

# *INDUSTRY*

## What are those rocks used for?

When you see a quarry or mine, rock or minerals are being extracted to make, or assist in making, something useful to us.

You may also see the ruins of industrial buildings used for processing rocks and minerals – what were they for?

Below are some examples of some locations that HHGS members have visited to explore the present or past use of rocks.

# OIL AND GAS

Britain has both onshore and offshore oil wells.



Kimmeridge, Dorset produces 65 barrels of oil per day.



Wytch Farm in Dorset produces around 13,500 barrels of oil per day. Also, 1.42 billion cubic metres of natural gas are in place.

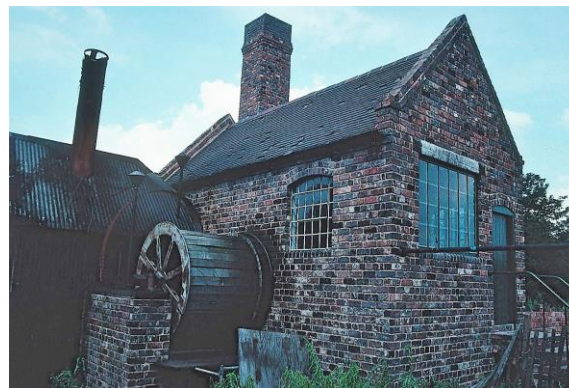
# COAL

The fuel that powered the Industrial Revolution. Used to power steam engines and pumps, it was excavated from underground mines and opencast pits.

Selar opencast mine, Celtic Energy, Glynneath, Wales.



Zeche Zollern II-IV colliery, Westphalian Industrial Museum, The Ruhr, Germany



Racecourse Colliery. Black Country Museum. Winding House & Pithead.

# COPPER AND TIN

Copper and Tin are important metals that are used in industry throughout the world. They are particularly important because of their electrical, thermal and corrosion resistant properties.



Disused tin mine buildings, Cornwall



Great Orme prehistoric copper mines, North Wales, now a tourist attraction.



Parys Mountain in NE Anglesey, Wales, extensively exploited for copper in the late 18<sup>th</sup> century.



# IRON

Iron and Steel, the most useful and versatile metals, have been used since prehistoric times and made the Industrial Revolution possible.



Blast furnace complex, Heinrichshutte Iron & Steel Museum, The Ruhr, Germany

Meiderich Ironworks, The Ruhr, Germany



Bessemer Converter at the Sheffield Kelham Island Museum



Moira Blast Furnace, Leics. A fine example of an early 19<sup>th</sup> century iron making blast furnace, built in 1804 by the Earl of Moira to exploit the wealth of coal and iron in the area.



# LEAD

Lead is an important metal because of its properties. It is soft, heavy, electrically conductive and has a low melting point. Lead has a wide range of uses, from radiation shielding, to building, to car batteries. In the past it was used for water pipes, paint, ammunition and weights, but no longer, due to its toxicity.

Condensate recovery flues from smelters Grassington, Yorkshire Dales (left) and Charterhouse, Mendips (right).



Cupola smelt mill, Grassington, Yorks Dales

Grassington lead mining area



1950s mine ruins, Grassington

Laxey Wheel, Isle of Man, powers the mine pumps.



# OCHRE

Ochre is a naturally occurring mineral, a mixture of ferric oxide, clay and sand. Refined ochre is used as a pigment in paints and art. It has been used since the Iron Age.

Golden Valley Nature Reserve in Wick, near Bristol, the site of an ochre mine and processing works that produced refined ochre from 1892 until 1970. It used water power from the River Boyd in the valley below.



# SAND AND GRAVEL

Sand and Gravel is quarried mainly as a building material in this country, but it has many other uses, from children's 'sand pits', to sports arenas, golf course bunkers, agriculture, water treatment and the manufacture of glass.



Denham Quarry, Sand and Gravel, Taplow Gravel



Mundays Hill Pit, Leighton Buzzard. Leighton Buzzard sand is world famous for its high silica content and consistency of shape and size.

