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DESCRIPTION OF THE MUTILATED CRANIUM OF A
LARGE FISH, FROM THE LOWER CRETACEOUS OF
QUEENSLAND.

BY R. ETHERIDGE, Junr., Curator

(Plates i.—ii.)

A comparatively recent visit to Queensland yielded to Mr. P. G. Black's researches in the Lower Cretaceous beds at Marathon, Flinders River, the mutilated skull of a fish. A reproduction of this fossil has been made for the Museum collection, with Mr. Black's permission, the original returning to his cabinet.

The skull is crushed from above downward, and consequently expanded to some extent laterally, and also pressed backwards. Above, the bones are firmly encased in the close-grained argillaceous limestone forming the matrix, but below are weathered to a great extent free of the latter. The displacement arising from this downward and backward pressure renders the determination of the osseous members of the cranium difficult and uncertain; but the jaws are in a much better state of preservation. A preliminary inspection shows considerable portions of the maxillaries, and mandibles *in situ*, parts of the opercular apparatus, the hyoid bones, the pectoral fins, some of the anterior vertebræ, and remains of some ribs.

Photographs of this head were forwarded to Dr. A. Smith Woodward, who has been good enough to afford me some valuable suggestions as to its affinity. In correspondence, I indicated the genus *Portheus*, Cope, a species of which is believed to exist in the Lower Cretaceous of Queensland, but Dr. Woodward suggested *Elopopsis*, Heckel, as a more fitting resting-place. As, however, the teeth are implanted in sockets, and not merely attached to the margins of the jaws,¹ I have rejected this reference in favour of one that appears to me to suit the case better. In the Ichthyodectidæ (Crook), the margins of the jaws bear a row of strong, conical teeth implanted in sockets,² and the maxillæ

¹ At least, so I infer from Dr. A. Smith Woodward's remarks (Brit. Mus. Cat. Foss. Fishes, pt. 4, 1901. p. 8); see also J. J. Heckel—Denks. K. K. Akad. Wiss. (Math. Nat. Classe), xi., 1 Abth., 1856, p. 251.

² Zittel—Text-Book Pal. (Ed. Eastman), ii, 1902, p. 95.

are long and stout. Within this family we meet with two genera, *Portheus*, Cope,³ and *Ichthyodectes*, Cope,⁴ the latter of which appears to possess stronger affinities with our fossil. In the first of these, the maxillary and dentary teeth are large but of variable size, but in the latter the teeth are of uniform proportion. Furthermore, in our fossil the vertebral centra bear lateral longitudinal pits, and not mere ridges, as in *Eloporopsis*.⁵

In its present depressed condition, the skull measures seven and a half inches, whilst the transverse width across the combined maxillæ and dentaries is three inches.

The maxillæ (*m.*) are stout bones approximately four and a half inches long, but are not perfect anteriorly. The premaxilla has disappeared, leaving a large, open space between the anterior ends of the maxillæ. The dentaries (*de.*), in consequence of compression, are overlapped by the maxillæ, and are stout and strong, approximately five inches long, by five-eighths of an inch deep, with deeply V-shaped posterior ends for the insertion of the articulators (*ar.*); the latter are stout bones also, in keeping with the dentaries, and are about two and a quarter inches long. The superior bones of the skull, in common with the orbits, are so crushed together that an attempt to distinguish them can result only in provisional determination, but perhaps, on the right side parts of the ethmoid and frontal (*eth. & f.*) are represented by the crushed mass of osseous matter seen above the maxilla. Immediately behind the gape is a curved transverse bone that may be a portion of the hyomandibular or preoperculum (*hm. pr.*), and behind that again, particularly on the right side, a flat exfoliated bone, which cannot be other than the operculum (*op.*). From this obliquely inwards to the middle line of the head, is a thick prominent surface (*p.g.*), but thinly-covered with bone here and there, and again repeated on the left side. The two halves form between them a wide open V-shaped figure, casting a deep shadow over the depression in which the vertebræ lie; possibly this represents some portion of the pectoral girdle.

Between the dentaries (*de.*) at their posterior ends may be seen the diverging hyoids (*hy.*), and a number of the branchiostegal rays (*br.*), the anterior vertebræ (*v.*), some ribs (*r.*), and the sup-

³ Cope—Rept. U.S. Geol. Survey Territories (Hayden's), ii., 1875, p. 190.

⁴ Cope—*Loc. cit.*, p. 205. By Woodward both these genera are placed in the Chirocentridæ (Brit. Mus. Cat. Foss. Fishes, pt. 4, 1901, p. 87), and by Dr. G. A. Boulenger in the Saurodontidæ (Cambridge Nat. Hist., vii., Fishes, 1904, p. 561).

