

South Dorset Field Trip

March 18th & 19th 2017

We are more than fortunate that we have as our Club President, Bob Chandler, a world authority on the Middle Jurassic Inferior Oolite. In March a group of our members travelled to Dorset for a weekend Field Trip, led by Bob, to be introduced to, or to renew their acquaintance with the Inferior Oolite.



The Four Sites Visited on Day 1:

1. - The Beach, Burton Bradstock
2. - Uploaders
3. - Horn Park
4. - Mapperton Farm

Saturday

The first site we visited was Hive Beach at Burton where two former members, Ann and Richard Hood, who had retired to Dorset 14 years ago, joined us for the day.

Bob explained that the cliffs we could see all along Lyme Bay were younging to the East because of the gentle dip of the beds to the south east. Rock layers we could see high in the cliffs to the West were at beach level to the East. These faulted blocks were to define the rest of the exposures we visited inland. Through the day we saw highly variable successions from place to place but they principally showed bioclastic, ironshot, oolitic limestone with well-preserved fossils in the Aalenian and Bajocian stages of the Middle Jurassic. They represented a duration of ca 6 My and comprised 14 ammonite zones.

We observed beds of similar age with the same guide fossils at sites with different datum points. At some sites whole sections of the stratigraphy were missing. Over the last 50 years Bob, the late John Callomon, an amateur of great distinction, and their contemporaries have followed up the work done by geologists from the 19th and early 20th centuries such as James Buckman and L. H. Richardson and have pieced together the succession showing that enthusiastic amateurs can add greatly to scientific study.

Site 1 – (Cliff Sections on the beach)

At Hive beach Bob showed us huge blocks brought from offshore to use as sea defences, they showed a jumbled mass of echinoderm pieces, other fragments and nautiloids in a grey matrix quite different to anything at beach level. These had been formed in faulted fissures, known as Neptunian Dykes, where sediments of a different facies had infilled them. We viewed the trace of the fault, clearly shown, on a bathymetry chart. We then drove West along the coast to Freshwater beach, where we saw how the beds differed. Here the Inferior Oolite is considerably thicker than the succession in the cliff top at Hive Beach and some units are absent while other have been preserved. While at the coast we were encouraged to note the Scissum Bed, the Red Bed and the Astarte Bed, on our handouts. This was for later reference as these beds denote well defined horizons across the region.

Site 2

We travelled North to our next stop, a farm at Uploders, 5km inland. Here a fossil rich exposure and ploughed field allowed us to find abundant ammonites, gastropods, bivalves and belemnites while we had lunch. In the cliff section Bob showed us a slickensided surface caused by the local faulting and pointed out the detail and different thicknesses of the beds to those we had seen on the coast. The old farm yard preserves an excellent section in these beds which Bob has numbered with white paint so that amateurs like us can match them with our stratigraphic logs. The Loders is the site of L. F. Richardson's examination of the Inferior Oolite in the early 20th century. He had also visited the cliffs at Burton.

Site 3

We drove another 8km North West to the SSSI, Horn Park, the smallest National Nature Reserve in England. (A full report on this site can be found in the Dec. 2016 Stonechat Magazine). Here we saw the work Bob has helped with to preserve this very important link in the stratigraphy of the Inferior Oolite. The complete sequence of Aalenian rocks is present. A covered section of the site was unveiled for us to see a cleared bedding plane covered with examples of male and female ammonites (microconchs and macroconchs respectively) including *Brasilia gigantea* and various graphoceratid ammonites. Then Bob related the theory of biotic erosion by a bacterial mat to explain the totally flat surface of the site. The assumption that it is bacterial is based on the lack of any high energy feature throughout the Inferior Oolite. From Horn Park we could see Waddon Hill, 2km to the South West and 100m above us. The top has the same sequence of rocks we were standing on, proving we were on the downthrow side of a faulted block. At the West End of the quarry was a pile of loose rock that we could collect from. At this point our new member Andy nearly took the top off his finger but that did not deter his fossil hunting over the weekend one bit.

Site 4

Our last visit on the Saturday was 3km South East to Mapperton Farm. This sequence of rocks cut out almost all of the Middle Inferior Oolite so the whole of the Middle and Upper Aalenian and most of the Lower Bajocian are missing. The Scissum bed here forms the quarry floor and is similar to that seen on the coast. However, the bed above is unique to this quarry and was named the Comptocostosum Bed by Bob and John Callomon. In it are the earliest examples of *Ludwigia* transitional from *Leioceras*, the root of the ammonite family *Graphoceratidae*. We found species including *Ludwigia*, *Euhoploceras*, *Hyperlioceras*, *Leioceras*, *Parkinsonia*, and *Stephanoceras* plus gastropods, bivalves and belemnites.

