
Tremeirchion (Cae Gwyn and Ffynnon Beuno) Caves

Highlights

Bone and human Palaeolithic implement-bearing deposits are found here beneath glacial sediments laid down during the last major Pleistocene cold phase in the Late Devensian. The 'cold' mammal fauna from the cave has been dated to about 18,000 BP, immediately before this glacial episode.

Introduction

Tremeirchion comprises the caves of Cae Gwyn and Ffynnon Beuno. These have yielded rich mammalian faunas including the remains of mammoth, woolly rhinoceros, spotted hyaena, lion and reindeer, and they have provided some of the earliest clear evidence for the association of manmade stone tools with the remains of extinct mammals. The site is particularly significant in providing evidence that the last glaciation of the Vale of Clwyd took place during the Late Devensian. The site was first investigated by Hicks (1884, 1886a, 1887, 1888), and the evidence from these early excavations has been reviewed by Garrod (1926), Boswell (1932). Neaverson (1942), Embleton (1970) and Synge (1970). A radiocarbon date obtained from faunal material at the site (Rowlands 1971) has been discussed within the wider context of the Pleistocene history of North Wales (Oakley 1971; Bowen 1973a, 1973b, 1974; Peake *et al.* 1973; Campbell 1977; Green 1984).

Description

Ffynnon Beuno and Cae Gwyn Caves [SJ 085 724] are situated close together at the base of the Carboniferous Limestone escarpment on the eastern side of the Vale of Clwyd. Cae Gwyn Cave consists of two entrances connected by a narrow single passage. One entrance faces south at c. 19m above the floor of the Ffynnon Beuno Valley. The other entrance faces west and was completely buried prior to its excavation (Campbell 1977). Ffynnon Beuno Cave, which lies at a slightly lower level, comprises three galleries and has two openings to the south (Garrod 1926).

The sequence found at the southern entrance to Cae Gwyn and inside the cave was as follows (Hicks 1886a):

5 Reddish recent loam (0.60m)

4 Laminated clay with thin ferruginous and stalagmitic lenses (0.20m)

3 Reddish sandy clay with pebbles of felsite, granite, gneiss, quartz, quartzite, sandstone and limestone. with an early Upper Palaeolithic tool — partially disturbed (0.60m)

2 Unfossiliferous gravel mostly of local rock types (0.30m)

1 Carboniferous Limestone bedrock

Following a partial collapse in a field above the cave, a second section and entrance to the cave was exposed, showing the following sequence (Hicks 1886a; Garrod 1926; Campbell 1977):

12 Surface soil (0.15m)

11 Brown till (0.85m)

10 Yellow clay with silt and sand (0.18m)

9 Stiff red till (0.70m)

- 8 Sand (0.05m)
- 7 Purple clay (0.25m)
- 6 Sand with boulders (0.50m)
- 5 Gravelly sand with boulders and lenses of purple clay (0.65m)
- 4 Sandy gravel (0.60m)
- 3 Sand lenses (0.40m)
- 2 Red laminated clay and 'bone earth' with angular limestone fragments and a few boulders (0.80m)
- 1 Carboniferous Limestone bedrock

From Ffynnon Beuno Cave, the following sequence was recognised (Hicks 1886a; Garrod 1926):

- 6 Surface soil
- 5 Cemented breccia with charcoal
- 4 Red cave earth with bones and implements
- 3 Yellow band (ancient floor?)
- 2 Gravel with angular blocks of limestone
- 1 Carboniferous Limestone bedrock?

Cae Gwyn and Ffynnon Beuno Caves were first excavated by Hicks and Luxmoore between 1883–1887 (Hicks 1884, 1886a, 1887, 1888). Both contained a considerable mammalian fauna (Hicks 1886a; Garrod 1926):

Lion *Panthera leo*

Wild cat *Felis sylvestris*

Spotted hyaena *Crocuta crocuta*

Wolf *Canis lupus*

Fox *Vulpes vulpes*

Bear *Ursus* sp.

Badger *Meles meles*

Wild boar *Sus scrofa*

Bovine *Bos*?

Giant deer *Megaceros giganteus*

Red deer *Cervus elaphus*

Roe deer *Capreolus capreolus*

Reindeer *Rangifer tarandus*

Horse *Equus* sp.

