

IV.—ON *ACANTHOPHOLIS HORRIDUS*, A NEW REPTILE FROM THE CHALK-MARL.

By THOMAS H. HUXLEY, F.R.S., V.P.G.S.,
Professor of Natural History in the Royal School of Mines.

PLATE V.

SOME time since, my colleague, Dr. Percy, purchased from Mr. Griffiths, of Folkestone, and sent to me, certain fossils from the Chalk-marl near that town, which appeared to possess unusual characters. On examining them I found that they were large scutes and spines entering into the dermal armour of what, I did not doubt, was a large reptile allied to *Soelidosaurus*, *Hylæosaurus*, and *Polarcanthus*. I therefore requested Mr. Griffiths to procure for me every fragment of the skeleton which he could procure from the somewhat inconvenient locality (between tide-marks) in which the remains had been found, and I eventually succeeded in obtaining three teeth, with a number of fragments of vertebræ, part of the skull and limb-bones, besides a large additional quantity of scutes. I am still not without hope of recovering other parts of the skeleton; but as the remains in my hands are sufficient to enable me to form a tolerably clear notion of the animal's structure, a brief notice of its main features will probably interest the readers of the GEOLOGICAL MAGAZINE.

The dermal bony plates or scutes (Plate V. Figs. 1-3) are of very various forms and sizes, from oval disks slightly raised in the middle, and hardly more than an inch in diameter, up to such great spines as that represented in Plate V. Fig. 1, which could have fallen little short of nine inches in length and five inches in the antero-posterior measurement of its base. The outer surface of all these scutes is irregularly pitted and, in the case of the long spines, is occasionally marked by branching grooves which doubtless lodged vessels.

Each scute is excavated on its attached face in proportion to the elevation of its outer surface, so that a transverse section of one of the depressed scutes is more or less roof-like, while that of one of the long spines shows it to possess a great internal cavity like the medullary cavity of an ordinary bone.

Some of the scutes, though comparatively few, are almost flat, with an obtuse median ridge, which is highest about the middle of the scute (Plate V. Fig. 3). But when the ridge is more prominent, as in Plate V. Fig. 2, its summit is usually placed very much nearer one edge than the other, so that one side of the triangular lateral aspect is much shorter and more perpendicular than the other. The short side, however, is not absolutely perpendicular in any scute among those which have reached me, and the summit consequently always lies within the circumference and never overhangs it.

The spine-like dermal plates are altogether unsymmetrical. If, as I suppose, the convex edge of that represented in Plate V. fig. 1 was anterior, then the posterior edge is concave, and the left side convex, with a slight longitudinal excavation in its anterior half; while the

right side is much more deeply hollowed in the same direction. Furthermore, the anterior, convex, edge is not straight, but is slightly concave towards the left, and convex towards the right side; while the posterior, concave, edge is concave towards the right, and convex towards the left side. The ridge which forms the posterior edge is suddenly interrupted near the base of the spine by a deep notch, (Fig. 1, a,) which probably received the anterior edge of the next succeeding spine. The transverse diameter of the base of this spine could not have been less than four inches when it was entire.

I estimate that the more or less complete remains of nearly a hundred scutes of the different forms now mentioned, must have passed through my hands, and, as they all came from one small area, they probably belonged to one animal.

Such vertebræ as have been obtained, are in a very fragmentary state. The body of a dorsal vertebra is about 1.5 in. high, but has a less width; its length cannot have exceeded two inches. Its articular ends are very slightly concave, and it is somewhat narrower in the middle than at the ends. The neural canal is spacious, being not less than one inch high. The neural spine appears to have been low and inclined somewhat backwards. Another detached body of a dorsal vertebræ is 2.1 in. long, 0.2 in. high, 1.85 in. wide at its articular ends, and 1.5 wide in its centre. The sacrum of this reptile would be very interesting, but no fragment of that part of its skeleton has as yet made its appearance. Of the skull I possess only a very much mutilated fragment, showing the basioccipital and basisphenoid. The occipital condyle measures 1.4 transversely, or has about the same diameter as that of the skull of a *Crocodylus biporcatus*, which measures 16 inches in length, from snout to occiput. But it is more elongated transversely and excavated above than in the Crocodile, and the exoccipitals enter more largely into its composition. The Crocodylian disposition of the Eustachian tubes is absent, and the carotids run up the side of the basisphenoid in Lacertilian fashion. The *silla turcica* has a well developed posterior plate.

