

---

# Chawley Brick Pits, Cumnor Hurst, Oxfordshire

[SP 475 042]

## Highlights

Chawley Brick Pits, Cumnor Hurst are famous for the dinosaur *Camptosaurus*, an important genus that proves a close link with North America during the Late Jurassic. The site has also produced other typical Kimmeridgian-age reptiles, plesiosaurs and ichthyosaurs.

## Introduction

Chawley Brick Pits are important for their fauna of marine and terrestrial reptiles, and for the dinosaur *Camptosaurus* (Figure 7.3) in particular. The former exposure of Kimmeridge Clay here, although greatly reduced in area, could be re-excavated to produce further finds.

The brickyard was formerly worked on the north side of Cumnor Hurst and displays the only exposure of Kimmeridge Clay in the area. Parts of the Cretaceous (Lower Greensand–Gault) are also seen. The section formerly spanned the Early and early Late Kimmeridgian, but this is now much reduced. The geology was described by Richardson *et al.* (1946), Arkell (1947a), McKerrow and Baden-Powell (1953) and Cope (1967, 1978; *in* Cope *et al.*, 1980b). A sketch of a photograph of Chawley Brick Pit in the late 19th century is given by Pringle (1926, p. 98). The dinosaur and other reptile finds have been discussed by Phillips (1871), Prestwich (1879, 1880), Hulke (1880a), Lydekker (1888a, 1889c, 1890a) and Galton and Powell (1980).

## Description

The section after Richardson *et al.* (1946, pp. 100–2), Arkell (1947a, pp. 106–7), McKerrow and Baden-Powell (1953, p. 97) and Cope (1967, 1978; *in* Cope *et al.*, 1980b) is:

	Thickness (m)
Northern Drift	3.0
Lower Gault	3.0
Lower Greensand	6.1
Kimmeridge Clay	
? <i>pectinatus</i> Zone	
Shotover Grit Sands: bluish sandy clay (loam) weathering white to a depth of 1 m below junction, with brown weathering grey nodules	c. 4.3
(break in sequence)	
<i>wheatleyensis</i> Zone	
Wheatley Nodule Clays; dark shaly clays with big cementstone crackers, some crowded with <i>Pectinatites</i> ( <i>Virgatosphinctoides</i> ) cf. <i>wheatleyensis</i> , <i>P. (V.) tutcheri</i> , etc. and bivalves	seen to 2.4
(break in sequence)	
<i>eudoxus</i> Zone, ?lower	
<i>autissiodorensis</i> Zone	
dark clays with <i>Nanogyra virgula</i> , <i>Aulacostephanus eudoxus</i> , aptychi and reptile bones	seen to 3.0

The fossil reptiles apparently came from the *eudoxus* Zone ('*pseudomutabilis* Zone' Arkell, 1947a, p. 106). Prestwich (1879, 1880) gave a detailed account of the finding of the dinosaur *Camptosaurus*. The skeleton was broken up in collecting, but nearly all elements were found associated. The fossil was found when a tramway was driven into the side of the hill 'in a thin 3 inch [75 mm] sandy seam intercalated in the clay'. This sand occurred about 34 ft (10.4 m) below the Lower Greensand, according to Prestwich (1880), and his section can be matched with Arkell's (1947a) section to confirm that the dinosaur came from the *eudoxus* Zone. Prestwich (1880) found *Ichthyosaurus* vertebrae and ribs and *Pliosaurus* and *Dakosaurus* teeth in the clay below (also *eudoxus* Zone), and *Plesiosaurus* vertebrae in the clay above (*eudoxus* or *wheatleyensis* Zone).

## Fauna

Fossil reptiles from the Chawley Brickpits are preserved in the BMNH and OUM. Numbers of specimens and type specimens are indicated.

