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Note on a very Large Saurian Limb-bone adapted for Progression upon Land, from the Kimmeridge Clay of Weymouth, Dorset

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Notes

3. *Note on a very* LARGE SAURIAN LIMB-BONE *adapted for* PROGRESSION *upon* LAND, *from the* KIMMERIDGE CLAY *of* WEYMOUTH, DORSET.

By J. W. HULKE, Esq., F.G.S., F.R.S. (Read November 5, 1873.)

[PLATE II.]

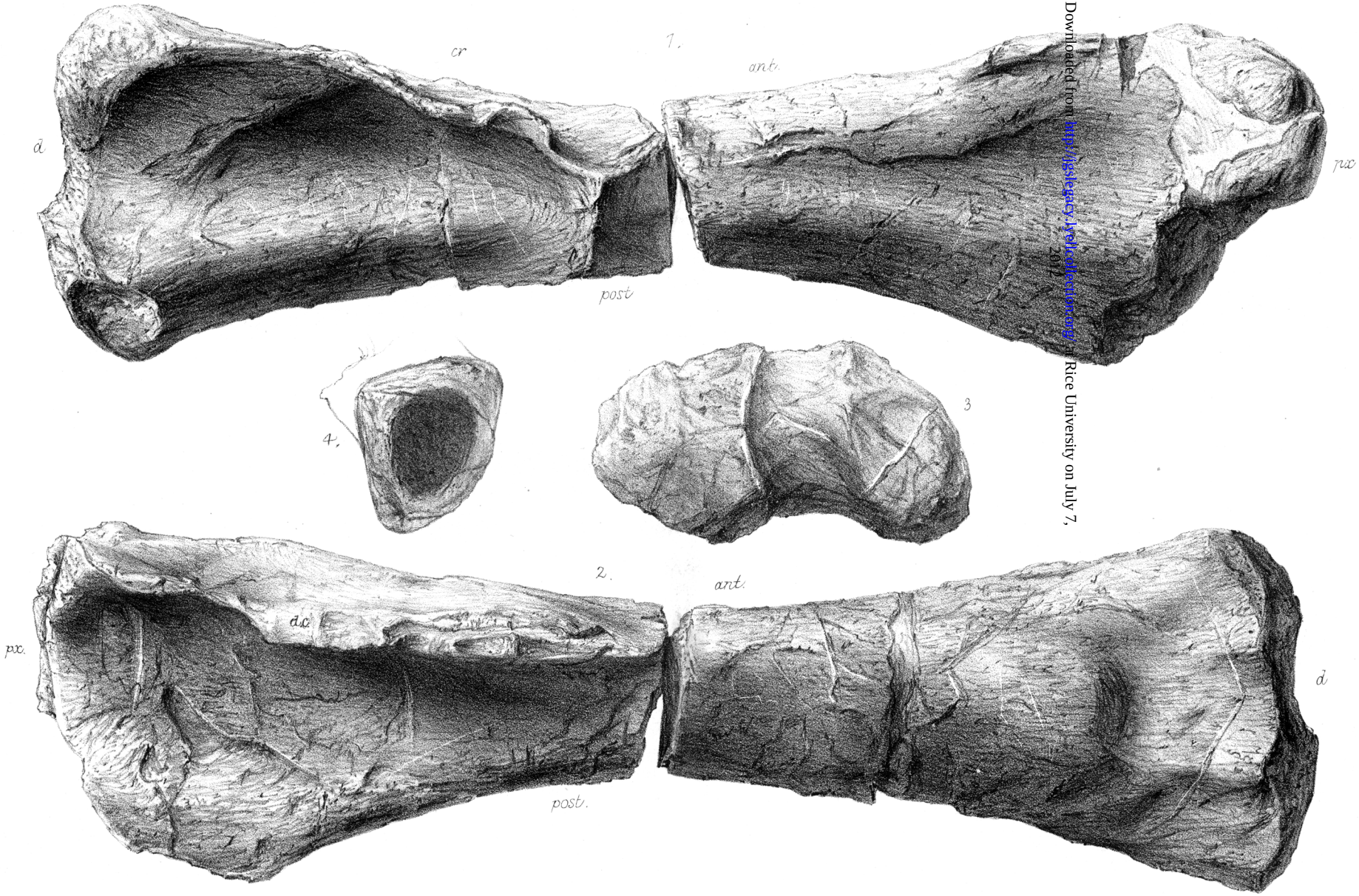
AT rare intervals there have been obtained from the Kimmeridge Clay in several localities (inland and also on the Dorset coast) remains of very large reptiles differing from the contemporary Enaliosaurs (the Plio-, Plesio-, and Ichthyosaurs) by the adaptation of their limbs to walking upon dry land. On June 23, 1869, I brought before the Society a large humerus of such a reptile, which had been obtained in Kimmeridge Bay by J. C. Mansel Pleydell, Esq., a Fellow of our Society. It was afterwards presented by him to the British Museum*; and to the Saurian indicated by it I gave the name of *Ischyrosaurus*.

