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# Durdham Down, Avon

[ST 572 747]

## Highlights

Durdham Down fissure was the first of the Late Triassic Bristol fissures to be identified. It was the source of the material of the prosauropod dinosaur, *Thecodontosaurus antiquus*, the most primitive member of its group.

## Introduction

The fissure at Durdham Down, located in a quarry close to Quarry Steps, is important in being the site of the first discovery of a reptile-bearing fissure in the Bristol region. It was from here that the remains of the prosauropod dinosaur *Thecodontosaurus*, unique to the district around the Severn Estuary, were first described, and the remains of two other prosauropods and a phytosaur recognized. The site also produced a low-diversity fish fauna, represented by spines, scales and teeth, as well as an *Echinus* spine and reworked Carboniferous fossils (Moore, 1881). The fissure cuts through Carboniferous Limestone and was regarded as a true fissure by Tarlo (1959a) and Halstead and Nicoll (1971), in contrast to Robinson (1957a), who viewed the deposit as an infilled depression in the land surface. Although the quarry at Quarry Steps is largely built over today, fissures can be seen on the limestone faces [ST 572 747]. Careful excavation of the site should produce more finds of *Thecodontosaurus* and establish a detailed stratigraphy for the fissure(s) and the palaeoenvironmental context of the fossils.

The first mentions of the find at Durdham Down seem to be Anon. (1834, 1835). Riley and Stutchbury (1840) described three dinosaurs, of which only two, *Palaeosaurus cylindrodon* and *P. platyodon*, were named as species, *Thecodontosaurus* being referred to only generically. Morris (1843) gave the specific name *T. antiquus*. Seeley (1895) re-examined the material, identifying two, and not three, species of dinosaur, *Thecodontosaurus antiquus* and *Palaeosaurus platyodon*. Huene (1908b) renamed the larger dinosaur *Thecodontosaurus cylindrodon*.

Huene (1902, pp. 62–3) established a new genus and species of phytosaur, *Rileya bristolensis* for a humerus and two vertebrae from Durdham Down. Huene (1908b, p. 240; 1908e) also reclassified the tooth *Palaeosaurus platyodon* as a phytosaur, allied it with the postcranial remains as the species *Rileya platyodon*, and assigned further teeth and postcranial bones to this form.

Halstead and Nicoll (1971) mention a small jaw of the sphenodontid *Clevosaurus*, which has been re-identified as *Diphydontosaurus avonis*, known also from Tytherington and Slickstones (Fraser and Walkden, 1983; Whiteside, 1986), and the articulated skeleton figured (Halstead and Nicoll, 1971, pl. 23B) as a lizard may also belong to this species.

## Description

The site of the *Thecodontosaurus* deposit is not known for certain. Pertinent information can be found in the papers of Etheridge (1870), Moore (1881) and Huene (1908a). Etheridge shows two drawings (his figs. 4 and 5) which show the reptile deposit at about 320 ft above mean sea level. Moore (1881, p. 72) mentions specifically a place known as The Quarry and The Quarry Steps' and states 'Looking from it [the platform of Quarry Steps], along the Down escarpment to the west, the eye takes in Bellevue Terrace [Belgrave Terrace], on the edge of the Down; and it was between these houses and the quarry, a distance of probably 200 yards, along the same face of limestone... that the... *Thecodontosaurian* remains were found... Unfortunately the precise spot is unknown... and built over.' Huene (1908e, 19081) seemingly misunderstands Moore, naming the site of discovery as Avenue Quarry at the end of Avenue Road, but Moore mentioned this quarry as a location 680 yards away from Quarry Steps and terminating a transect of workings which produced fissures of different ages.

## Fauna

## Archosauria: Crurotarsi: ?Phytosauria

*Rileya platyodon* (Riley and Stutchbury, 1840) Type tooth: BRSMG. Other putative remains: BRSMG, BMNH, YPM

## Archosauria: Dinosauria: Saurischia: Sauropodomorpha

*Thecodontosaurus antiquus* Morris, 1843 Type jaw and other cranial and postcranial material (BRSMG, BMNH, BGS(GSM), YPM)

## Interpretation

Moore (1881) regarded the deposit as of 'Rhaetic' age on the basis of a reptile vertebra from Vall'sVale, but later (according to H.H. Winwood) thought it to be 'Upper Keuper' after finding teeth of *Thecodontosaurus* at Ruishton near Somerset. Etheridge (1870) thought the deposit was equivalent to the German Lettenkohle (Ladinian). Conditions at the time of deposition of the Durdham Down fissure system and the dating of the Tytherington *Clevosaurus* and *Diphydontosaurus* as Rhaetian suggests that the Durdham Down fissure could also be Rhaetian, and the presence of unrolled fish teeth, implying a high water-table, could appear to add support to this notion. Halstead and Nicoll (1971) mention that the matrix is virtually identical to the breccia from the Gliny sea cave; this also implies a marine influence, hence suggesting a Rhaetian age. Moore (1881) describes the fissures very near that of Durdham Down with Rhaetian and Lower Jurassic (Lias) fossils.

On the other hand, *Thecodontosaurus* (Figure 4.24)C is a basal prosauropod in cladistic terms (Gauthier, 1986; Galton, 1990), with relatives from North America and elsewhere that occur in Late Carnian and Norian deposits.

*Thecodontosaurus* is known also from fissures in Slickstones, Tytherington, and Pant-y-ffynon quarries, and these are dated, on evidence of their reptile faunas, with a range of Late Carnian to Rhaetian ages, and Pant-y-ffynon even as Late Triassic to Early Jurassic (Kermack, 1984). If *Rileya* is a phytosaur, this would limit the age to Late Triassic only.