We journeyed back to Folke, where we were staying, with just enough time to get ready and go out to eat at the Italian in Sherborne. Good food but a noisy boisterous venue not conducive to conversation. John Lonergan met us at the restaurant and joined us on the Sunday field excursion.

Sunday

Bob took 5 members to Bradford Abbas and the others who had seen this site on a previous trip went into Sherborne to look at the building stone.

Bob Chandler led the small group to the Holloways on Babylon Hill which lies between Yeovil and Sherborne. South Devon has a number of Hollow Ways which are ancient (Saxon) cart tracks, they have gradually cut steep sided narrow gorges as the traffic of people, carts and animals have worn away the soft sandstone. Professor James Buckman lived at Bradford Abbas close to Babylon Hill and used to cycle from his home to study the exposed rock faces and it was here that he gained the inspiration and insight for his seminal paper in the Journal of the Geological Society of London in 1877 "The cephalopoda-beds of Gloucester, Dorset and Somerset". This explained and established the detailed study of fossils to map and age the strata of Jurassic rocks. It changed the thinking on how to accurately identify and date strata and this method is today still being used and developed by Bob and other geologists.



The Holloway

The Holloway has special significance and a particularly magical aura which was animated by Bob's irrepressible enthusiasm and knowledge.

As Bob spoke to us we stood in awe transfixed to the spot where it all began.

We even thought we saw the reincarnation of Buckman's bicycle!



That bike!

The rest of the group went into the centre of Sherborne to see the building stones. The oldest building we found was the Benedictine Monks wash-house built in 1509. When Bob and the others joined us he

explained that all the high status buildings in Sherborne used the local free stone, 'Ham stone'. Other lower status buildings around us were constructed of irregular shaped blocks of local rock. We walked round the Abbey and examined the ferruginous, honey coloured, sandy limestone looking for cross bedding and fossil fragments until it was time to move on to the next site.



Monks' Washhouse

Frogden Quarry near Osborne, east of Sherborne is a working quarry the eastern part of which is one of the most important SSSI's in Britain. It is the source of numerous type specimens of fossils from the Jurassic in museum collections today. The working end of the quarry is providing building stone locally. The site has a more or less complete succession of the Bajocian which complements the Aalenian succession at Horn Park SSSI. Members collected specimens of ammonites: *stephanoceras* and *teloceras* and the nautilus *cenoceras* from waste rock piles. There were also huge belemnites plus gastropods and corals.



Frogden Quarry

After lunch at Frogden a special treat was a visit to Wolfgang Grulke's extraordinary fossil collection at Osborne. A treasure trove of beautifully prepared specimens, well researched, some rare, some local and prepared on the premises, others from all over the world.

An ichthyosaur took pride of place on one wall. A uniquely complete specimen seen in relief on its fossil bed showed its dramatic demise as a high speed chase in the water ended abruptly when it hit an immovable object. The resulting concertinaing of its beaklike snout, and displaced neck vertebrae, cartoon-like, showed it all.



Wherever you turned there was something special, from opalised belemnites to clutches of dinosaur eggs. An impressive display of ammonites through 300 million years showed how initially they had evolved from nautiloids which are still going strong after 500 million years. Both species originated in straight forms and went through about three stages of coiling and uncoiling, named heteromorphs – (different shaped, irregular)



Outside Wolfgang Grulke's Exhibition

Our last visit of the day was to another collection, put together by John Whicher and Bob Chandler over their 50 year friendship. This was a spectacular display of local fossils prepared by John, Bob and their contemporaries. Most of the fossils were from the Inferior Oolite and all meticulously, numbered and given full locality and stratigraphic place. A truly useful research collection for scientific study.



We headed for home very please and satisfied with such an informative and enjoyable weekend. Thank you Bob from everyone.

Our Field trips are very social occasions and it has long been recognised that they add another dimension to our club. This time two past members joined us and three newcomers came to find out what field trips are all about and extend their knowledge. The rest of us had been on Bob's trips before. We try to eat out together. We share cars as much as possible. (Back seat drivers who give wrong directions are to be avoided at all costs). We hope this account encourages new members to join us on future trips.