	Numbers
<b>Archosauria: Dinosauria: Ornithischia:</b>	
Ornithopoda	
<i>Camptosaurus prestwichii</i> (Hulke, 1880) Type specimen: OUM J.3303 'dinosaur limb'	1  1
<b>Sauropterygia: Plesiosauria:</b>	
Elasmosauridae	
<i>Colymbosaurus trochanterius</i> (Owen, 1840) Including 'type specimens' of <i>Plesiosaurus validus</i> Phillips, 1871, OUM J.2854–6	c. 5
<b>Sauropterygia: Plesiosauria: Pliosauridae</b>	
<i>Pliosaurus brachydeirus</i> Owen, 1841	1
<i>Pliosaurus</i> sp.	8
<i>Liopleurodon macromerus</i> (Phillips, 1871)	3
<b>Ichthyopterygia: Ichthyosauria</b>	
<i>Macropterygius thyreospondylus</i> (Owen, 1840)	2
<i>Macropterygius trigonus</i> (Owen, 1840)	3
ichthyosaur indet.	5

## Interpretation

The ornithopod *Camptosaurus prestwichii* (see (Figure 7.3)) was named *Iguanodon prestwichii* by Hulke (1880a). Seeley (1888c) placed it in the new genus *Cumnoria* because of its differences from *Iguanodon*, but Lydekker (1888a, p. 196) questioned the validity of the new genus and returned the species to *Iguanodon*. Then Lydekker (1889c, p. 46; 1890a, p. 258) noted its provisional assignment to *Camptosaurus* because of close resemblance to *C. leedsi* Lydekker, 1889 from the Oxford Clay of Peterborough, which Galton and Powell (1980) confirmed. They redescribed the fragmentary skull and nearly complete skeleton and compared it with other species of *Camptosaurus* from Europe and North America. *C. prestwichii* was about 3.5 m long and it is characterized by features of the skull and teeth. It is more gracile than the better-known *C. dispar* (Marsh, 1879) from the Morrison Formation (Late Kimmeridgian) of Wyoming. Galton (1980c) stressed the palaeogeographical importance of *C. prestwichii*: similarity of the North American and European species indicates a former land connection across the North Atlantic in the Late Jurassic which was probably broken by Kimmeridgian times, hence allowing the two species to diverge slightly.

The plesiosaurs and ichthyosaurs from the Chawley Brick Pits need little comment since they are better represented elsewhere in the British Kimmeridge Clay. Compared with other sites, Chawley lacks crocodiles and turtles. The plesiosaurs, represented by vertebrae and skull remains, probably all belong to *Colymbosaurus trochanterius* (Owen, 1840), the commonest valid Kimmeridgian genus (Brown, 1981). The species *P. validus* Phillips (1871) was based on

vertebrae from Shotover, Cumnor and Baldon (Phillips, 1871, pp. 370–2), but Brown (1981, p. 324) regarded the species as a *nomen dubium*. The rarer ichthyosaur remains include several species regarded as *taxa dubia* by McGowan (1976), but a detailed revision is required (A. Kirton, pers. comm., 1981).

