Cold Ashton

Judy Hible

History

Cold Ashton is ancient in origin and is mentioned in the Domesday Book; it also has two round barrows known as Robin Hood's butts. The village church, Holy Trinity, has a 14th-century tower and the rest of the church was rebuilt in the 16th century by Thomas Key, its rector.

In 1643 during the English Civil War Sir Bevil Grenville was injured at the Battle of Lansdowne and carried to the rectory at Cold Ashton where he died. There is a monument to him across the valley.

Geology - Overview

In landscape terms much of South Gloucestershire is anomalous in that the outcrops of the older and harder Paleozoic rocks do not form uplands but are characterised by low undulating terrain. This is because much of the area formed part of an ancient erosion surface which was reduced to a low relief before the deposition of the Mesozoic strata. It is therefore the younger rocks, most notably limestones of Jurassic age, which form the highest land of South Gloucestershire, that being the Cotswold escarpment to the east.

Geology - Historical

Mentioned by William Smith in his Memoirs: February 6th Cirencester to Bath, 1803

Mr Smith is commenting on the association of the two layers of oolite with the intervening Fullers earth and tracing them south from Cirencester down to Tormarton with an opening through the upper layer giving rise to the valley south of Tormarton.

'*Cold Ashton, on the opposite side of this vale, plainly points out the line of its corresponding outcrop, which runs round the point of the hill very near the cross ways on the road from Marshfield to Bristol, then returns by the line of the cold wet lands on the south side of the ridge between Cold Ashton and Marshfield. Insulated parts of the upper rock very evidently appear upon the east end of Huntrick's Hill, Charmy Down and Little Solsbury, and to the left run out in another broader part, which includes Toll Down, makes another longer return towards Littleton, and leaves a narrow opening between this line and its opposite outcrop, which stretches from Littleton through Littleton Wood, and crossing the road from the turnpike, runs out a little way to the right, and returns again to another vale between the parting of the roads and Cold Ashton. The main line before described from Cold Ashton to Marshfield continues in a connected line, which is deeply indented by the many ramifications of the Catherine Stream until it joins the high land at Culeron Down.'*

Effectively, the clayey strata of Fuller's earth is the source of the streams on the western side of the Cotswold Hills and also here (St. Catherine's Valley) on their southern edge.

Transactions of the Geological Society of London 1835, Part II, XIV On the Oolitic District of Bath. By William Lonsdale

Fullers' Earth

Mr Lonsdale places the Fuller's earth as the top part of the Inferior Oolite rather than the bottom part of the Great Oolite and divides it into.

1. Blue and yellow clay, with nodules of indurated marl. Contains calcium carbonate, with masses of 'cone in cone' calcareous spar.
2. Bad fuller's earth, sandy with shell fragments (i.e. not good for fulling)
3. Good fuller's earth, either blue or brown (better quality), confined to the brow of Odd Down and the side of Midford Hill.
4. Clay with beds of bad fuller's earth, layers of nodular limestone ('Fuller's earth rock') and indurated marl. The 'fuller's earth rock' always contains immense numbers of *Terebratulae* plus *Mya angulifera* and *Isocardia concentrica*

Great Oolite

1. Upper rags

a) coarse shelly limestone, beds of Polyparia
b) Tolerably fine oolites
c) Tough, brown argillaceous limestone; cavernous weathering

2. Fine freestone
3. Lower rags – shelly limestone; sometimes very high shell content

The superior boundary of the great oolite, or that which defines its separation from the Bradford clay and forest marble, extends in an undulating line from Yatton Keynell by Giddy Hall, and the brow of the hills overhanging the Box brook to the Chippenham road, which it crosses to the westward of Pickwick; thence it follows the curvature of the hills, but keeps a little to the east of the escarpment, to Wadswick and the Devizes road, which it passes near Wormwood Farm: from this point it turns westward, and ranges along the descent which bounds Kingsdown and Farleydown on the south, and crosses the Bradford road a little above Moncton Farley : it afterwards describes a line nearly parallel with the heights on the right bank of the Avon to Bradford; and from that town it may be traced by Upper Westwood to Iford Mill and Farleigh Hungerford, where it dips beneath the forest marble.

