
Chapter 5 Cambrian rocks of England

A.W.A. Rushton

Introduction

In England, Cambrian rocks mainly occur in association with Precambrian volcanic rocks in small inliers in the Welsh Borderlands and the English Midlands.

The Welsh Borderland

Inliers of Cambrian and Precambrian rocks are brought up along the Church Stretton Lineament and the Malvern Line (Brasier *et al.*, 1992b), the principal outcrops being in the Comley and Wrekin areas of south Shropshire and the Malvern Hills of Worcestershire and Herefordshire. In these areas the successions are mainly of quartzitic and glauconitic sandstones of the Comley and St David's series, overlain by thin black mudstones of the Merioneth, and in all areas there are significant breaks in deposition. The sediments accumulated in shallow water in areas close to active fault-complexes. Apart from the basal strata, most of the succession in the Comley and Wrekin areas is very badly exposed, and practically all the details of the stratigraphy had to be elucidated by trenching (Cobbold, 1927; Cobbold and Pocock, 1934). The accepted succession (summarized by Rushton, 1974) is given in outline in (Figure 4.1). In the Malvern Hills the Cambrian is better exposed but the sequence is badly disrupted by faulting. Groom (1902) assembled the general succession, also shown in (Figure 4.1).

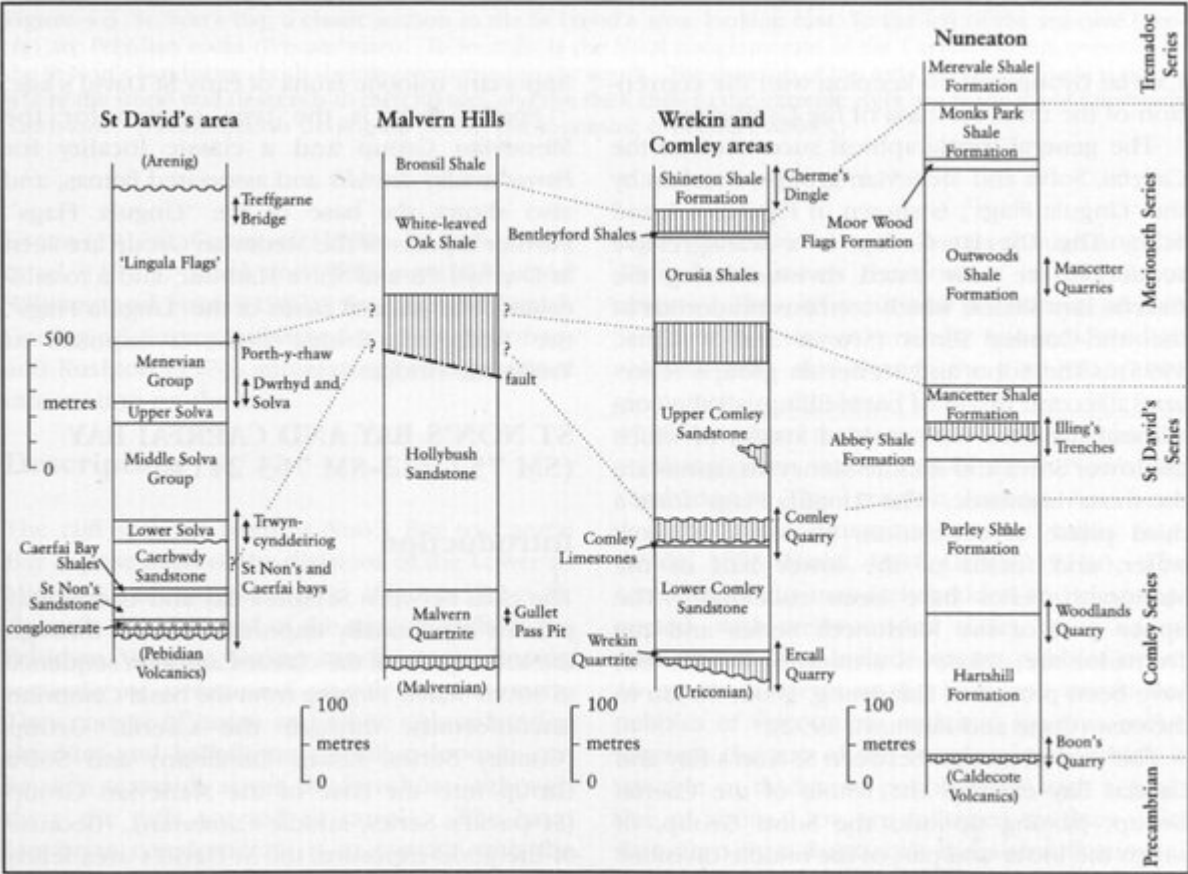
The Wrekin Quartzite and basal lower Comley Sandstone are exposed in the Ercall Quarry, where both radiometric age-dating and bio-stratigraphy contribute to the relatively good dating of the early Cambrian transgression. The approximately correlative Malvern Quartzite is exposed in the Gullet Pass Pit, where it is fossiliferous. The interesting contacts between the top of the lower Comley Sandstone, the Comley Limestones and the base of the upper Comley Sandstone are present in the Comley Quarry site and the associated 'Excavation No. 2', but none of the overlying divisions is well-enough exposed to have been selected for the GCR site series.

English Midlands

In contrast to the Welsh Borderland, the Cambrian of the English Midlands has substantial sandstone formations only in the lower parts of the Lower Cambrian, as seen in the Nuneaton Inlier of Warwickshire and in the Charnwood Forest area. The Lickey Quartzite, south-west of Birmingham, was formerly referred to the Cambrian but is now regarded as Ordovician (Old *et al.*, 1991). At Nuneaton the sandstones of the Hartshill Formation are overlain by thick mudstone divisions of the Stockingford Shale Group, which range in age from early to late Cambrian and accumulated in a relatively stable intra-cratonic shelf setting. There may be stratigraphical breaks in the Hartshill Formation, but in the Stockingford Shale such breaks are confined to a single trilobite zone. These Cambrian divisions are partly exposed in the Nuneaton area and have been encountered widely in boreholes. The general succession is described by Brasier *et al.* (1978), Taylor and Rushton (1972) and Bridge *et al.* (1998), as shown in (Figure 4.1).

There are few good natural exposures, but the Hartshill Formation was studied when well-exposed in several working quarries (Brasier *et al.*, 1978). The base of the succession is seen at Boon's Quarry, and the upper part, from the Jee's Member to the base of the overlying Purley Shale Formation, is represented at Woodlands Quarry. The overlying formations are in general very badly exposed, and all the overlying divisions are best known from borehole cores (Taylor and Rushton, 1972), though the richly fossiliferous Abbey Shales are present at Illing's Trenches. None the less, where lamprophyric intrusions have been quarried, some parts of the Outwoods Shales Formation are available for study, and representative exposures that exemplify the thickest division of the Stockingford Shale Group are exposed at the Mancetter Quarries, which are described as a potential GCR site. The chapter ends with brief notes on two Lower Cambrian sites in the Brand Group of Charnwood Forest; the importance of these sites in Cambrian stratigraphy has only recently emerged (Bland and Goldring, 1995), and they are described fully in the companion volume on the Precambrian

References



(Figure 4.1) Correlation of the principal Cambrian sequences in South Wales and England, modified from Rushton (1974, figs 2, 3). The stratigraphical ranges of the GCR sites are indicated. For the location of Treffgarne Bridge, see (Figure 8.1).