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# Coundmoor Brook, Harnage

[SJ 558 037]

## Introduction

Coundmoor Brook (once known as Cound Brook) is the historical type locality for the Harnagian Substage of the Burrellian Stage. It is one of the few sites in the type Caradoc area to yield sufficiently diagnostic graptolites to allow correlation between the graptolite and shelly zonal schemes. It is also the type locality for the stratigraphically important trilobite species '*Broeggerolithus harnagensis*' (Bancroft).

In their detailed subdivision of Murchison's (1839) 'Caradoc Sandstone', Salter and Aveline (1854) termed the lowest units the 'Shales of Harnage and Shineton', here overlain by the Hoar Edge Grits. Callaway (1877) separated the Shineton Shales of Tremadoc age from the Harnage Shales and placed the latter in their correct position above the Hoar Edge Grits (see the Sheinton Brook and Coundmoor Brook, Evenwood site reports in Chapter 7).

Bancroft (1929a) introduced the stage term 'Harnagian', which he subdivided into trilobite biozones, citing Coundmoor Brook as containing the typical representatives for the lower zones. Subsequently (1933) he refined the trilobite zonation and in 1945 (p. 182) gave the Harnage Shales in Coundmoor Brook as the type locality for the stage, defining its base on the first appearance of the trinucleid trilobites *Reuscholithus* and *Salterolithus*. Dean (1958, p. 201) subtly amended this definition to state that the boundary is 'marked by the appearance of the trilobite genera *Reuscholithus* and/or *Salterolithus*'. He subsequently (1960) reassigned some of the early Harnagian material of *Salterolithus* to *Broeggerolithus*. In their revision of the Caradoc Series, Fortey *et al.* (1995, p. 22) suggested that probably the best site for a basal stratotype for the Harnagian (revised as the basal substage of their Burrellian Stage) lies within the Hoar Edge Grit Formation (Figure 10.10) in Cwms Brook, 12 km to the southwest of Coundmoor Brook, at the southern end of the northern inlier of the historical type Caradoc. None the less, Coundmoor Brook remains an important site, both historically and for its fossil content.

The geology of the northern end of the historical type Caradoc area was described by Pocock *et al.* (1938), who included a map of the Harnage–Coundmoor Fault Complex (Pocock *et al.*, 1938, fig. 28). Within this, the Uriconian Volcanic Group, Tremadoc Shineton Shales, Hoar Edge Formation and Harnage Shales are extensively faulted and locally folded and lie in faulted western contact with Upper Carboniferous and Triassic red beds (Figure 10.13). Dean (1958) outlined the historical development of terminology applied to the Caradoc stratigraphy, which he revised, and in so doing rebutted the assertion of Pocock *et al.* (1938) that there was a considerable break between the Hoar Edge and Harnage formations. He subsequently included material from Coundmoor Brook in his descriptions of the Caradoc trilobites (Dean, 1960, 1961b, 1963a, b).

## Description

Although the contact is not seen, the uppermost part of the Shineton Shales, the Arenaceous Beds, at the western end of the site, are overlain unconformably by the SE-dipping Hoar Edge Formation (Figure 10.13). Coarse sandstones, shales and impure limestones of the latter formation also crop out in the old quarry on the south bank of the brook. The Hoar Edge Formation is repeated by faulting some 250 m along the brook. Pocock *et al.* (1938, fig. 28) also show the formation, along with a sliver of Shineton Shale, at the very northern-most end of the site just south of the faulted contact with the Upper Carboniferous Keele Formation. The remainder of the outcrops in the section are of the micaceous grey silty mudstones, shales and rare thin sandstones of the Harnage Shale Formation. In the northern part of the section, these beds are folded into a SW-plunging syncline that is repeated by a fault sub-parallel to its axial plane.

