof. Marsh[2] gives the number of lower teeth as 18. From the small Indian *Epicampodon*[3] the present specimen is sharply distinguished by the existence of serrations on the front, as well as on the hinder margins of the teeth.

I take it, therefore, that while the Oxfordian Dinosaur cannot be assigned to the Megalosauridæ, it appears to be more nearly allied to the Anchisauridæ, or—as the family ought properly to be called—Thecodontosauridæ. It seems, however, to differ from all described genera of that family by the marked deflection of the mandibular symphysis; and on this ground I propose to refer it to a new genus under the designation of *Sarcolestes*. The species may be appropriately named after the discoverer of its type, *S. Leedsi*.

Postscript.

[During the discussion on the above my attention was called to the maxilla described by Prof. Seeley as *Priodontognathus Phillipsi*,[4] of which the age is not definitely known, although it is probably either Wealden or Jurassic. By the courtesy of Prof. Hughes I have had an opportunity of comparing that specimen with the mandible under consideration, and find that there is a probability of the two belonging to allied forms, although they are certainly specifically distinct. In both, the successional teeth pierce the bone on one side of those in use: the new alveoli in the upper jaw being situated externally to those of the teeth in use, while in the mandible they are internal,—such a reversal being exactly what we might expect in the opposite jaws of one and the same animal. Both have teeth of a very similar general type, but those of *Priodontognathus* (Pl. XI. fig. 3) have larger marginal cusps, and are altogether more Scelidosaurian in appearance. Moreover, there is no decisive evidence that the maxilla of the latter was deflected in a manner to correspond with the lower jaw from Peterborough. Whether, however, the two specimens may not belong to two species of a single genus I am not prepared to say; and therefore the generic name which I have suggested above may, for the present at least, stand. The teeth of *Priodontognathus* are somewhat suggestive

[1] Quart. Journ. Geol. Soc. vol. xxvi. (1870) pl. iii. fig. 1.
[2] Am. Journ. Sci. ser. 3, vol. xliii. (1892) pl. xv. fig. 1.
[3] See Lydekker, Cat. Foss. Rept. Brit. Mus. pt. i. (1888) p. 174.
[4] Quart. Journ. Geol. Soc. vol. xxxi. (1875) p. 439.

of Scelidosaurian affinities, but the absence of a premandibular element in the lower jaw forming the subject of this paper differentiates that specimen from all the Iguanodonts, Scelidosaurians, and Stegosaurians in which the complete mandible is known; and, after all, the structure of the teeth is so little removed from the Megalosaurian type as not to forbid the reference of both specimens to the carnivorous group of Dinosaurs.—May 5th, 1893.]

EXPLANATION OF PLATE XI.

Figs. 1, 1 *a*. Outer and oral aspects of the imperfect left dentary bone of *Sarcolestes Leedsi*, from the Oxford Clay of Peterborough. $\frac{2}{3}$ nat. size. *s*=symphysis.

Fig. 1 *b*. A single tooth of the former. $\frac{3}{1}$ nat. size.

Figs. 2, 2 *a*. Outer aspect and quadratic cavity of the hinder region of the same jaw. $\frac{2}{3}$ nat. size.

