

Mr. EVANS pointed out that the main question at issue was whether the sandy beds below the Cephalopoda-bed of Bradford Abbas were really the equivalents of those which were found above the analogous bed in Gloucestershire.

Prof. RAMSAY regretted the absence of Fellows more especially interested in this question. For himself, he considered it impossible to correlate particular zones over any large area, and thought that the whole series might be regarded as passage-beds, the order of which might vary even within a limited distance.

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4. On CETARTHIROSAURUS WALKERI (Seeley), an ICHTHYOSAURIAN from the CAMBRIDGE UPPER GREENSAND. By H. G. SEELEY, Esq., F.L.S., F.G.S.

THE specimen now described was discovered several years since by J. F. Walker, Esq., M.A., F.G.S., among some fossils gathered at a coprolite-washing in the Upper Greensand, from near the railway-bridge at Ditton, N.E. of Cambridge. Mr. Walker recognized the specific importance of his fossil; and, from a cast, I made a brief note, enrolling the species in the Cambridge Greensand fauna as *Ichthyosaurus Walkeri* \*. No other bone presumably referable to the same species is known to have been found; and, as with many of the associated fossils, abrasion has done its work upon this femur in a way to suggest that, like many disfigured recent bones to be picked up on our own shores, these Greensand exuviae were rolled on a pebbly beach before deposition in the bed of phosphatic nodules at the base of the deposit.

The bones of the extremities of Ichthyosaurians, as was pointed out by Mr. Hawkins, afford excellent characters by which species may be defined; but in this ordinal group no sufficient description of the skeleton has been made to assist comparison of specimens with a type, perhaps because the varieties of structure in the different genera confounded under the name of *Ichthyosaurus* are such as to make a comprehensive diagnosis of the several bones a task of difficulty.

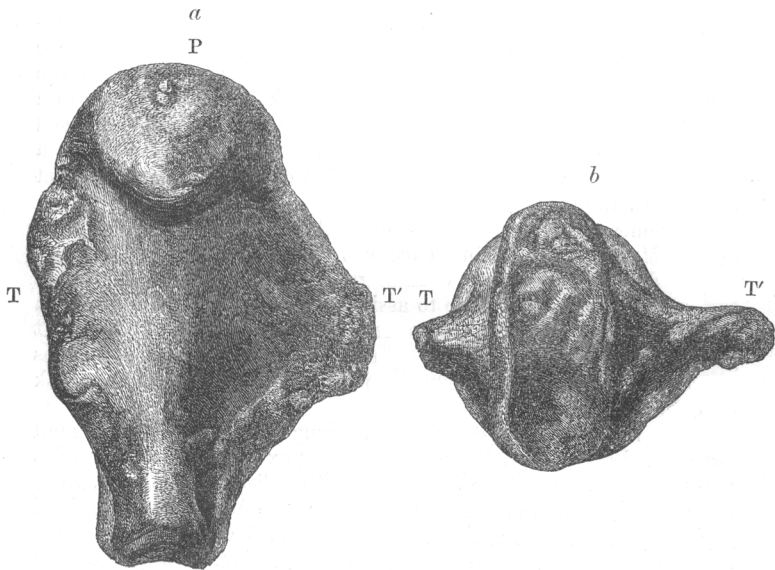
“The femur of *Ichthyosaurus* is a strong short bone, with a small compressed distal end, having its greatest extension at right angles with the greatest width of the head. The distal end shows two or three articular facets for the bones of the foreleg. The proximal end is large, convex, and broad, and sends off on each side a trochanteroid process, which makes the head massive. These processes are rounded laterally, and extend down the short shaft, gradually being obliterated with the increasing compression of its distal end. The outer side of the bone is the flatter; the inner side is made convex by a more or less well-defined, rounded, longitudinal ridge, which, extending from the head of the bone, slightly curves convexly backward, so as to indicate that the greater part of the head lies