Only three teeth have been found in connexion with these remains, but one of them is in a very perfect state, and was readily detached from the matrix, so as to be easily viewed from all sides, (Plate V. Fig. 4, a, b, c). The crown is broken off from the fang, which another specimen shows to be about as long as the crown and sub-cylindrical. The crown is nearly 0.4 long, the greater diameter of its base is 0.27, and the less about 0.2; it is shaped like a lance-head, with an acute point and sharp edges; these edges are notched in such a manner that the crown exhibits eight serrations on each side of its apex. The enlargement of the crown into its swollen base is somewhat sudden, and takes place higher up on the one face of the tooth than in the other, so that when the tooth is viewed from one edge the one face appears concave and the other convex (Plate V. Fig. 4, b).

The most curious feature about this tooth, however, is its colour. The ground hue of the crown is pale brown, but vertical lines of dark

chocolate colour run vertically and parallel to one another from the serrated edge to the swollen base, on which they die out. The middle of each intermediate pale brown band exhibits a very delicate dark line.

One of these pale brown bands occupies the middle of each face of the tooth and its apex. On each side of this are six or seven dark bands and as many interspaces. The dark bands correspond pretty nearly, but not exactly, with the summits of the serrations.

The shape of these teeth is quite different from that of the teeth of *Scelidosaurus*, which they approach most nearly.

The most perfect fragment of any of the bones of the extremities appears to be the distal end of a humerus. It presents a division into two condyles by wide and shallow anterior and posterior depressions, and the width of the bone in this part, when perfect, could hardly have been less than five inches. It narrows very rapidly, however, and where it is broken, at 3·5 in. from the dorsal end, its shaft is not more than 1·7 in. wide and as much in antero-posterior diameter. It has a large medullary cavity, the bony walls of which are on the average not more than 0·3 in. thick.

From the general resemblance of the dermal armour and teeth of this reptile to those of *Scelidosaurus*, *Hylæosaurus*, and *Polacanthus*, it plainly belongs to the same group; but its teeth separate it from the first genus, and the characters of its dermal armour from the two latter. I propose to call it *Acanthopholis horridus*.

My colleague Mr. Etheridge is good enough to supply me with the following precise determination of the stratigraphical position of the remains. I may add that numerous portions of *Ichthyosaurus campylodon* have been obtained by Mr. Griffiths "about six feet lower down" than *Acanthopholis*.

EXPLANATION OF PLATE V.

Acanthopholis horridus, Huxley.

Fig. 1. *a.* Side view of one of the spine-like scutes: *b.* Front view of the same.

Fig. 2. *a.* A more depressed scute seen from above; *b.* viewed laterally; *c.* viewed from the hinder, or more raised, end.

Fig. 3. *a.* A still flatter scute seen from above; *b.* viewed laterally; *c.* viewed from the hinder end.

(The preceding figures are one-half the size by nature.)

Fig. 4. *a.* A tooth viewed from one side; *b.* with one edge turned to the eye; *c.* from above.—The outlines give the natural size of the tooth.

V.—ON THE STRATIGRAPHICAL POSITION OF *ACANTHOPHOLIS* *HORRIDUS* (Huxley).

By ROBT. ETHERIDGE, Palæontologist to the Geological Survey of Great Britain.

PROFESSOR HUXLEY'S communication, relative to the discovery of a new Reptile in the Lower Chalk of the south of England, which he has called *Acanthopholis horridus*, may be rendered more interesting by a detailed description of its stratigraphical position and its associated organic remains, a matter of some importance in this case, as few, if any, higher reptilian remains have occurred