FOSSIL REPTILES IN THE AYLESBURY MUSEUM

By KENNETH P. OAKLEY.

Fossil Turtle from Wall of Hartwell Park.

In 1940 Mr. Edwin Hollis contributed to the *Records*[1] a preliminary note on the carapace of a fossil turtle (? *Hylaeochelys* sp.) which had recently been removed from the wall of Hartwell Park and placed in the Museum. At the time the note was going to press doubt arose as to the original provenance of the specimen. Although this question was eventually settled to Mr. Hollis's satisfaction, he did not live long enough to publish the completed story. Several false trails were followed before the truth about the specimen became evident; but they were instructive in their way, and I think worth recording.

Until the two halves of the split nodule containing the turtle carapace and its counterpart had been removed from the wall and subjected to laboratory examination it had generally been assumed that this specimen, like the rest of the stones of which the park wall is built, had come from one of the pits in the Hartwell district. The wall consists mainly of limestone quarried in the pit near the Bugle Horn Inn. Here the Portland Beds (marine, mainly limestones), are overlain by Purbeck Beds (mainly marls formed in a freshwater lake). Ovoid nodules of calcareous sandstone (or sandy limestone) like the one containing the turtle have not been observed in either of these Jurassic formations at Hartwell, but as the Purbeck Beds are known to yield turtle material (there is some in the Lee Collection at the Museum, e.g. 3948), they were considered at first to be the most likely source of the specimen. Examination of the surface of the nodule showed, however, that it had been subjected to the boring activities of a marine mollusc (*Lithophagus* was suggested). The defection of glauconite[2] grains in

[1] *Records of Bucks*, XIII (1940), p. 477.

[2] The mineral which gives greensand its characteristic colour.

the stone itself finally confirmed its marine origin. These facts ruled out the Purbeck Beds and appeared to make the Portland Beds a more probable source. A turtle of the type represented might have become entombed in an off-shore marine deposit just as well as in a lake bed; moreover, glauconitic sands occur in the lower part of the Portland Beds and might conceivably have been the site of a calcareous concretion.

There appeared to be at least one other possibility to consider. Built into the wall for ornamental purposes, in addition to giant Perisphinctid ammonites (*Titanites* and allies) from the Bugle Pit, there are brownish irregular masses of silicified sandstone with smooth mammilated surfaces, very like sarsens in texture. These sandstone concretions are known locally as bowel-stones[3] and are said to have come from the base of the Cretaceous sands which form outliers at Hartwell, at the adjoining village of Stone (where they are worked as glass-sands), and at other localities nearby. Dr. Morley Davies has termed these sands the Bishopstone Beds.[4] Although blocks of ferruginous sandstone found near the base of the sands at Stone and Hartwell have yielded fossils indicative of a Wealden lake deposit, the reported occurrence of *Exogyra sinuata* and other marine shells in one exposure of these sands at Hartwell shows that the beds there are, in part at least, marine, i.e., Lower Greensand.[5]

Although the turtle nodule, being calcareous, differs from the concretionary masses so far recorded in the Bishopstone Beds, its basically sandy constitution suggested that the possibility that it had come from these beds should at least be borne in mind. The turtle itself is of a Mesozoic type which could just as well occur in a Cretaceous formation as in a Jurassic one.

[3] J. Morris, *Geol. Mag.*, IV (1867), p. 458. They were at one time known as "the doctor's bowels," presumably in reference to the renowned Dr. John Lee, F.R.S., who had had the wall built (see Explanation of Horizontal Sections 140, *Mem. Geol. Surv.*, 1891, p. 2). I have also heard them referred to as "deadmen's bowels" (1940).

[4] *Proc. Geol. Assoc.*, XVI (1900), pp. 45, 50.

[5] ibid.; also Morris op. cit., pp. 458-9, and J. F. Kirkaldy, *Proc. Geol. Assoc.*, L (1939), pp. 385, 408.

It was hoped that determination of the shells lining the bottoms of the borings in the turtle stone might throw light on its geological age. By breaking open part of the nodule Mr. Hollis was able to extract some complete specimens. On closer examination it became evident that they were not *fossil* shells at all! I submitted them to Mr. J. R. le Tomlin who pronounced them to belong to recently dead specimens of the marine mollusc *Saxicava arctica* (L.). He judged them to have come from the south coast and suggested Swanage as a likely locality. Further examination of the surface of the nodule revealed recent encrusting Bryozoa, *Mucronella* and *Membranipora*. Of course the turtle was a Mesozoic fossil right enough, but the nodule containing it had been lying about on a present-day shore, whence it had been brought to Hartwell!

The probable explanation of its presence in the Hartwell wall was now evident. Dr. John Lee, of Hartwell House, who had been responsible for having the park wall built (1853-5), is known to have been a great collector of geological specimens, and one who went in for the *omnium gatherum*. He had probably obtained this showy fossil from a dealer or friend, and decided to have it built into the park wall together with the local ammonites and bowel-stones. Mr. Hollis searched through the manuscript catalogue of the Lee Collection at the Museum in the hope of finding a reference to this specimen. He noted item 2977, described as a fossil turtle in nodule from Harwich obtained in 1845 from E. Charlesworth, Esq., but this was evidently from the London Clay. Judging by the lithology of the present nodule and by the characters of the enclosed carapace it is quite certainly not from the London Clay, but is much older, either Jurassic or Cretaceous. The London Clay specimen remains to be found.

Lithologically the turtle nodule is a dark greenish-grey, glauconitic sandstone with a crystalline calcareous cementing matrix; it could be described almost equally well as a concretionary sandy glauconitic limestone. The cortex has weathered to a greenish-buff colour. It has probably been derived from the Upper Greensend of the Dorset Coast or the Isle of Wight

where similar ovoid stone nodules are known to occur. It is perhaps worth noting that the type specimen of *Hylaeochelys lata* (Owen) came from the Upper Greensand of the Isle of Wight.[6]

I hope that the 'Hartwell' specimen will eventually receive the attention of a vertebrate palaeontologist, so that it may be reliably determined and fully described from the morphological point of view.

Dinosaur Remains from the Bugle Pit, Hartwell.

Sir Alan Barlow has recently presented to the Museum some reptilian bones collected by him in Sept., 1894, in the Purbeck Beds of the Bugle Pit. They are fragmentary limb and pelvic bones of a sauropod dinosaur, not generically determinable.[7]

It is worth recalling that teeth of a sauropod dinosaur (identified as *Pelorosaurus humerocristatus* Lyd.) have already been recorded from the Bugle Pit, but they are said to have been found in the Portland Beds, not in the Purbeck.[8] Teeth of a carnivorous dinosaur *(Megalosaurus)* have also been recorded from the same horizon.[9] All these teeth were found by Mr. J. Alstone in 1893 and 1894 and are now in the Geology Department of the British Museum (Natural History).

[6] A. S. Woodward and C. D. Sherborn, "Catalogue of British Fossil Vertebrates," 1890, p. 232.

[7] *Brontosaurus* and *Diplodocus* are the best known genera in this herbivorous group of dinosaurs.

[8] R. Lydekker, *Quart. Journ. Geol. Soc.*, XLIX (1893), p. 566.

[9] A. S. Woodward, *Proc. Geol. Assoc.*, XIV (1895), p. 31.