⁵ Smith Woodward—Brit. Mus. Cat. Foss. Fishes, pt. 4, 1901, pp. 9 and 99.

posed pectoral fins (*f.*). Of the branchiostegal rays there are portions of nine protruding through the matrix on the right-hand side, and a less number on the left. There are ten anterior vertebræ partially weathered out, occupying a length of four and a half inches, but as the four posterior have slid slightly from their normal position, the actual fore-and-aft space occupied by the series of ten will be rather less. The normal anterior vertebræ are from five-sixteenths of an inch to three-eighths in length, and all bear defined rims at both ends, and pits, almost round on the second and third from the front, but more oval in a fore-and-aft direction on the succeeding centra. The ribs are long and moderately stout, no trace of neural arches remaining. At the sides of the vertebræ, but separated from them by matrix, are roughened bony surfaces of some extent, which my colleague, Mr. E. R. Waite, suggests may be the larger basal joints of the pectoral fins compressed together and transversely displaced. Teeth are visible on both maxillæ, but not on the dentaries in consequence of the overlapping of the former over the latter, except at their immediate fractured anterior ends; at these points one tooth is visible on either side. The teeth are strong, hollow, and conical, and not compressed to a sharp edge, extending along the whole length of the maxillæ as far as these bones are preserved, and set in alveoli. The remains of about twenty-four are visible on the right maxilla and about fifteen on the left. The single teeth preserved at the anterior fractured ends of the dentaries do not appear to differ in size or character from those along the maxillæ.

The vertebræ closely resemble those figured by Dr. A. Smith Woodward "as possibly referable to [his] *Cladocycclus sweeti*,"⁶ a species dependant on certain detached scales from the Lower Cretaceous of Queensland. Dr. Woodward has also figured the left lateral view of the anterior portion of a skull from the same series of rocks as *Portheus australis*,⁷ to which the present fossil bears a very suspicious resemblance. In the light of Cope's type figure of the cranium of *Portheus*,⁸ and his remarks on the teeth—"Sizes irregular; the premaxilla, median maxilla, and anterior dentary teeth much enlarged"⁹—there is a possibility of Dr. Woodward's fish being an *Ichthyodectes* also. In the figure of *Portheus australis*

⁶ Woodward—Ann. Mag. Nat. Hist., (6), xiv., 1894, pl. x., f. 7.

⁷ Woodward—*Loc. cit.*, pl. x., f. 1, 1a.

⁸ Cope—Report U. S. Geol. Survey Territories (Hayden's), ii, 1875, p. 184, f. 8, pls. xxxix and xli (*P. molossus*).

⁹ Cope—Report U.S. Geol. Survey Territories (Hayden's), ii, 1875, p. 190.

there is no greater degree of variation in the size of the teeth than there is in those of our fossil. The maxillæ and dentaries in both are large bones, although larger in *P. australis*, whilst in *Ichthyodectes marathonsis*, as I purpose terming Mr. Black's specimen, the space left by the accidental removal of the premaxilla, would accommodate nearly as large a bone as that represented in the figure of that of *P. australis*.

If my selection of *Ichthyodectes* be correct, *I. marathonsis* resembles *I. ctenodon*, Cope,¹⁰ in possessing straight maxillæ, and apparently similar dentaries also. *I. ctenodon*, in common with *I. anaides*, Cope,¹¹ is a much larger fish, and the bones are certainly more massive. With *I. serridens*, Sm. Woodw.,¹² *I. tenuidens*, Sm. Woodw.,¹³ *I. minor* (Egerton), Newton,¹⁴ and *I. elegans*, Newton,¹⁵ hardly any comparison is necessary. In *I. hamatus*, Cope,¹⁶ the maxillæ are again much curved.

¹⁰ Cope—*Loc. cit.*, pl. xlvi., f. 1 and 2.

¹¹ Cope—*Loc. cit.*, pl. xlv., f. 1.

¹² Smith Woodward—*Brit. Mus. Cat. Foss. Fishes*, pt. 4, 1901, pl. viii.

¹³ Smith Woodward—*Loc. cit.*, pl. ix., f. 6.

¹⁴ Newton—*Quart. Journ. Geol. Soc.*, xxxiii., 1877, pl. xxii., f. 14.

Newton—*Loc. cit.*, pl. xxii., f. 15.

