The Geology of the WREN'S NEST National Nature Reserve















GEOLOGY

Wren's Nest was declared a National Nature Reserve in 1956, the first to be designated for its outstanding geology and we celebrate its 50th anniversary in 2006. Wren's Nest is of international importance both for the quality and quantity of its fossils, but also for its value as an educational resource. Wren's Nest Hill and Mons Hill are made of Wenlock limestone composed of the remains of ancient sea creatures that lived more than 400 million years ago. This period of geological time is known as the Silurian. These ancient fossils are so beautifully preserved that they are displayed in museums throughout the world and geologists come from far and near to study and collect them.

Many of the best fossils were found in the 18th and 19th centuries. During this time the limestone rock was being excavated and burnt to produce lime, an important material for agriculture and industry. This mining activity left great scars on the flanks of the hill and many large and spectacular caverns.

The Silurian World

The Dudley area would have looked very different during Silurian times. Shallow seas covered the Midlands and the nearest land lav many miles to the east of Wren's Nest. Plants were just beginning to colonise the land, but the seas were full of life, some of which would seem familiar to us today. At Wren's Nest

small coral reefs grew up

providing a home for

thousands of animals and

plants, many of which

have been preserved as

limestone. Some of the

most common fossil

animals to be found here

are illustrated (right).

within



Reef Limestone

There were many types of CORALS in the reef, Favosites (a) and Halysites (b) were compound types where many tiny coral animals (polyps) lived together; solitary corals like Dokophyllum (c) were less common.

fossils

CRINOIDS grew in sheltered areas behind the main reef, in patches of sand or soft sediment. They are often called "Sea Lilies" because they look so much like plants, with roots, a stem and a flower-like 'cup' on top, but they were actually animals and are related to starfish and sea-urchins. Crinoids (d) still live in the seas today but are rarer than they were in Silurian

times, when Marsupiocrinus and Gissocrinus were common reef animals.

ORTHOCERAS (n) were relatives of modern day squids and cuttlefish. They had cone-shaped shells which could be several metres long and they were probably carnivores, using the long tentacles surrounding the head to catch smaller animals.

prev.

The limestone rocks at Wren's Nest have been exploited by man for hundreds of years. Originally the rock was used as a local building stone and it can be seen in the walls of Dudley Castle and Dudley Priory. Later it was discovered that burnt limestone, or lime. was a good fertiliser and the demand for the rock increased. Lime was produced by placing alternate layers of limestone and coal in a kiln and burning it for





TRILOBITES are probably the most famous fossil found on Wren's Nest. Calymene (e) was so commonly found by the guarrymen in the 19th century that it became known as the "Dudley Locust" or the 'Dudley Bug' and was incorporated into the town's coat-ofarms as a symbol of the limestone mining industry. Another common trilobite is Dalmanites (f). Trilobites were arthropods, related to modern crabs and lobsters, but they lacked the claws and special mouthparts of their carnivorous relatives and probably grazed on plants for food. Whole fossil trilobites are rarely found. The animals had to moult in order to grow, shedding their outer skin or exoskeleton in pieces. Most trilobite fossils are therefore of moulted exoskeletons and not of dead animals.

Some of the easiest fossils to find on Wren's Nest are BRACHIOPODS, such as Atrypa (g), Strophonella (h) and Leptaena (i). These are often confused with BIVALVES, like Goniophora (i) and Pteronitella (k), which were much rarer. The most obvious difference between the two types of fossil is that bivalves have valves or shells which are identical whereas brachiopods' valves are of different sizes. Today bivalves are far more common than brachiopods.

Other animals that lived on the reef included GASTROPODS (sea snails) like Poleumita (II) and Acroculia (m). Gastropods were probably vegetarian. but there were predatory animals on the reef as well.

Another predatory creature on the reef was the EURYPTERID or sea-scorpion (o). Eurypterids were arthropods, like trilobites, but they were much larger, growing up to 2 metres long and had claws for catching

Quarrying at Wren's Nest



several days. The lime powder was then raked out from the bottom of the kiln. Several of these kilns can still be seen on the west side of the Nature Reserve. In the early 18th century a method was found to smelt iron using coal, so limestone, which was used as a flux in this process, became a valuable commodity.

At first only surface outcrops of limestone were guarried, but soon the guarrymen began to dig underground to get to the purest and most valuable deposits. By the start of the 19th century, the mines and caverns extended so deep that it was too difficult to haul the rock to the surface; thus a system of underground canals was built so that the limestone could be carried away by barge to furnaces elsewhere in the Black Country.

Background: Halysites



Seven Sisters cavern circa 2000

As the guarrymen worked they found many wonderful fossils. These were purchased by dealers, to be sold through local fossil shops. No doubt the vast majority must have been lost forever in the furnaces of the ironworks.

By the early 20th century there was much less demand for Wren's Nest limestone and by 1924 it was no longer profitable to mine and the guarries were closed. Today all the former underground workings are closed to the public. It is however, still possible for groups to view the original 'Seven Sisters' by prior arrangement with the warden service. Please phone for details. The Seven Sisters are massive rock pillars that once supported the roof of a vast cavern complex descending 100 metres below the ground. Only five pillars of the original seven now remain.

In 1973 the Dudley Canal Trust opened up part of the underground canal network beneath nearby Castle Hill and narrowboat trips are now run from the Black Country Museum into the famous Singing Cavern.

Here an exciting audio-visual show re-creates life in a limestone mine.



Safety Information

Rock exposures can be unstable and visitors are requested to exercise care and caution when visiting the reserve. Due to essential engineering works it has been necessary to extend the safety fencing and reroute certain paths. We apologise for any inconvenience this may cause. Please remain on designated paths and observe any path closures or diversions. It is strictly prohibited to enter the areas inside the safety fences.

Visitors to the Reserve do so entirely at their own risk. Neither Dudley Metropolitan Borough Council or English Nature can accept liability or responsibility for loss, damage or injury to property or, in absence of negligence, to persons.



Other publications available

The Wildlife of Wren's Nest National Nature Reserve Wren's Nest National Nature Reserve Geological Handbook and Field Guide

Wren's Nest Warden Service

The nature reserve has a team of three full time wardens who maintain and care for the site's geological features and wildlife. We always welcome help from volunteers. For more information on volunteering or to book a school visit, guided walk or illustrated talk please contact 01384 812785.

Dudley Museum & Art Gallery

To complement your trip to Wren's Nest pay a visit to the Museum & Art Gallery. Here there is an extensive geological collection and fine displays of fossils from Wren's Nest and the local coal measures. Staff are available on weekdays to offer general advice on geology. Books, fossil replicas, posters, postcards etc. are available in the Museum shop. ADMISSION FREE. Dudley Museum & Art Gallery, St. James's Road, Dudley, West Midlands DYI 1 HU Contact - The Keeper of Geology Tel. (01384) 815575.

Geological Societies

The Black Country Geological Society is made up of both professional and amateur geologists. Meetings are held at the Ward Arms and Dudley Museum in Dudley. The society arranges talks and field trips. For more information contact the society at www.bcgs.info

Background: Flower meadow at Wren's Nest National Nature Reserve.

