

III.—*On some Teeth of new Chimæroid Fishes from the Oxford and Kimmeridge Clays of England.* By A. SMITH WOODWARD, F.L.S., F.Z.S., of the British Museum (Natural History).

[Plate III.]

NOTWITHSTANDING the fact that the number of forms of Chimæroid teeth known from Mesozoic formations is already large, there are still several specimens in the British Museum that cannot be assigned to the genera and species as yet described. More especially does this remark apply to the collection of Alfred N. Leeds, Esq., of Eyebury, lately received; for if the characters of the teeth can be relied upon in generic diagnoses (as seems probable), the small series of specimens from the Oxford Clay of Peterborough, collected by Mr. Leeds, makes known the occurrence of two distinct genera hitherto unrecognized. There are also some small teeth from the Kimmeridge Clay of Weymouth, which are partly identical with one of Mr. Leeds's fossils, and partly seem to indicate even a third genus as yet unknown in the Jurassic. It is with the systematic arrangement of these specimens that the present communication deals.

A general summary of existing knowledge on the subject of the Mesozoic Chimæroid fishes will be found in the second part of the British Museum 'Catalogue of Fossil Fishes,' and the following descriptions are arranged to be uniform in style with that work.

Genus PACHYMYLUS, nov.

Diagnosis.—Mandibular tooth massive, with a well-defined hard layer upon the outer aspect immediately below the oral margin, and a very broad symphysial facette; one median tritor forming a prominent boss; anterior and anterior-outer tritor absent; posterior outer tritor represented by few small patches. Palatine tooth robust, with a single, large, prominent tritor.

Remarks.—The upper and lower teeth, here placed together, have not yet been found in natural association; but they agree so closely in character that there can be no doubt as to their pertaining to one and the same fish. Regarded as Jurassic fossils they are of much interest, from the great

width of the mandibular symphysis, the remarkable reduction of the tritoral areas, and the prominence of the median tritor that remains.

Pachymylus Leedsi, sp. n. (Pl. III. figs. 1, 2.)

Diagnosis.—A species attaining to a large size, the measurement from the middle of the symphyseal border to the extremity of the post-oral margin of the type mandibular tooth being 0·14 m. *Mandibular tooth* with a prominent beak, and the symphyseal facette occupying about one third of the inner aspect; median tritor narrow, occupying only one sixth of the length of the oral face; posterior outer tritor reduced to three small, round, punctated areas. *Palatine tooth* diverging from its fellow of the opposite side in front, and terminating anteriorly in a sharp, chisel-like edge; median tritor occupying much less than half the width of the tooth and separated by a space equal to its own length from the anterior border. [*Vomerine tooth* unknown.]

Remarks.—This, the type species of the genus, is based upon the mandibular tooth and the pair of palatine teeth shown of two thirds the natural size in Pl. III. figs. 1, 2. The state of preservation of all the specimens is good, the hinder border only of the palatine teeth being partly destroyed. Viewed from the oral aspect (fig. 1) the palatine teeth exhibit a slight want of symmetry; and there is a marked line of weakness round the elevation on which the tritor is placed, this line being indicated by the fracture in the tooth of the left side. The inner face of each palatine tooth (fig. 1 *b*) exhibits the fibrous texture of the cement and exposes the base of the tritor in irregular, narrow, oblique stripes; the outer face (fig. 1 *a*) shows the strengthened external border, while the tritoral prominence is also conspicuous from this aspect. Seen from the inner face (fig. 2) the mandibular tooth exhibits its robust character; and a direct view of the symphyseal facette (fig. 2 *a*) shows its very broad rhomboidal form. The external oral border of the mandibular tooth is strengthened, but not far beneath this border the outer face in the fossil is crushed and destroyed.

Formation and Locality.—Oxford Clay, Peterborough.

Genus BRACHYMYLUS, nov.

Diagnosis.—Mandibular tooth short and deep, much laterally compressed, the symphyseal facette narrow, and the

oral border scarcely sinuous; the symphysial, median, and posterior outer tritors deep and narrow; anterior outer tritor absent. [Palatine and vomerine teeth unknown.]