The subject of this note is a much larger limb-bone lately found in the Kimmeridge-clay beds, near Weymouth, by Mr. R. I. Smith, and intended to be added to the national collection. It was enveloped in large septarian masses, which stuck so closely to it that thin laminæ of the surface of the bone were unavoidably detached in stripping the matrix from it. The natural surface, where uninjured, is smooth; it has a close, fine grain resembling that of the humerus of the *Ischyrosaurus*, and quite unlike the coarse texture of many Enaliosaurian bones. The bone has been much fissured, and cemented together by spar; and some parts have been distorted by squeezing; but the general figure is well preserved†.

It has a closer resemblance to the Crocodilian type of humerus than to any other bone; and I am disposed to regard it as a humerus, the left one. Its present length is 54 inches; but the articular surfaces of both ends are wanting, and for these scarcely less than 9 additional inches can be allowed; so that the whole length of the perfect bone can hardly have been less than 63 inches. The middle of the shaft is cylindroid; its girth is 21 inches; and its horizontal transverse diameter is 7·8. Its transverse section (Pl. II. fig. 4) is a subtrigonal figure; and it exhibits a large coarsely cancellated core enclosed in a stout compact cortical ring. Towards the proximal end the width increases, chiefly by the backward sweep of the posterior border, to a present maximum of 17 inches; but this would be increased by the absent posterior moiety of the proximal surface, including the articular caput and the adjoining end of the posterior border. The outline of the dorsal or upper surface in this situation is transversely convex, whilst longitudinally it rises in a gentle curve from the cylindroid shaft to the proximal end, owing to the increased thick-

* A description and figures of it will be found in the Quart. Journ. Geol. Soc. vol. xxv. p. 386.

† In the following description the bone is imagined to be placed nearly horizontally, with its long axis perpendicular to the animal's trunk.



G.L. Griesbach

M & N Hanhart imp.

HUMERUS OF CETEOSAURUS HUMERO-CRISTATUS

½ natural size

ness required here for the support of the terminal articular caput. The distal moiety of the dorsal surface beyond the shaft expands gradually to a maximum width of 16 inches at the distal articular surface. A very long, wide, and rather deep intercondyloid groove traverses it longitudinally. The ventral surface of the expanded proximal moiety is very hollow transversely; and beyond the shaft its distal moiety in the same direction is gently convex. The distal articular surface (fig. 3) is an oblong, the long diameter of which measures 16 inches, and the short one averages 6 inches. It is divided into a pair of condyles by a very shallow vertical groove, which above joins the dorsal intercondylar groove and below ends between two low eminences at the ventral surface. The posterior border, gradually contracting from the shaft towards the proximal end, becomes here a relatively thin rounded edge. In the distal moiety this border is stouter. The anterior border in its proximal half is much wider than the corresponding part of the posterior border; it is flattened and produced downwards as a ventrally projecting crest (fig. 2, *d c.*) which greatly increases the hollowness of the ventral surface in this part. The distal moiety of this border, in its whole length, has the form of a thin, rough, very prominent crest projecting forwards. These crests form one of the most striking features of the humerus, which distinguish it immediately from the almost equally large Mantellian Pelorosaurian humerus preserved in the British Museum*, and from the almost equally huge, but rather stouter, humeri of the *Ceteosaurus oxoniensis* in the Oxford University Museum, so admirably restored by Prof. Phillips†, as also from the much smaller humerus of *Ischyrosaurus* to which I have already referred.

A general correspondence with the humerus of *Ceteosaurus oxoniensis* inclines me to provisionally refer this new Kimmeridge Saurian to the genus *Ceteosaurus* as typified in *C. oxoniensis*. Its rough strong crests suggest the specific designation *humero-cristatus* (*Ceteosaurus humero-cristatus*).

EXPLANATION OF PLATE II.

Fig. 1. Dorsal or posterior surface of humerus: *d.* distal end; *px.* proximal end; *ant.* anterior border; *post.* posterior border; *cr.* crest.
2. Ventral or anterior surface of humerus: *px.* proximal end; *d.* distal end; *ant.* anterior or outer border; *post.* posterior or inner border; *d c.* deltoid crest.
3. View of distal articular end.
4. Transverse section near middle of shaft.

Discussion.

Mr. Seeley remarked that the internal structure of the bone resembled that found in *Gigantosaurus*, and the general form of the humerus was such as might be expected did it belong to an animal of that genus.

* British Fossil Reptilia of the Wealden Formation, Supplement ii. vol. xii. p. 39.

† Geology of Oxford, p. 272.