\* Aves, Ornithosauria, and Reptilia (1869, 8vo), p. 64.

behind a plane at right angles with the distal articulation"\*. This description is drawn from the Cretaceous genus of Ichthyosaurians found at Cambridge, and would apply but indifferently to most of the genera from the Lias. This remark holds true in a less degree for the following notes on the similitudes of the Ichthyosaurian femur\* :—

“The femur, in shortness and strength, recalls some seals; but in arrangement of parts, the resemblance among mammals is closest to *Ornithorhynchus*, which similarly has lateral trochanters extending the width of the proximal end, though in *Ichthyosaurus* the trochanters are not divided from the rounded articular head.” “Among crocodiles the only resemblances are that the articular ends of the bone are compressed, the proximal one rounded and at right angles to the distal end.” “The two trochanters at the head of the femur of *Chelydra*, though not so well developed and not opposite to each other, are homologous with those of the head of the femur in *Ichthyosaurus*; but there is no other character in common in the limbs.”

Fig. 1.—*Right Femur of Cetarthrosaurus Walkeri.*



*a.* Underside. *b.* View from the distal end. P. Proximal articulation.  
T. Anterior trochanter. T'. Posterior trochanter.

With the type thus indicated, *Cetarthrosaurus* is closely comparable. The specimen may be thus described:—

The bone is  $2\frac{5}{8}$  inches long, subovate at the proximal end, and a

\* MS. Osteology of the Reptilia.

narrow oblong at the distal end. The proximal end is  $1\frac{5}{16}$  inch from side to side in the direction of the extension of the distal end, and  $1\frac{4}{16}$  inch in the direction at right angles, thus differing essentially from *Ichthyosaurus*; but, as in that genus, the superior outline of the head is somewhat flattened, while the inferior outline is very convex; the head is hemispherically rounded, and so much of the original surface as remains is pitted over with terminal blood-vessels smaller than those of *Plesiosaurus*, and shows indications of the bone having been there sheathed with a thick articular cartilage. The distal end,  $1\frac{3}{8}$  inch long and  $\frac{5}{8}$  inch wide, is rather wider towards the tibial side, and rather narrower towards the fibula. The distal end shows three articular surfaces—two concave and subquadrate, and a small lunate articulation on its fibular margin. Between the head and the distal end the sides of the bone are concave, rather more so on the fibular than on the ulnar side. On each side of the bone, at right angles to the distal end, is given off an enormously elongated compressed trochanteroid process, which, even as preserved, widens the bone to  $1\frac{7}{8}$  inch, while the constricted shaft at right angles measures  $\frac{7}{8}$  inch only. On the underside the bone is gently convex from one trochanter to the other; on the superior face a longitudinal convex ridge extends from the distal end towards the head, while the parts on each side of it are made concave by the singular compression of the trochanteroid processes. From the condition of preservation, some difficulty may be felt in deciding how far these processes extended towards the proximal articulation; but as on both sides they are seen to run nearly to the head of the bone, they were probably there given off. The processes may have been of equal lengths, and have measured nearly 3 inches from side to side when perfect, making the bone wider than long.

Some Ichthyosaurians from the Lias in the British Museum show a small trochanteroid process towards the distal end of the bone on the fibular margin, quite distinct from these.

On the subovate form of the head of the bone, and on the development of the lateral trochanters, I base the genus *Cetarthrosaurus*. It may be considered to present a resemblance one degree nearer to the femur of the monotremes than that of *Ichthyosaurus*, a resemblance having its chief interest in other parts of the skeleton.

The name is not intended to indicate cetacean affinities, but merely the general resemblance of the bone to the humerus of a porpoise, which is sufficiently marked to arrest attention.

#### DISCUSSION.

Sir P. EGERTON was inclined to regard the trochanters as vertical rather than as lateral.

Mr. SEELEY remarked that in calling the two trochanters lateral, he was guided by the position in which it appeared to him that the limbs were carried during the life of the animal.