Remarks.—This genus is founded on the form of mandibular tooth recorded in the British Museum Catalogue (pt. ii. pp. 551, 552) as possibly referable to very young individuals of *Ischyodus Beaumonti*. The diminutive specimens from the Kimmeridge Clay of Weymouth noticed in that work did not seem to justify the foundation of a distinct genus and species; but a nearly similar mandibular tooth measuring 0.033 m. in length, now available in the Leeds Collection, shows that the fossils in question truly pertain to a hitherto unknown fish. In general outline they are most closely similar to the mandibular teeth of *Ischyodus Dufrenoyi*.

Brachymylus altidens, sp. n.

Diagnosis.—*Mandibular tooth* about as deep as long, with a regularly excavated sharp oral border and short beak; post-oral margin parallel with the symphysial; beak-tritor and posterior outer tritor very small; median tritor occupying less than one third of the length of the oral face and situated in its hinder half.

Remarks.—This species is known only by the left mandibular tooth, which measures 0.033 m. in length and is complete with the exception of the tip of the beak. The oral border of the tooth is very sharp and dense, but there is no conspicuous strengthening layer on the outer face.

Formation and Locality.—Oxford Clay, Peterborough.

Brachymylus minor, sp. n.

Diagnosis.—*Mandibular tooth* with a very slightly excavated, somewhat wavy, sharp oral border and insignificant beak; post-oral margin parallel with the symphysial, and its length much exceeding the antero-posterior measurement of the tooth; all the tritors small, the median tritor occupying less than one third of the oral face and situated in its hinder half.

Remarks.—The three teeth thus described (Brit. Mus. nos. 41866–67) differ from the corresponding tooth of the type species in the comparative straightness of the oral border and the relatively great length of the post-oral border. They are also distinguished by their very small size, the antero-

posterior measurement of the largest specimen (41866) being only 0.015 m.

Formation and Locality.—Kimmeridge Clay, Weymouth.

Genus ELASMODECTES, Newton.

[Mem. Geol. Survey, iv. 1878, p. 43 (*Elasmognathus*).]

Elasmodectes secans, sp. n. (Pl. III. fig. 3.)

Diagnosis.—Mandibular tooth with a moderately sinuous oral margin, and the post-oral border inclining backwards more than the symphysial border; outer tritons very small and undivided, coarsely laminated.

Remarks.—The type specimen is the small left mandibular tooth shown of the natural size in Pl. III. fig. 3, from the inner (*a*) and outer aspect (*b*). The beak is unfortunately broken away, revealing the small beak-tritor in section; but the tooth is in other respects complete. It is remarkable as being the most sectorial form of mandibular dentition hitherto discovered in Jurassic rocks. Though differing from the typical Cretaceous *Elasmodectes* in the simple character of the outer tritons, it does not appear advisable on present evidence to refer the tooth to a distinct genus; for the normally simple outer mandibular tritons of *Ischyodus* are partially subdivided in some species, and such subdivision ought not thus to be always noted in generic diagnoses. When the palatine teeth of *E. Willetti* and of the form now described are discovered, it may be possible to determine definitely whether the two fishes in question are generically identical.

Formation and Locality.—Kimmeridge Clay, Weymouth.

EXPLANATION OF PLATE III.

- Fig. 1.* *Pachymylus Leedsi*, gen. et sp. nov.; pair of palatine teeth, oral aspect, two thirds nat. size. 1 *a*. Right palatine tooth, outer aspect, two thirds nat. size. 1 *b*. Left palatine tooth, inner aspect, two thirds nat. size.—Oxford Clay, Peterborough. [Leeds Collection.]
- Fig. 2.* Ditto; right mandibular tooth, inner aspect, two thirds nat. size. 2 *a*. View of symphysis of same specimen, two thirds nat. size.—*Ibid.*
- Fig. 3.* *Elasmodectes secans*, sp. n.; left mandibular tooth, inner (*a*) and outer (*b*) aspects, nat. size.—Kimmeridge Clay, Weymouth. [Brit. Mus. no. 43284.]



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