

CHELODINA INSCULPTA De Vis.³⁰

This species is at once recognisable by the great thickness of its carapace and plastron (attaining 19 mm. in places) in comparison with present-day species, as well as by the strongly marked though variable sculpturing. The largest fragment consists of the anterior moiety of the plastron, much abraded, with remains of both bridges. Another fragment is part of the right hypoplastral and xiphiplastral bones, the contours of which demonstrate that this species had a pronounced ventral curve on the extreme lateral borders of the posterior part of the plastron.

The carapace is represented by several small fragments, including remains of two posterior neurals with part of the last costal plate, the base of the left ilium being attached. An isolated right ilium, with the iliac section of the acetabulum, is fairly complete and shows that the dimensions of the pelvic elements did not exceed those of large specimens of *Chelodina expansa*, notwithstanding the thickness of the shell. This species has been previously recorded from Eight-mile Plains (near Brisbane), Darling Downs, and the Warburton River.

A NEW GIGANTIC MARINE REPTILE FROM THE QUEENSLAND CRETACEOUS.

KRONOSAURUS QUEENSLANDICUS new genus and species.

(Plate IV.)

A fragment of a very massive sauropterygian mandible, forwarded from Hughenden by Mr. A. Crombie, in 1899, demonstrates the existence in Australia in Cretaceous times of a reptile far larger than any yet put on local record. Although tantalisingly incomplete, this fragment presents such definite characters that it is desirable to describe it, so far as the evidence permits, and to give it a distinctive name.

The fossil is a portion of the anterior end of a mandible, and is 200 mm. in maximum length, 120 mm. in height, with a breadth of at least 140 mm., when allowance is made for abrasion.

Teeth.—There are remains of six very large thecodont teeth, three on each side of the symphyseal portion of a massive yet relatively narrow rostrum. Two of these teeth and the alveolus of a third are represented on Plate IV., where the external surface of the mandible is abraded. These teeth have a pronounced slope antero-posteriorly, and it is also evident that the right and left series of alveoli are set obliquely, resulting in a slight divergence of the apices of each tooth from the median line. The preserved portions of the teeth are mainly alveolar and the crowns are missing. From the remains of an unerupted or germ tooth, embedded in the fossil adjoining one of the larger teeth, it appears that the crowns were conical. There is no evidence of either

³⁰ De Vis, C. W., Ann. Qld. Mus. No. 3, 1897, p. 5.



KRONOSAURUS QUEENSLANDICUS Longman.

Fragment of mandibular symphysis, with remains of three teeth and alveoli.
Maximum length 200 mm.

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carinae or flutings in the portions preserved. The immense sockets are distinctly separated, and may reach within 21 mm. of the lower margin of the mandible, but as this has been abraded the bulk of bone here may have been thicker. The teeth have a maximum diameter of 40 mm. in the upper part of the alveolar portion, and this decreases to about 30 mm. at the base. The contours are circular in horizontal sections throughout, and the slight tapering ends abruptly, as in the tooth of *Peloneustes philarchus*³¹. The maximum length of the preserved section of teeth is 140 mm., and this suggests a total length of at least 250 mm., being comparable with that of *Pliosaurus grandis*. The centre line of each tooth is situated about 65 mm. from that of its neighbour. With the exception of a circular sheath, the walls of which are 6 mm. in thickness, the preserved portions of the teeth (dentine and pulp cavity) are entirely changed into a crystalline formation identified as barytes (see Note³²). Between the white enamel-like circular sheath and the walls of the alveolus there is evidence of a thin surrounding film of matrix, which suggests that the teeth were never firmly ankylosed.

Mandible.—The condition of the mandible does not lend itself to detailed description, but it is evident that it represents a type with a pronounced rostrum, and a lengthy symphysis. On the lower surface in the median line a thin vein of matrix marks the juxtaposition of the right and left hand elements. Certain structures, which are more apparent at the anterior end, were at first thought to be splenial elements, but later study makes it more probable that these are remains of a large oval dental canal, on each side, now infilled with fine matrix, connected with the pulp cavities. The mandible in the region preserved is thought to be wholly composed of the two conjoined dentaries. On the superior surface in the median line there was a prominent ridge running above and between the alveolar borders. In his description of the mandible of *Pliosaurus grandis* Owen³³ referred (p. 5) to a median longitudinal rising formed by the interalveolar part of the "symphysis mandibulæ." The right side of the mandible, as illustrated in Plate IV., is abraded to the median line of the tooth row, but on the left side the bases of the alveoli are not exposed. In section the lower moiety of the dentaries is semi-circular, and brings to mind the contours of *Ichthyosaurus*.

