

Field Trip Review – Winsley and Avoncliff 7th July 2021

By Phil Burge

The morning of Wednesday 7th July dawned with the possibility of favourable weather for this our second mid-week field trip of the year. While a mid-week date is not suitable for everyone it was felt that, given the Covid implied difficulties that we have had since March 2020 it was necessary to provide members with field trips wherever possible. But, back to the weather – would it hold off?

A very detailed set of field trip notes were provided by Graham Hickman and our guides for the day were Graham and Maurice who had arranged a trip with 11 locations around Winsley and Avoncliff for us. Twelve members (Fig. 1) met opposite Quarry Lane in Winsley and the trip started with a review of the palaeogeography of the mid to lower Jurassic of the area. In summary warm shallow seas creating the Great Oolite (specifically the Corsham Limestone) and Inferior Oolite as well as deeper seas creating the clays of the Fullers Earth and lower in the sequence the Lias.



Fig. 1: Team photo

Walking down Quarry Lane we stopped at the top of the tramway which allowed quarried rock to be transported down the hill to a wharf alongside the canal. A brief examination of “spoil” revealed some interesting fossils including bryozoans (Fig. 2). Walking further down the tramway takes you to firstly the Murhill mine (Fig. 3) and lower down the Murhill Quarry.



Fig. 2: Bryozoans



Fig. 3: Murhill mine

The Murhill mine is significant now as a SSSI because of the hibernating Greater Horseshoe Bat. The Murhill quarry was worked from 1803 until the mid-1870's. Measured sections from 1832 and 1893 show a complete section thickness of 10-13 metres with workable free-stone of 2-3 metres. It is clear looking at the imposing walls of the quarry that the job of a quarry man was fraught with danger as revealed by the extensive jointing of the limestone due to a mass movement known as cambering.

The Limestone overlays the Fullers Earth clay. During periglacial periods drainage from the limestone coupled with the plasticity of the clay causes extensional joint movement in the limestone and extensive cracking, known as gulls. Identifying gulls from other jointing due to water flow is by looking at how the two sides of the gull match up as shown in Fig. 4. The Murhill Gull has been surveyed to a length of 287 metres with a further 30 metres not yet surveyed.



Fig. 4: Cambering in Murhill Quarry

The walk so far and down to the Wharf alongside the canal has more than geology to offer! Industrial archaeology! The steep tramway was originally built in 1803 using wooden rails. A new track made of cast iron was

laid in 1826 and remnants of the rail can be seen (Fig. 5). The rails are of I section, fish belly type with the ends of the adjoining rails overlapping. The track gauge is 48-49 inches.



Fig. 5: Cast iron tram way lines

The lower Murhill Quarry was known as the Engine Quarry on account of the steam powered stone cutting saw installed in 1835. At the base of the quarry two adits are found, lined with freestone which tapped springs for water for the steam engine (Fig. 6). The springs emerge, as they do throughout the area at the base of the Great Oolite and top of the Fullers Earth. The steam saw was housed in an engine shed, no longer visible, adjacent to the water collection pond.



Fig. 6: remains of adits and water pond

At the end of the tram way and alongside the canal is the wharf which is scheduled as an Ancient Monument (Fig. 7).

The group walked along the canal towards the Avoncliff Aqueduct. An outcrop of Inferior Oolite outcrops on the north side of the canal. It cannot be described as overwhelming! However, of more interest is the story of the troglodyte, Charles Norris who lived in a cave within the Inferior Oolite for 8 years in the late 1890's.

Before we return to geology there are two more industri-

al archaeology sites of interest to be seen. We saw them in the wet as it began to rain heavily. The first is the line of pill boxes built in 1940 along the south side of the canal as part of the GHQ defensive line.



Fig. 7: Loading wharf on Avon canal

A short walk further on takes you across the Avoncliff aqueduct. Not only is this a fine piece of Georgian engineering it has an interesting geotechnical story. The aqueduct was built by John Rennie and chief engineer John Thomas between 1797 and 1801. It has three arches and spans 100 metres. The central elliptical arch has an 18-metre span and the two semi-circular side arches are each 10 metres across. The use of cheap local stone resulted in frost splitting and the collapse of buttresses. The rebuild used Bathstone from Bathampton Down. The aqueduct and canal were lined with concrete in 1980 to make them watertight.

Before our lunch break at the Cross Guns, we stopped to look at an impressive Tufa spring. The spring is near the boundary of the Inferior Oolite and the Midford Sands. Professor Tucker explained that calcium carbonate can be deposited either abiogenically or biogenically. In the former deposition is the result of degassing of the spring water. The biogenic source of precipitation are viruses that inhabit the microbial mats around the spring. These act as nucleation points for the precipitation of calcium carbonate (Fig. 8).

After lunch, it rained a bit, we walked up the hill towards Winsley. The sun shone and rain wear put back in rucksacks. We passed by the Turleigh Trows (troughs) which are a series of interconnected basins cut from stone along which water passes from a spring. This spring emerges from the base of the Great Oolite and the Fullers Earth. Until mains water was supplied around 1930 these trows provided the village with clean drinking water.

Our final two stops included the sponge rock arch at Midway House on Green Lane, so named because they look like sponges. Very popular with the Victorians as an ornamental building stone used for archways and

grottos, these sponge rocks are the result of crustacean burrows within firm ground (Fig. 9). Our last stop was to look at three ammonites embedded within a garden wall and identified as the genus *Coroniceras*.



Fig. 8: Tufa spring at Avoncliff



Fig. 9: Sponge rock

Finally, we arrived back at our vehicles, thanked Graham and Maurice for a great field trip, wonderfully organised, with an extensive field trip guide, got in our vehicles and the heavens opened! Perfect!

~.-

A note from the Journal Editor

I would like to say a huge thank you to everyone who has contributed to this years Journal. I wouldn't be able to put together without your efforts.

Here are a couple of photos from me. The first one was taken from our really good Zoom social on the 16th. It was a really good night with some brilliant discussions/quizzes/opinions on kitchen work surfaces and cake. Absolutely fantastic. The second photo is a taste of what is to come next year.. I hope you enjoy it! Mell

~.-



The Bath Geological Society Disclaimer

The Purpose of the Journal is to record the activities of the Bath Geological Society. It may include, but is not limited to the following; Chairman's report for the year, record of the meetings held, list of members including committee, officers of the Society and obituaries. Illustrated articles of geological interest written by members.

The Editor of the Journal will be appointed by the committee and report to the committee on issues and costs relating to the production of the journal. The Editor has the final say on inclusion of articles in the journal, their inclusion in part or whole. The Editor can request help from members of the Society or elsewhere in proof reading, verifying or correcting articles.

The Journal does not claim to be a peer-reviewed scientific journal and does not follow rigorous formats for articles. The Editor decides on the level of references or citations listed which may be useful to members wishing to dig deeper after reading an article. Submissions are preferred as a Microsoft Word document, illustrations as separate files. All articles to be in final form with title and corresponding author clearly stated.

The Bath Geological Society Journal is published annually and distributed to the members as part of the membership subscription. Since 2019 the Journal has been published in a digital format as a PDF file and distributed only to members of the society. A hard copy, printed version will be made available only to those members unable to access it online.

At the discretion of the Editor and after two years have elapsed, articles from the journal may be added to the online archive available to the public and searchable from our website