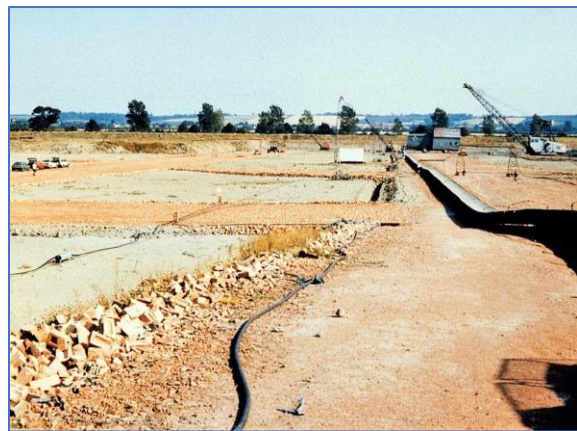


# CLAY

Clay is a widespread sedimentary rock, there are three main groups of clays and around thirty different types of pure clay. They are used in many different applications from sealing landfill sites to making bricks to pharmaceuticals.



Doulton's (Royal Doulton) claypit was worked for fireclay, a refractory clay used in the manufacture of ceramics, and operated from 1870-1940. It is now a SSSI, part of the Saltwells Nature Reserve in the West Midlands.



Brick clay is used in the manufacture of building bricks and roofing tiles; the four photos here are of the Quest Pit, in the *Oxford Clay* at Stewartby, Beds. The clay here has just the right amount of organic matter to optimise the fuel required for firing.



# SALT

Rock salt is mined at Winsford in Cheshire. The mine is almost 200 metres deep and is the largest in the UK, accounting for 60% of all UK production. Salt was discovered here in 1844 while prospecting for coal. Rock salt is used for de-icing our roads. Table salt is sourced from brine extraction or sea water.

Inside Winsford salt mine



Mining machinery in the mine



# CHALK

Chalk is a sedimentary carbonate rock used in agriculture, building and pharmaceuticals. In the past, it was extracted from underground mines or quarries, burnt in lime kilns, then used as a fertiliser or as a mortar in brickwork.



Pinner chalk mine,  
18<sup>th</sup>-19<sup>th</sup> Century



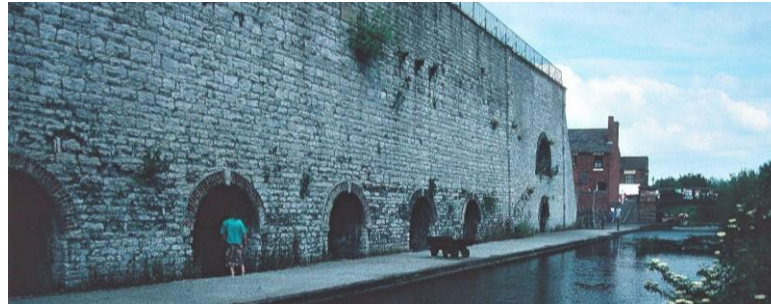
Bluewater shopping  
centre, Kent, built in an  
abandoned Chalk quarry.  
The quarry supplied local  
cement works for the  
construction of Bluewater.



# LIME KILNS

Although it is a process used since Roman times, most British lime kilns were built in the 19<sup>th</sup> century. Crushed limestone or chalk was burnt to produce quicklime, which was mixed with water to produce slaked lime, which in turn was used in agriculture to improve the soil, or in building to make plaster or mortar.

Lime kilns at Totternhoe Chalk Quarry, Beds.



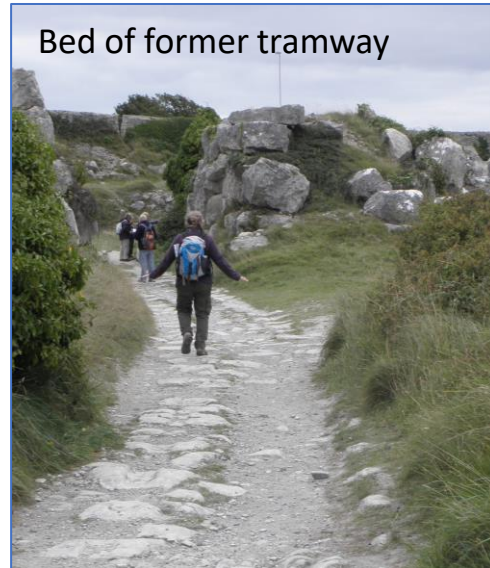
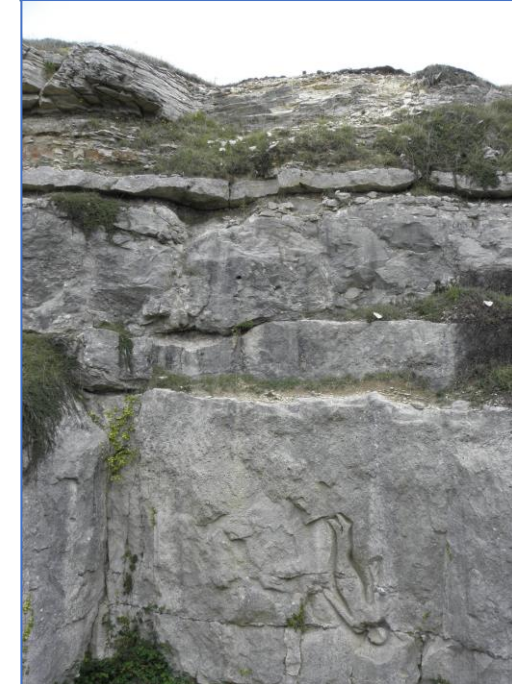
Lime kilns on the Moira Blast Furnace site, Leics.