## Interpretation

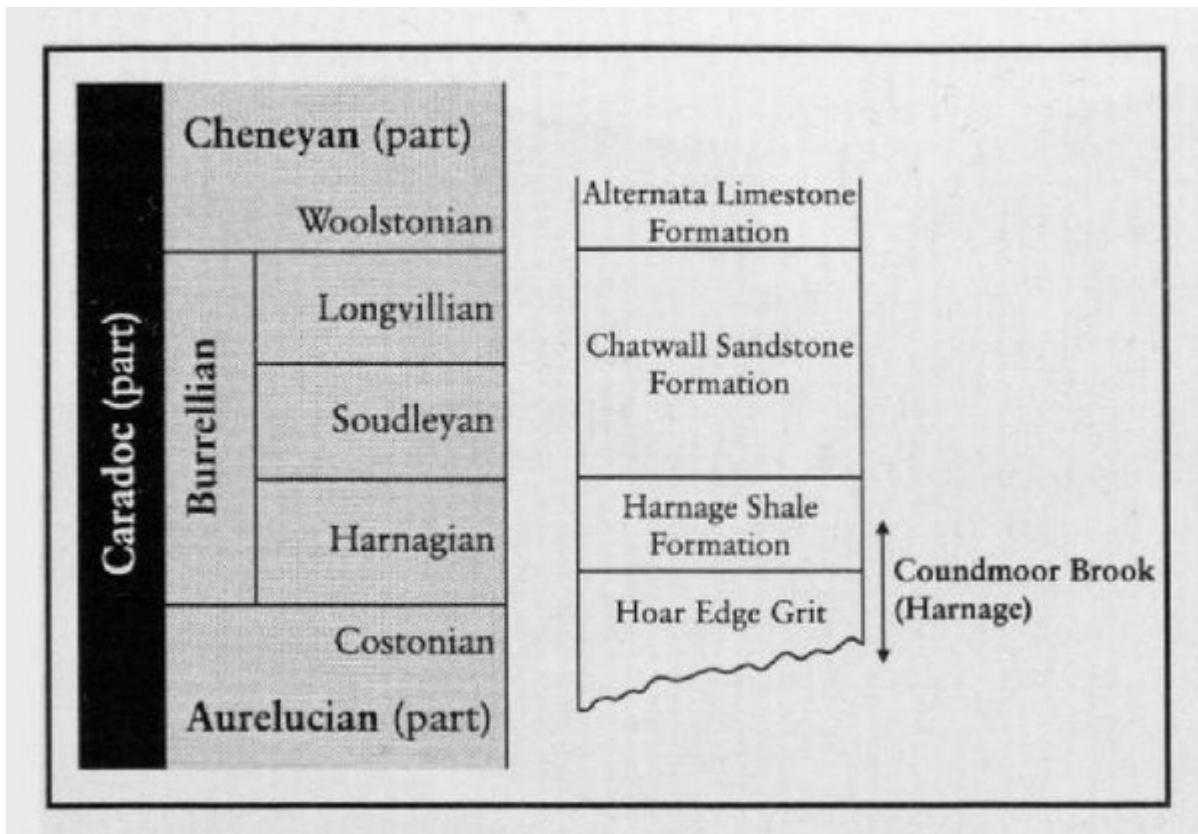
The Hoar Edge Formation in the northern inlier of the type Caradoc was divided by Dean (1958, essentially following Bancroft, 1928b, 1929a, 1933) into the following: (1) sandy shales and limestones with *Harknessella subplicata*, overlain by (2) sandy limestones with *H. subquadrata*, followed by (3) Rhynchonella Grits. Dean correlated the first two of these respectively with the *Harknessella* Beds and *Costonia ultima* Beds at Coston (see the Coston Farm site report), at the southern end of the type Caradoc area. Dean (in Whittington *et al.*, 1984, p. 25) also summarized records of graptolites of the *Nemagraptus gracilis* Zone in the *Harknessella subplicata* Beds. Although the trinucleid trilobite *Costonia* is not yet known from Coundmoor Brook, the *H. subquadrata* Beds at other localities contain *C. elegans*, not *C. ultima*, which occurs in their likely correlatives in the Coston area. *C. ultima* also occurs in the upper part of the Spy Wood Formation in the Shelve area (see the Spywood Dingle site report), immediately above the highest *Nemagraptus gracilis* and close to the base of the *multidens* graptolite zone. This occurrence, together with that of graptolites of the latter zone (including *Diplograptus foliaceus*) in the Harnage Shales at Coundmoor Brook (Dean, 1958; Hughes, 1989), suggests that the base of the *multidens* Zone lies very close to the Costonian–Harnagian boundary. Moreover, the occurrence in the Rhynchonella Grits at nearby Stevenshill of trilobites ascribed to *Salterolithus* (Dean, 1958, p. 198) indicates that they are Harnagian in age and that the Hoar Edge Formation thus extends, at least locally, up into the Harnagian.

