It should be noted that the beach is made of fine gravel called pea grit, small rounded pea size or slightly larger pebbles. The beach here forms the western end of Chesil Beach and moving east the gravel gets progressively coarser especially when you get east of Abbotsbury. Visits to the beach at Abbotsbury, Ferrybridge and Chesil Cove will show marked change in size of the beach material. The pebbles are made of very hard silica material called flint and chert. This does not come from the local cliffs but has been moved along the coast by a process called long shore drift.

USEFUL RESOURCES:

Maps: Ordnance Survey 1:25,000 Outdoor Leisure 15, Purbeck and South Dorset.

British Geological Survey Map Sheet 327 Bridport.

Books: Geology of the Dorset. John C.W. Cope. Geologists' Association Guide No 22.

Coast and Country Geological Walks in and around Dorset. DGAG

Mesozoic Fossils. British Museum (Natural History). This book is very useful for identifying many of the fossils found along the Dorset Coast and East Devon Coast.

Websites:

dorsetgeologistsassociation,org

jurassiccoast.org

southampton.ac.uk/~imw



The picture above shows differential weathering and erosion in the cliff due to variation in cementing calcium carbonate in the sandstone.

Email: alanholiday@btinernet.com

©Alan Holiday 2018

WORLD HERITAGE COAST LOCATIONS: BURTON BRADSTOCK SPECTACULAR CLIFFS AND FOSSILS.



Burton Cliff looking SE towards Portland

WHAT'S SPECIAL ABOUT THE COAST AT BURTON BRADSTOCK?

Burton Cliffs are approximately 30 metres high and expose the bright orange Bridport Sand seen in the picture on the front cover. These are capped by extremely fossiliferous Inferior Oolite and grey Frome Clay or Fuller's Earth Clay. The complete sequence of rocks is seen if you walk about 1 km. west from the National Trust car park.

HOW TO GET THERE:

1. Location: Burton Cliffs which extend from GR SY 491888 NW to Burton Freshwater at GR SY 477895.

2. Access is gained via the minor road off the B3157 as you approach Burton Bradstock village from Weymouth, Portesham and Abbotsbury. Parking is available in the National Trust car park where the minor road reaches the beach at SY491888.

3. Facilities. Parking is available throughout the year. The National Trust Café is open in the summer everyday but in the winter period opening is more restricted. Toilets are available at the café and also in Burton Bradstock. Convenience shops and pubs are also available in the village.

HEALTH & SAFETY:

The cliffs along this section of coastline are relatively high and vertical. Cliff falls are quite frequent especially during the winter. This is because the sea breaks against the base of the cliffs during storms and they are undercut. The cliffs also have many vertical joints which can cause sections to fall.

At high tide especially in stormy conditions waves break against the base of the cliff and so the best time to walk along the beach is during a falling tide in quiet conditions. Access to the beach can also be gained by following the cliff path NW to Burton Freshwater and walking SE along the beach for about 0.5 km where the fossiliferous strata can be seen in fallen blocks on the beach.

THE GEOLOGY:

The rocks exposed at the base of the cliff are the Lower Jurassic (Upper Lias) Bridport Sands. These sands were deposited in relatively shallow tropical seas approximately 180 million years ago. They contain few fossils, but the occasional ammonite and belemnite can be found as well as burrows called trace fossils, i.e. traces where animals have been. The rocks are fine sands which are quite soft and partially cemented with calcium carbonate. The bedding is apparent in the sandstone as weathering has picked out the weaker, less well layers while the better cemented. layers show honeycomb cemented weathering, with a very pockmarked surface. The rocks dip gently to the east and Bridport Sand is found at depth, some

900 metres down in east Dorset and forms one of the reservoir rocks for the Wytch Farm Oilfield located under and to the south of Poole Harbour.

Above the Bridport Sand, which is up to 25 metres thick here, there is a thin layer, about 4 metres, of Inferior Oolite, This is highly fossiliferous and has many interesting features. Small round grains in some of the sediment show it is an oolitic limestone normally formed in shallow tropical seas and forming now in places such as the Bahamas. Many types of fossils occur in this limestone with a number of species of ammonites, nautilus, belemnites, brachiopods, and bivalves. The best time to collect these is after a cliff fall when fresh rock is to be found at level. beach



The very top of the cliff is capped by grey clay, the Frome Clay, previously called the Fuller's Earth Clay. This can be studied in the cliff falls but can also be seen to the east of the National Trust café and the car park. The presence of the clay at beach level rather than at the top of the 30 metre high cliff is due to a geological fault which has lowered the clay on the east side of the fault by around 60 metres. The fault coincides with the valley (due to a line of weakness) used by the minor road to reach the sea.