*Rileya platyodon* is an enigmatic form, being regarded by some as a phytosaur and by others as an aetosaur (Westphal, 1976, p. 116). The paucity of the original material (a tooth), and the later assignment of postcranial material to the same species (Huene, 1902; 1908b, p. 240; 1908e) has not helped matters. Restudy of the material is necessary.

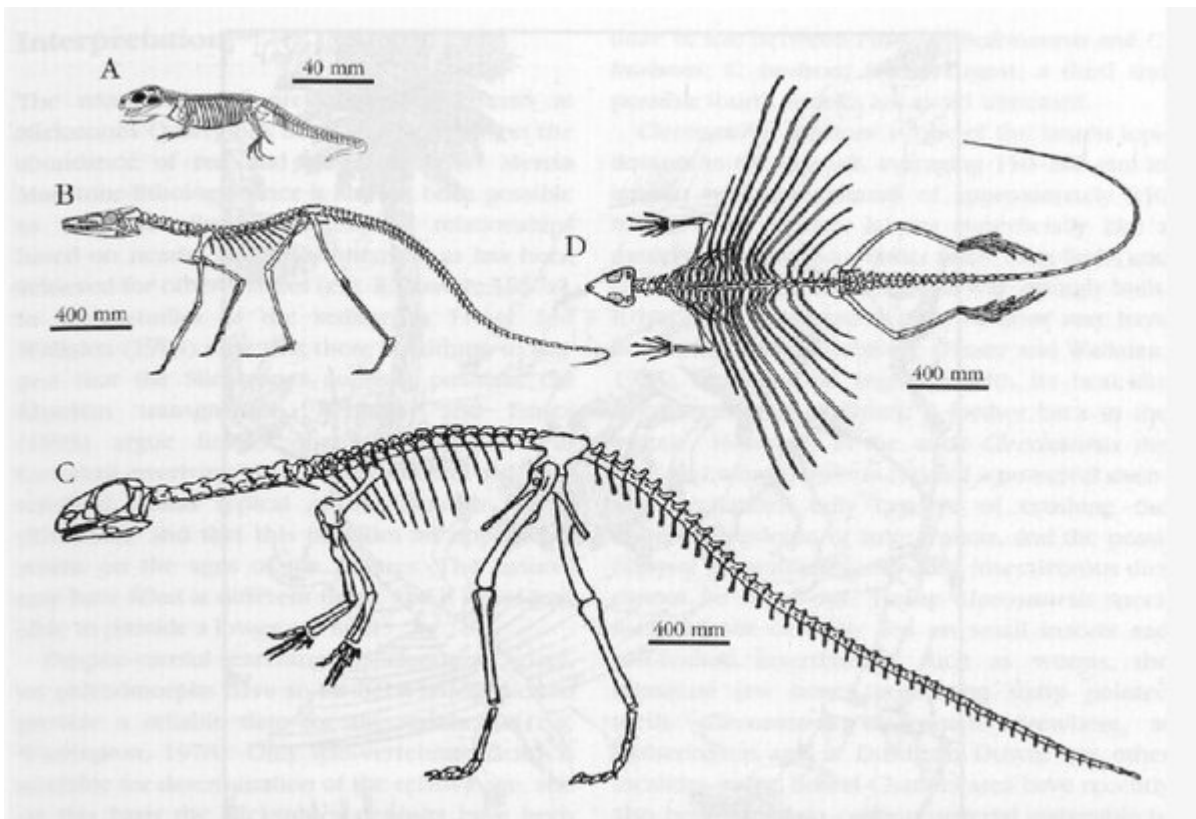
The *Thecodontosaurus* bones from Durdham Down show similar size ranges to those from Tytherington, and it would appear that *T. cylindrodon* are adult *T. antiquus*. The new remains of *Thecodontosaurus* sp. from Pant-y-ffynon (Kermack, 1984) may belong to juvenile *T. antiquus*, based on their smaller size and on the incomplete ossification of some bones. The systematic position of *Thecodontosaurus* has been debated recently. Galton and Cluver (1976) referred it to the Anchisauridae, but cladistic analyses (Gauthier, 1986; Galton, 1990), showed that it was a basal sauropodomorph taxon, and it is assigned to its own family, Thecodontosauridae. Galton (1990) also includes *Azendohsaurus* from the Late Carnian Argana Formation of Morocco in this family, but this is based on very limited dental remains and offers little evidence for comparison. The recent analyses of the relationships of *Thecodontosaurus* have been based largely on the ?juvenile Pant-y-ffynon material (Kermack, 1984), and it has yet to be demonstrated that this is the same as the type *T. antiquus* from Durdham Down.

## Conclusions

Durdham Down is the type locality of *Thecodontosaurus antiquus* and *T. cylindrodon* (if it is considered a separate species) and of the ?phytosaur *Rileya platyodon*. The only cranial material of *T. antiquus* comes from this site (an occiput held in the YPM). *Thecodontosaurus* is an important basal sauropodomorph dinosaur, seemingly unique to the British fissures.

The historical importance of the fossil finds from this site and its limited potential for re-excavation together give it significant conservation value.

## [References](#)



(Figure 4.24) Typical reptiles from the Late Triassic fissures in South Wales and around Bristol. Skeletal reconstructions of (A) the sphenodontid *Clevosaurus*; (B) the crocodylomorph *Saltoposuchus*; (C) the prosauropod dinosaur *Thecodontosaurus*; and, (D) the gliding diapsid *Kuehneosaurus*. After various sources; in Fraser (1994).