

XXVI.—*Description of the Remains of a Bird, Tortoise, and Lizard from the Chalk of Kent.*

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PLATE XXXIX.

*Description of the Remains of a Bird from the Chalk, Pl. XXXIX. fig. 1 and 2.*

THE three portions of fossil bone to be first noticed in this paper were obtained by the Earl of Enniskillen from the chalk near Maidstone, and were recognised by his Lordship and Dr. Buckland to belong to a species of bird. The largest portion is the shaft of a long bone, fig. 1, and is nine inches in length, with one extremity mutilated, but nearly entire, and the other broken off. The extremity is expanded; the rest of the shaft of the bone preserves a pretty regular and uniform size, and is slightly bent. It is unequally three-sided, with the sides flat and the angles rounded off, fig. 1 *a*, and measures two inches and a half in circumference.

It differs from the femur of any known bird in the proportion of its length as compared with its breadth, and from the tibia or metatarsal bone in its trihedral figure and the flatness of the sides, none of which are longitudinally grooved. It resembles most the humerus of the Albatross, both in its form, proportions, and size, but differs therefrom in the more marked angles which bound the three sides. The expanded extremity likewise resembles the distal end of the humerus of the Albatross, but is too much mutilated to allow of the exact amount of similarity to be determined.

On the supposition that this fragment of bone is the shaft of the humerus, its length and comparative straightness would prove it to have belonged to one of the longipennate natatorial birds, equalling in size the Albatross.

The form of the bone might warrant the supposition that it was the distal portion of a radius; but this idea can only be entertained by supposing the fossil bird to have been of gigantic dimensions, almost realizing the fabulous 'Roc' of Arabian romance; and the other two portions of bone associated with it, and most probably parts of the same bird, render this last supposition still less probable.

These portions, fig. 2, both belong to the distal end of the tibia, the peculiarly well-marked trochlear extremity of which is sufficiently preserved, although crushed. Their relative size to the preceding bone, on the supposition that it is the hu-

merus, is nearly the same as in the skeleton of the Albatross ; and there is no bird now known, north of the equator, with which the fossils can be compared.

All the three fossils exhibit the thin compact external walls and large air-cavities which characterise the texture of the corresponding bones in birds of flight.

*Description of the Remains of a Chelonian Reptile from the Chalk, Pl. XXXIX. fig. 5.*

The remains of the Chelonian reptile were discovered in the lower chalk at Burham, in Kent. They consist of a few of the marginal plates of the carapace and some smaller fragments of the expanded ribs which form the dorsal bony shield. The marginal plates are four in number, united together by the usual finely indented sutures, and each impressed along its middle and upper surface with a line corresponding to the margin of the horny plate that originally defended it. The external or free margin of each plate is slightly emarginate in the middle. These marginal plates are narrower in proportion to their length than in the *Chelone Mydas* and *Chelone imbricata*, and they deviate still more, in the character of their internal articular margin, from the corresponding plates of the terrestrial *Chelonia* ; but they sufficiently agree with the marginal plates of the carapace of the *Emydes* to render it probable that the present chalk fossil is referable to that family of *Chelonia* which lives in fresh waters or estuaries\*.

*Description of the Vertebral Column of a small Lacertine Saurian from the Chalk.*

Pl. XXXIX. fig. 3 and 4.

The third fossil from the chalk which I have to notice, is one which Sir Philip Egerton has recently added to his collection ; it consists of a chain of small vertebræ in their natural relative position (fig. 4.). The bodies of these vertebræ are united by ball- and socket-joints, the socket being on the anterior, and the ball on the posterior part of the vertebra ; and they are proved to belong to the Saurian class of reptiles by the presence of many long and slender ribs, and by the conversion of two vertebræ through the length and strength of their transverse processes into a sacrum. Remains of an ischium and pubis are connected with the left side of this sacrum, proving incontestably that this reptile had hinder extremities as well developed as in the generality of Saurians ; but of these, as well as of the anterior extremities and head, there is no trace.

\* Subsequent observation of the modifications in the form of the marginal plates and of other parts of the skeleton of extinct *Chelones*, by which the interval separating the existing marine and freshwater species is diminished, has weakened the impression which the character of the marginal plates of the chalk Chelonite first made in favour of its Emydian affinities ; and the examination of the nearly entire skeleton of the same species recently obtained from the same quarries at Burham by Mr. Bensted, and described since the reading of the present paper by Dr. Mantell in the Philosophical Transactions, has demonstrated that it is not an *Emys*, but a true *Chelone*, or marine Turtle.— April 1842.