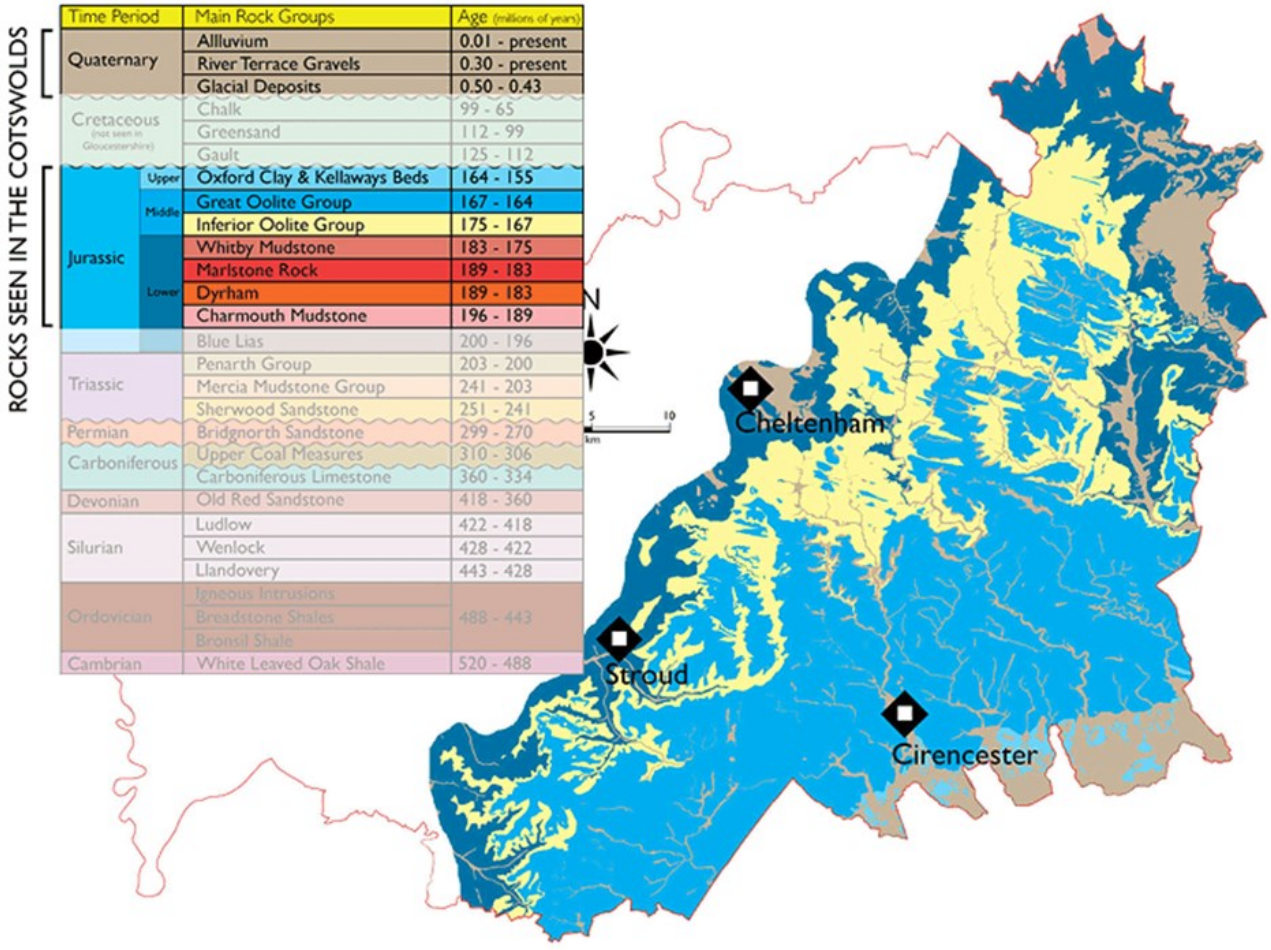
Mr Lonsdale includes a comprehensive list of all the fossils he found in the area, notably *Terebratula bullata* at Cold Ashton.

Ramsay: Geology 1878, Chapter XII Liassic and Oolitic, or Jurassic Strata

Succession: Inferior Oolite; The Fuller's Earth; the Great or Bath Oolite
The Fuller's Earth

The Fuller's earth accompanies and overlies the Inferior Oolite through the whole length of this area, excepting where locally interrupted by faults. It consists chiefly of a tenacious bluish clay, with frequent thin shelly bands of limestone, often largely charged with a small oyster, *Ostrea acuminate*, and with *Terebratulae*. In the neighbourhood and south of Bath, a strong band of limestone lies in the middle of the clay, known as the Fuller's Earth Rock.

Sequence found at Cold Ashton:



a. Top of Cold Ashton: Chalfield Oolite Formation – limestone, ooidal, 165 – 168 mya. Shallow seas.

b. Across Hydes Lane: Fuller's Earth Formation – mudstone, calcareous 165-168 mya

c. Down slope: 1. Fuller's Earth Rock Member – limestone, evaporates, shelly fauna and corals
2. Fuller's Earth Formation
3. Inferior Oolite Group : limestone 165 – 176 mya
4. Bridport Sand Formation: sandstone 176-183 , shallow seas
5. Dyrham Formation: Siltstone 183 – 190 mya , shallow seas

d. Valley bottom: Charmouth Mudstone Formation – mudstone 183 – 197 mya, shallow seas

Cotswolds Geology

The Cotswold Hills stretch for nearly 60 miles, part of an outcrop of Jurassic rocks that runs NE from the Dorset coast to the North Sea off Yorkshire. The rocks that form the Cotswold Hills are made up of three different geological stages of the Jurassic period and date from between 210-140 mya.