The lowest part of the Harnage Shales in Coundmoor Brook has yielded abundant specimens of '*Broeggerolithus barnagensis*', including the type material; this very variable species occurs in abundance, and a detailed statistical analysis being undertaken by Ms A. Bowdler-Hicks of Glasgow University promises to form a starting point for understanding the subsequent evolution of the stratigraphically important British Caradoc cryptolithines. The range of growth stages of *Reuscholithus reuschi* known from Coundmoor Brook enabled Bancroft (1929a) and Dean (1960) to describe aspects of its ontogenetic history. With the exception of ostracods, described by Jones (1986–1987), and the type specimen of *Platanaster ordovicus* Spencer, redescribed by Blake (1994), other elements of the diverse lower Harnagian fauna (Pocock *et al.*, 1938, appendix 4) are in need of modern description. Geographical variation in composition of the trilobite fauna of the Harnage Shales and the laterally equivalent Smeathen Wood Formation in the southern Caradoc area suggests that subtle but significant ecological controls affected the distribution of species in the area. The same also applies to the underlying Costonian faunas (Dean, in Whittington *et al.*, 1984, p. 26).

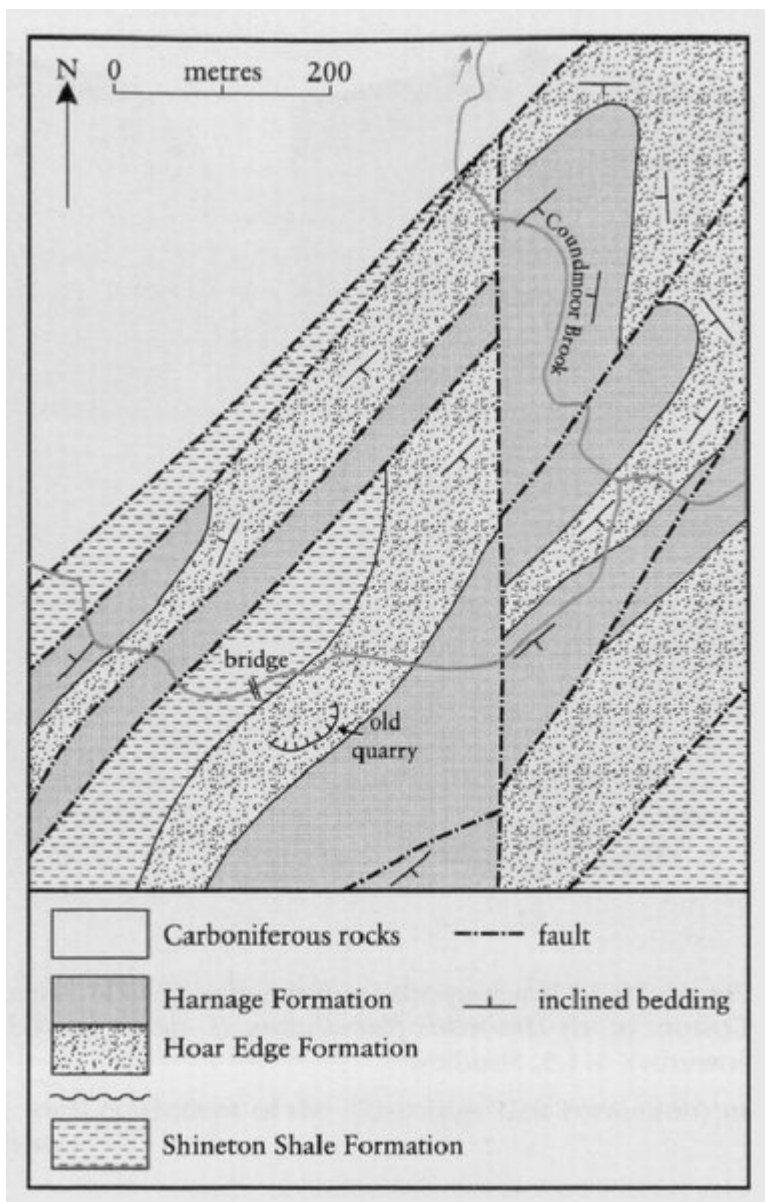
## Conclusions

Coundmoor Brook is the historical type locality for the division of the Caradoc Series now termed the 'Harnagian Substage' of the Burrellian Stage. It is one of few sites in the type Caradoc to yield both benthic shelly organisms and planktonic graptolites. The latter allow correlation between the local shelly zonal scheme and the international graptolitic scheme. It is also the type locality for the stratigraphically and evolutionarily significant Harnagian trilobite species '*Broeggerolithus barnagensis*'.

## [References](#)



(Figure 10.10) Stratigraphical succession for part of the northern Caradoc area, showing the stratigraphical range of the Coundmoor Brook site near Harnage.



(Figure 10.13) Geological map of the area around Coundmoor Brook, south-west of Harnage, after Pocock et al. (1938, fig. 28). For location, see (Figure 7.10).