Woolly rhinoceros *Coelodonta antiquitatis*

Mammoth *Mammuthus primigenius*

Interpretation

Hicks considered that this fauna showed that the cave had been a hyaena den during the Pleistocene, and he noted that amongst the remains, the teeth of horse, rhinoceros, hyaena and reindeer were most numerous. Both caves also yielded human artefacts. He suggested that the evidence furnished from the bones and artefacts showed that Man had been contemporaneous with the mammals. His most significant claim, however, was that the caves had been sealed by undisturbed till. In places, the till contained marine shell fragments and erratics, indicative of a northern or Irish Sea origin. The sealing of the caves was considered by Hicks to demonstrate that the bones and artefacts were of 'pre-glacial' age. This suggestion was strongly refuted, especially by Hughes (1887) who argued that the glacial deposits were not *in situ*. Hughes was convinced that the Tremeirchion Cave deposits were 'post-glacial' in age. In the discussion (Hughes 1887), debate occurred concerning the antiquity of Man in relationship to the deposits, and it was noted that "the interest attaching to the cave depends on the light which it throws on the relation of Palaeolithic Man to the glacial period". Hicks' view that the caves were sealed by till and that the fossiliferous remains predated glaciation of the local area, however, prevailed (Garrod 1926; Boswell 1932; McBurney 1965; Embleton 1970; Synge 1970).

Garrod (1926) reviewed the earlier work at Tremeirchion and considered that the artefacts from the caves were of two principal types; Middle Aurignacian and Proto-Solutrean. Indeed, on the basis that the Irish Sea till at Tremeirchion postdated the Aurignacian tools, Charlesworth (1929) established a Magdalenian (Creswellian–Cheddarian) age for the 'Newer Drift' (Devensian) glaciation of Wales and adjoining regions.

Campbell (1977), however, observed that Garrod's sub-division of the artefacts was probably arbitrary, and assigned the finds more broadly to the Upper Palaeolithic. Neaverson (1942) also reviewed the early excavations at the site, providing useful details of the museums and establishments to which the finds had been dispersed.

Rowlands (1971) submitted a mammoth carpal collected by Hicks for radiocarbon dating. A date of 18,000 \pm 1,400 – 1,200 BP was obtained on the collagen, and this was used by Rowlands to demonstrate that the last glaciation of the area was Late Devensian in age, after c. 18,000 BP. He considered the date too young to provide an age for the Palaeolithic industry at the site. Oakley (1971), however, pointed out that although the dates of similar industries in France were in the region of 10,000 years older, a radiocarbon date on human bones at Paviland Cave in Gower, South Wales, showed a very close correspondence to Rowlands' Tremeirchion date. This indicated that human occupation may have occurred close to the peak of the Late Devensian glaciation.

The radiocarbon date from Tremeirchion demonstrates that the glacial deposits of the local area post-date c. 18,000 BP and are, therefore, Late Devensian in age. The exact significance of the date is, however, less clear: in discussing the evidence from Tremeirchion, Bowen (1973a, 1973b, 1974) suggested two main possibilities for interpreting the radiocarbon date. Either, the date indicates that the main thrust of Late Devensian Irish Sea ice in the region post-dated c. 18,000 BP, and a close similarity was noted between the Tremeirchion date and a radiocarbon date from Dimlington in Holderness (Penny *et al.*, 1969) or, the date provides a maximum age for a readvance of the Late Devensian ice-sheet, rather than the main pulse of the glaciation. Although this remains unresolved, the Tremeirchion date shows that the fauna and human industries pre-date the last, Late Devensian, glaciation of the area (Peake *et al.* 1973; Campbell 1977; Green 1984). Historically, the site also provides some of the earliest evidence for the association of man-made stone tools with the remains of Pleistocene mammals. Although contemporary assessment of the mammal fauna from Tremeirchion is not available, it represents a generally 'cold' assemblage, and would appear to date, at least in part, from immediately before the Late Devensian glaciation.

Tremeirchion Caves provide an important record of Late Pleistocene conditions in North Wales, with a unique combination of faunal, archaeological, sedimentary and radiocarbon dating evidence. They provide a reference point for Late Pleistocene/Upper Palaeolithic tools which were apparently overlain by till from the last glaciation. The radiocarbon date from the site has shown that the glacial deposits post-date c. 18,000 BP and are, therefore, Late Devensian in age. Radiocarbon dates from Tremeirchion and Dirnlington indicate that a substantial area of Britain was covered by glacier ice sometime after 18,000 BP.

Conclusions

The Tremeirchion Caves are among the most important archaeological sites in Europe. Because they contain a rich sequence of archaeological remains which are dated broadly to the period between 20,000 and 40,000 years ago, and because these were sealed inside the cave by glacial deposits of the last ice-sheet, they provide an important limiting date for that glaciation. A radiocarbon date of 18,000 years ago from a mammoth bone is one of only a few age determinations from this time in the British Isles.

[References](#)