Lime kilns at The Black Country Museum next to the canal



# BUILDING STONES ONE

Building stones are quite diverse, depending on how and where they are used, they may be structural, decorative or both.



Bed of former tramway



Tout Quarry,  
Dorset, in  
Portland  
Limestone

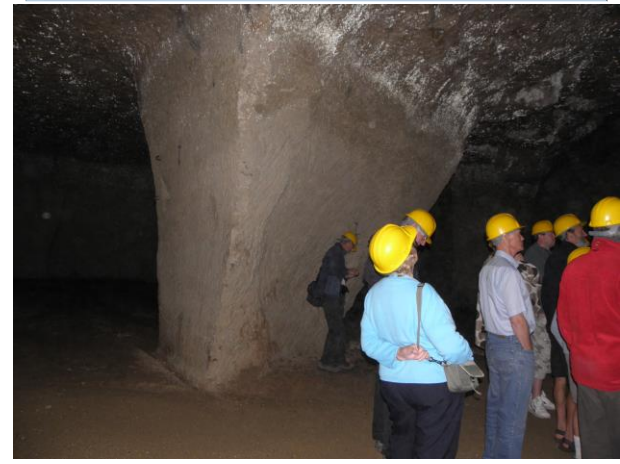
Winspit Quarry,  
Purbeck, in  
Portland  
Limestone



Beer Stone underground  
quarry and workshop



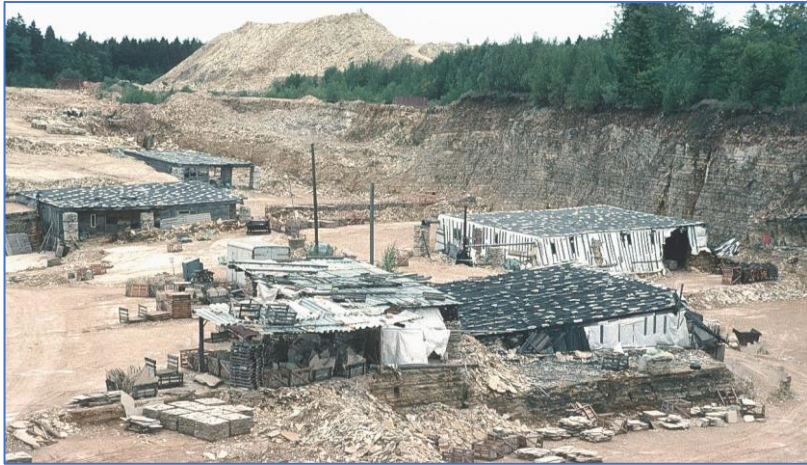
Cliff top crane near Portland  
Bill



# BUILDING STONES TWO

Rock, as a decorative finish, exterior cladding, or interior floor and wall tiles, is cut into thin slabs and given the required finish with specialist machinery.

Individual workshops in a Solnhofen quarry, Germany



Hainaut Quarry, Belgium. Stone block being sawn into multiple slabs and stone slabs awaiting further processing.



Portland limestone slabs in holding bay



Llanberis Slate Museum, Wales, in the former Dinorwic Quarry buildings.



# BUILDING STONES THREE

Stone is used in the construction of roads and railways. It is crushed and graded to provide the right strength and porosity. Crushed and graded stone is a key constituent of concrete and is selected carefully to give it the desired properties.

Ronez Granite quarry in Jersey



Hill Hole Nature Reserve in Markfield, Leics, once a diorite quarry, now flooded.



Whatley limestone quarry and processing plant, Mendips