### Comparison with other localities

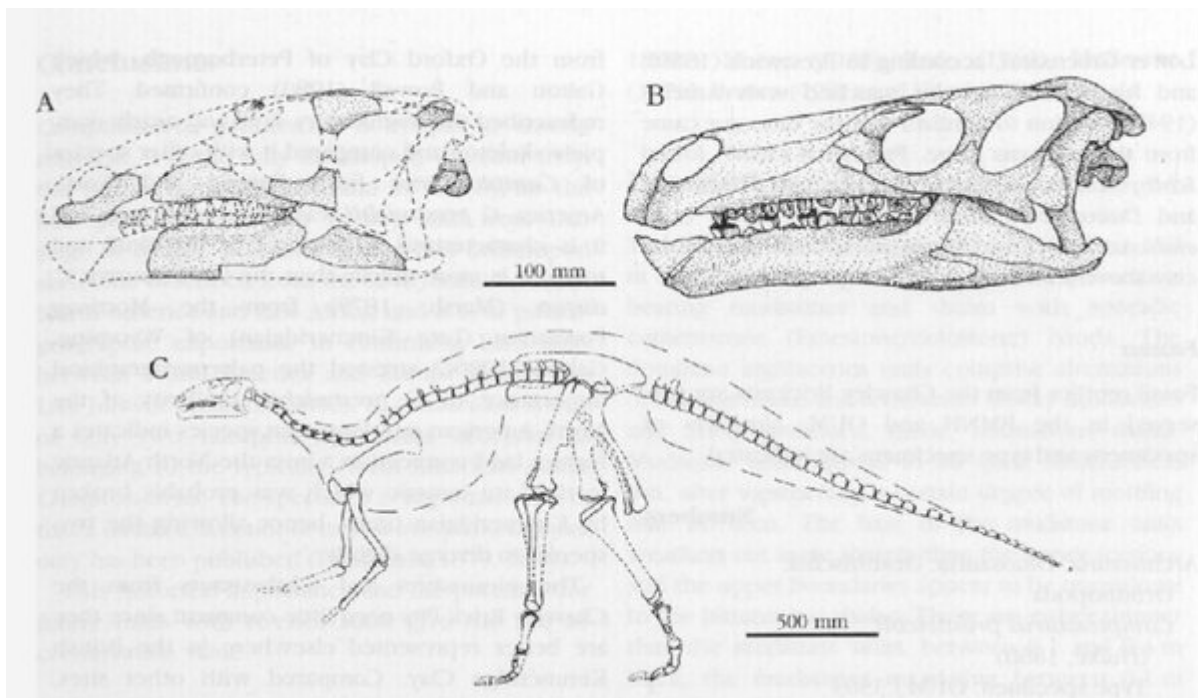
The plesiosaurs, pliosaurs and ichthyosaurs from Chawley are typical of other British Kimmeridgian Clay sites. The dinosaur *Camptosaurus* has been recorded elsewhere in the European Kimmeridgian only from Portugal (a femur, Galton, 198(k). Dinosaur bones have been recorded elsewhere in the British Kimmeridge Clay from Kimmeridge Bay (*Pelorosaurus*); Smallmouth Sands, Dorset (*Pelorasaurus*, *Dacentrurus*); Gillingham, Dorset (*Dacentrurus*); Foxhangers, Wiltshire (?*Megalosaurus*); Rodbourne, Wiltshire (ankylosaur); Wootton-Basset, Wiltshire (*Dacentrurus*); Swindon, Wiltshire (*Bothriospondylus*, *Dacentrurus*), Cottenham, Cambridgeshire (*Pelorosaurus*) and Ely, Cambridgeshire (*Pelorosaurus*, *Dacentrurus*), all but the first two and the last are lost as collecting sites.

### Conclusions

*Camptosaurus prestwichii* is unique in several respects. It is the only ornithopod dinosaur from the British Kimmeridgian, and in fact by far the best preserved dinosaur of any kind from that stage in Britain. It is one of only two ornithopod skeletons described from the Late Jurassic outside North America and East Africa, and it is of palaeogeographic importance in confirming land links between North America and Europe during the Late Jurassic (Galton, 1980c). *C. prestwichii* is one of only two European specimens accepted as belonging to the typically North American genus *Camptosaurus*. The specimen is important also in that a detailed account of its discovery and taphonomy has been published (Prestwich, 1879, 1880).

This historical importance and the potential for future finds with re-excavation give the site its conservation value.

### References



(Figure 7.3) The ornithopod dinosaur *Camptosaurus*. (A) Partial restoration of the skull of *C. prestwichii* (Hulke, 1880) showing the known fragments of bone; (B) restored skull of the North American *C. dispar* Marsh, 1879; (C) restoration of the skeleton of *C. prestwichii* (Hulke, 1880): the bones present include parts of the skull, much of the vertebral column, forelimbs and hindlimbs. After Galton and Powell (1980).