The steep western scarp of the Cotswolds exposes sections through Lower and Middle Jurassic rocks that dip gently eastwards towards Oxford and London. At Leckhampton Hill and Cleeve Common the thickest and most complete sections of Inferior Oolite rocks anywhere in the country are exposed, recognised by their designation as Sites of Special Scientific Interest. Further to the south-east exposures of the Great Oolite can be found in numerous quarries and cuttings

The Lower Jurassic rocks are made up of the Lias Group and the Middle Jurassic rocks consist of the Inferior Oolite Group and Great Oolite Group. Each of these groups is separated into various smaller divisions called Formations, and in the Middle Jurassic rocks, these formations are often sub-divided into Members. The different groups, formations and members are distinguished from each other according to differences in the types of rock, the types of fossils found in the rocks, and by erosion surfaces that mark breaks in deposition of the sediments.

The rocks that form the Cotswold Escarpment are almost exclusively marine, and were formed mainly in warm tropical seas, much like those around Bermuda today. Plate tectonics has transported this part of the Earth's crust northward over the last 150- 200 million years until we reached our present position.

There are two main types of sediment found in the rocks of the Cotswolds; the clastics and the carbonates. Clastics consist of particles of material eroded from rocks on land and transported by rivers, wind and form the clays, muds and sands and can have a very wide distribution over the sea floor. The carbonates are generally produced by precipitation of calcium carbonate and by accumulation chemicals from dead organisms, what we know as fossils, and form the limestones. These have a much narrower zone in which they form being restricted to shallow waters in a warm climate. The changes in the types of sediment give us a wealth of information as to the environment in which these sediments were deposited and close examination can provide a very clear picture of what the geography of the area was like at the time.

At the base of the Jurassic and making up the lower slopes of the Cotswold Escarpment are the clays, silts and sands of the Lias Group. These were deposited on the floor of quite a deep ocean, but an ocean that occasionally shallowed to allow the formation of some limestones, such as the Marlstone Rock Bed. At the top of the Lias Group there is a change in sediment type as loose sand replaces the clays and silts; in fact, in the south of the region there is more sand than clay in its upper part.

The Middle Jurassic rocks are the characteristic 'Cotswold Limestones'. The Inferior Oolite Group consists of the rocks seen in the numerous exposures along the western facing scarp of the Cotswolds. Soft, yellow, sandy limestones at the base of the Inferior Oolite give way to more solid rocks as the sequence moves upwards. The thick beds of fine grained oolitic limestones of the Birdlip Limestone Formation were widely

used as a high quality building stone. Towards the top of the Inferior Oolite the limestones become more fossiliferous and are widely referred to as ‘grits’ due to their coarser texture.

Lying above the Inferior Oolite Group is the Great Oolite Group. This consists of an extremely varied sequence of rocks that can change quite dramatically both through the sequence and geographically across the area. Important formations within the Great Oolite include the Fuller’s Earth, a thick bed of clay that contains a mineral which was used to remove grease from fleeces and contributed greatly to the success of the Cotswold wool trade in the Middle Ages. Other formations important to the area’s economy today are the White Limestone, quarried as an aggregate, the Chipping Norton Limestone, quarried as an aggregate and a building stone, and the Eyford Member, used to produce traditional Cotswold roofing 'slates'.

The Quaternary deposits of the Cotswolds comprise varied unconsolidated beds, referred to collectively as "Drift". These include glacial, fluvial and a mixed group of periglacial deposits known as "Head". These are scattered widely across the area but their heaviest concentrations occur in the Vale of Moreton and in the area around Cirencester, where they are extensively worked for their gravels.

Fossils:
Terebratula bullata in the Fullers Earth, ‘lamp shell’, Middle Jurassic, Great Oolite

Others include brachiopods, bivalves, ammonites, corals, sea-urchins.

North Wiltshire - a Geological outline

Judy Hible

To the north-west of Wiltshire, the Jurassic rocks crop out in succession, dipping south-eastwards under the Chalk. From young to old these Jurassic rocks are:

Inferior Oolite and Upper Lias;
Great Oolite Group (includes Fuller’s Earth);
Oxford Clay and Kellaways Sand;
Corallian Beds;
Kimmeridge Clay;
Wealden, Purbeck and Portland Beds (not seen locally).

Above these are Cretaceous rocks which can be seen on the highest ground including
Lower Greensand;
Gault Clay;
Upper Greensand. (Table 1)

Table 2 shows the local outcrops.

In this area of Avon Vale these outcrops trend from SW to NE

The following is a brief description of each area, its associated bedrock and the setting in which the rocks were formed.

Area: Bedrock

Morgan’s Hill, Cherhill Down: Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated). Sedimentary Bedrock formed approximately 71 to 94 million years ago in the Cretaceous Period. Local environment previously dominated by warm chalk seas.

Setting (1): warm chalk seas. These rocks were formed in warm shallow 'Chalk' shelf seas with little sediment input from land. They often consist of a calcareous ooze of the microscopic remains of plankton, especially the disc- shaped calcite plates or coccoliths that make up the spherical coccolithophores.

Cherhill White Horse: West Melbury Marly Chalk Formation And Zig Zag Chalk