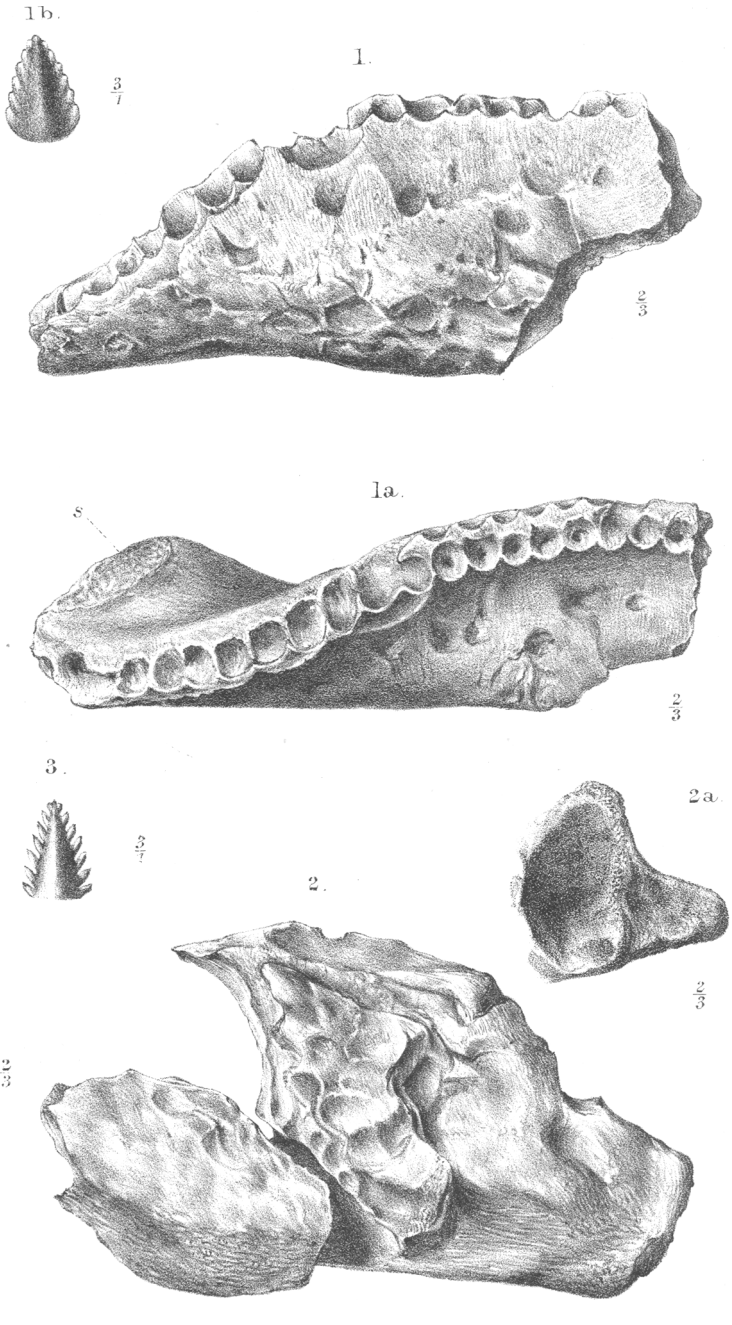
Fig. 3. A single tooth of *Priodontognathus Phillipsi*, $\frac{3}{1}$ nat. size, shown for purposes of comparison. Specimen in the Woodwardian Museum, Cambridge.

Discussion.

The President was glad to see that the Author had been again able to make use of the Leeds Collection, which was invaluable.

Prof. Seeley said that he had only seen the specimen for a minute or two since entering the room, and was not prepared to express a final opinion upon its relations. The mode of succession of the teeth, and, so far as he had seen, the forms of the teeth, reminded him of *Priodontognathus*, which the Society had figured in 1875. He had founded that genus on a maxillary bone, which therefore could not be closely compared with this mandible. The form of the dentary bone recalled Cretaceous types, and among others a bone from Gosau, which might belong to *Cratæomus*, figured in the Society's Journal for 1881. He did not recognize characters which would approximate it to *Megalosaurus*, *Anchisaurus*, or *Thecodontosaurus*; and he should not expect a Triassic type to occur in the Oxford Clay. The specimen might possibly prove to be a jaw of one of the Oxford Clay saurians already known from near Peterborough; and, rather than place it in a new genus, he would have preferred to group it provisionally with the remains which have been affiliated to *Omosaurus*. Some time ago, Mr. Leeds had submitted to him some long, terminal caudal vertebræ, which might be a part of the same animal as the jaw. It was to be hoped that other remains between these extremities may be found.

The Author briefly replied.



J. Green del. et lith.

Mintern Bros. imp.

SARCOLESTES LEEDSI.