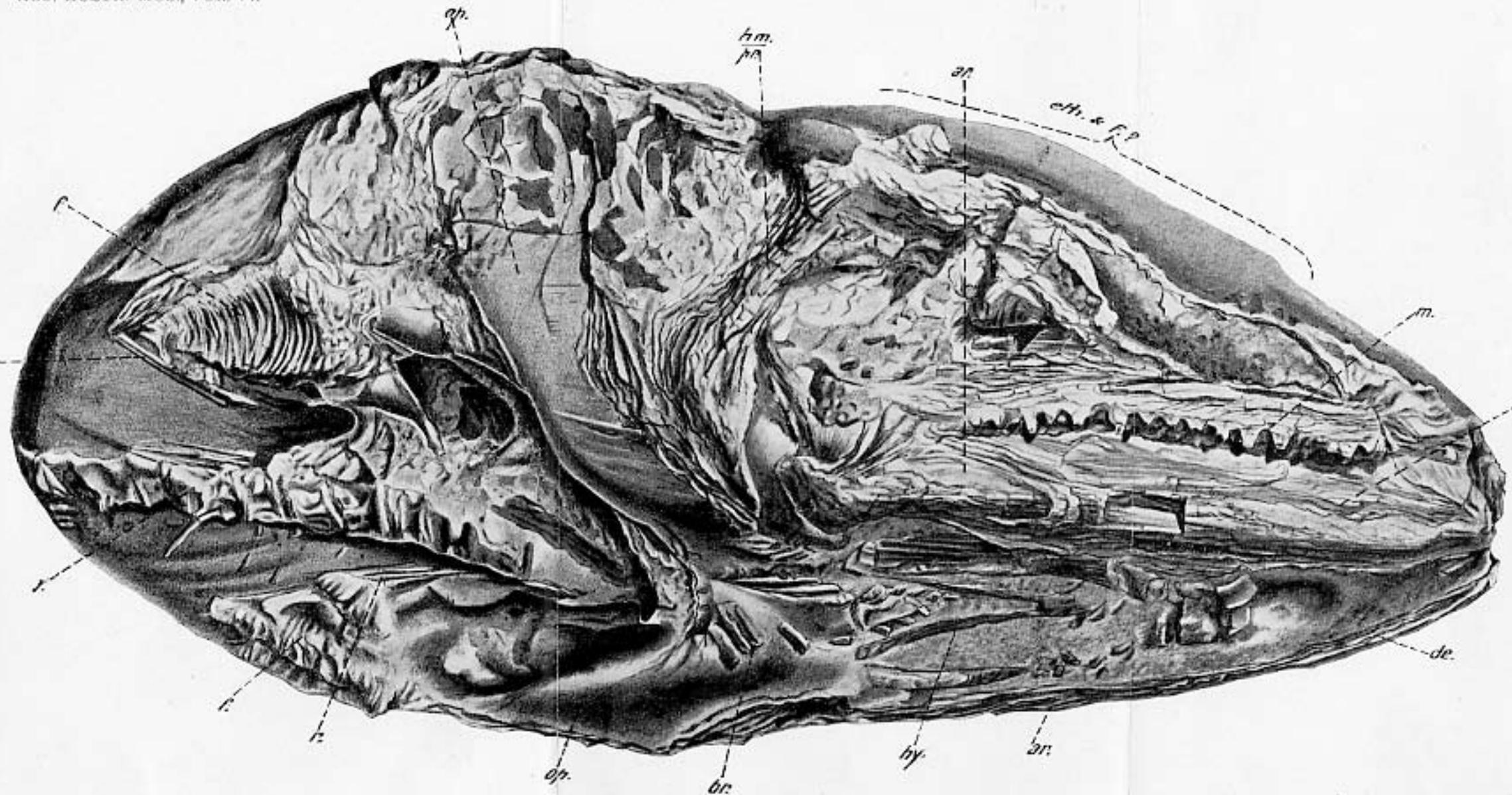
¹⁶ Cope—*Report U.S. Geol. Survey Territories* (Hayden's), ii., 1875, pl. xlvi., f. 5, 5a.

EXPLANATION OF PLATE I.

ICHTHYODECTES MARATHONENSIS, *Eth. fl.*

Skull seen slightly obliquely from below.

- m.* Right maxilla.
- de.* „ and left dentaries.
- ar.* „ „ articulares.
- eth. & f.?* Ethmoid or frontal (?)
- hm.* Hyomandibular or preoperculum.
- pr.*
- hy.* Hyoid bones.
- op.* Operculum.
- r.* Ribs.
- v.* Vertebrae.
- f.* Displaced fin rays.



EXPLANATION OF PLATE II.

ICHTHYODECTES MARATHONENSIS, *Eth. fil.*
Skull seen from below.

[For lettering see Explanation of Plate i.]