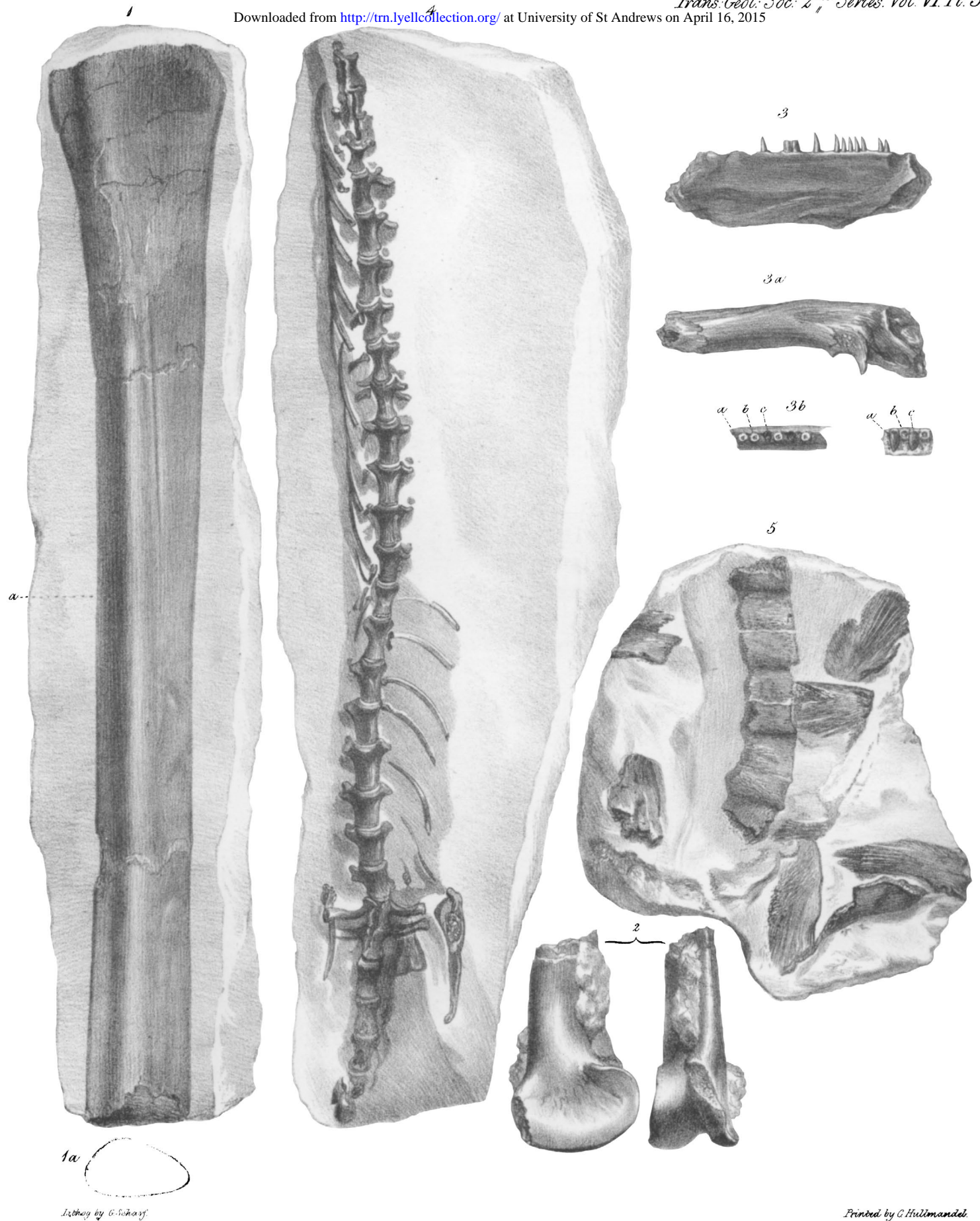
With this evidence of the primary group of reptiles to which the fossil belongs, there next remained to be determined to which division of Saurians having ball and socket vertebral joints it was to be referred. In the Crocodilian, or Loricata group, the transverse costigerous processes are elongated, the posterior ribs are exclusively attached to these processes, and three, four or five of the vertebræ which precede the sacrum are ribless, and consequently reckoned as lumbar vertebræ; in the Lacertine Saurians there are never more than two lumbar vertebræ, and all the ribs are supported on short convex processes or tubercles.

In the present fossil each rib is articulated by a single head to a short process of this kind, and they are attached to all the vertebræ except the one immediately preceding the sacrum: these characters, with the slenderness and uniform length of the ribs, and the degree of convexity in the articular ball of the vertebræ, prove incontestably that the fossil is part of a Saurian appertaining to the inferior or Lacertine group.

The costal tubercles are developed, as in other Lacertians, from the sides of the anterior part of the body of the vertebræ; the under surface of the vertebra is smooth, concave in the axis of the body, and convex transversely.

As there are twenty-one costal vertebræ anterior to the sacrum, including the single lumbar, the fossil cannot be referred to the genera *Stellio*, *Agama*, *Leiolepis*, *Lyriocephalus*, *Basiliscus*, *Anolis*, or *Chamæleon*; but a comparison may be instituted between it and the Monitors, Iguanas, and Scinks. In the absence of cranium, teeth and extremities, any closer approximation of the fossil to existing forms would be hazardous, and too conjectural to yield any good scientific result; and the subjoined figure supplies the place of further verbal description of the proportions of the different vertebræ.

If the portions of the lower jaw of a Lacertian from the lower chalk, near Cambridge, should be of the same species, as it agrees in size with that above described from the same formation in Kent, there would then be no doubt that the chalk Lacertian is generically distinct from any known existing Lizard. Fig. 3. Pl. XXXIX. is a side-view of a portion of the lower jaw of the Lacertian reptile from the lower chalk near Cambridge. It contains twenty-two close-set awl-shaped teeth, ankylosed by their bases to an outer alveolar parapet of bone, as shown at fig. 3*b*. I have proposed the name of *Raphiosaurus* for the genus indicated by this fossil.



*Fig. 1 & 2. Ornitholites. 3. 3a. 3b. 3c. & 4. Raphiosaurus. 5. Chelone.*  
*From the Chalk of Kent.*