It is almost certain that the three teeth preserved on each side do not represent the maximum for the symphyseal region. The right and left series of teeth are parallel, and the preserved contours suggest that in this region the lateral surfaces of the dentaries were also parallel. *Kronosaurus* evidently possessed a very lengthy and powerful mandible, with probably no great width in the posterior portion.

³¹ Lydekker, R., Catal. Foss. Rept. Amph., II., 1889.

³² I am indebted to Professor H. C. Richards for the identification of this material as barytes—"composition BaSO₄ (Barium sulphate). The barytes is very pure and very well crystallised."

³³ Owen, R., Mon. Brit. Foss. Rept., Kimmeridge Clay, III., 1869.

When first received, this fossil was tentatively labelled by the late C. W. De Vis as an *Ichthyosaurus*, but when studying the large skull of *Ichthyosaurus australis*³⁴ the writer found that it could not be placed in that family owing to the large socketed teeth and the general structure of the mandible.

Affinities.—In dealing with the difficulty of allocating fragmentary remains of plesiosaurs, S. W. Williston³⁵ referred to the provisional character of generic names. Owen and Leidy based genera on a single tooth, whilst vertebræ have been frequently used. This Queensland fossil cannot be satisfactorily placed in any genus known to the writer, although it presents some of the characteristics of *Pliosaurus* and allied genera described and illustrated by C. W. Andrews in his fine monographs on the Marine Reptiles of the Oxford Clay.³⁶ The contours of the teeth and mandible, however, seem to be quite distinct, and the resemblances may be due to homoplasy. Because of its lengthy symphysis it cannot be placed in *Cimoliasaurus*, a genus which, in Williston's words, "has served as a sort of waste-paper basket for the reception of fragments and poorly known forms." For the same reason it is excluded from the Plesiosauridæ as a sub-order. The teeth are by no means so divergent laterally as in Andrews' *Simolestes*, and they are larger, straighter, and not so tapering in the alveolar region as in *Peloneustes evansi*. In the circumstances it seemed necessary to give this gigantic marine reptile from the Australian Cretaceous generic and specific names, and it is firmly believed that when other remains are forthcoming of *Kronosaurus queenslandicus* that this course will be found fully justified. The lengthy symphysis, massive mandible, and very large teeth set in separate sockets, are outstanding features that suggest affinities, however, and the fossil is placed provisionally in the sub-order Pliosauridæ of the Plesiosauria, the latter term being used in preference to Sauropterygia in view of Boulenger's remarks in 1917.³⁷ Andrews records this sub-order as ranging from the "Lower Jurassic to the Upper Cretaceous of Europe." (1913, p. 1).

Matrix.—This is similar to that associated with other vertebrate remains from the Hughenden district such as *Ichthyosaurus* and *Cratochelone*, described by the writer, being a fine-grained calcareous mudstone.

Other Queensland Cretaceous reptiles include *Plesiosaurus macrospondylus* McCoy and *P. sutherlandi* McCoy,³⁸ regarded by Etheridge as *Cimoliasaurus*,³⁹ which were described from vertebræ, the dimensions of which do not suggest so large a reptile as *Kronosaurus*. *Cimoliasaurus leucoscopelus* and *C. maccoyi*, described by Etheridge (1897 and 1904)⁴⁰ from interesting remains found at White Cliffs, New South Wales, which had been converted into opal, may be also excluded for the same reason.

³⁴ Longman, H. A., Mem. Qld. Mus., VII., 1922, pp. 246-256.

³⁵ Williston, S. W., Field Columbian Mus., Geol. Sur., 1903, II.

³⁶ Andrews, C. W., Catal. Mar. Rept. Oxford Clay, pts. 1 and 2, 1910-1913.

³⁷ Boulenger, P.Z.S., 1917, p. 221.

³⁸ McCoy, F., Ann. Mag. N. H., XIX., 1867, p. 356.

³⁹ Etheridge, R., Rec. Aus. Mus., III., 1897, p. 19.

⁴⁰ Etheridge, R., Rec. Aus. Mus., V., 1904, p. 306-316.