

## **Symposium 'Uncovering the Yorkshire Jurassic' 19<sup>th</sup> May. Programme**

**Catherine Brophy**      **Chair Yorkshire Philosophical Society**  
**Welcome, acknowledge sponsors and housekeeping**

**Sarah King**      **Curator of Natural Science, Yorkshire Museums Trust**

**Title: Yorkshire's Jurassic World: The story so far**

The Yorkshire Museum's major new exhibition 'Yorkshire's Jurassic World' has been 145 million years in the making, but the story is far from over. The history of Jurassic research in Yorkshire is long and distinguished, evidenced in no small part by the collections in this Museum. By bringing these collections front and centre, we aim to build on their history but also shine a light on current work and discoveries that continue to build our picture of life in Yorkshire, and on the Earth, between 200 and 145 million years ago. Do come and explore with us.

**John Powell**      **Honorary Research Associate, British Geological Survey**

**Title: The Jurassic rocks and scenery of north-east Yorkshire: a natural laboratory**

The Jurassic rocks and scenery of north-east Yorkshire (Cleveland Basin) have acted as a magnet for geoscientists since the 18<sup>th</sup> century, and in recent decades the rocks received increased scientific interest because of their analogy with hydrocarbon source and reservoir rocks in the North Sea. The establishment of the Dinosaur Coast, and development of the Rotunda Museum in Scarborough have given the regional geology additional importance. This talk will focus on the evolution of the Jurassic Cleveland Basin and its faunas and floras through about 50 million years of Earth history, ranging from shallow stormy seas, to rivers and swampy deltas, coralline sands and deep-sea muds. This unique area was finally uplifted about 30 million years ago as a result of compressive Alpine movements. The varied and fascinating geology of the North York Moors will be linked to its profound influence on the building stones and architecture of the region.

**David Bond**      **Geology, University of Hull**

**Title: (Jurassic) Life After (Triassic) Death**

This talk will focus on the end-Triassic mass extinction, one of the "Big Five" extinction events of Earth history, and how it set the scene for the most famous period of geological history: the Jurassic. The end-Triassic extinction is rather poorly understood, but British geological successions provide useful information on its causes and consequences. The end-Triassic crisis provides an example of the causal relationship between major (large igneous province) volcanism and global warming, ocean anoxia and acidification, all of which feature in numerous iterations of the end-Triassic extinction scenario.

**Crispin Little**      **School of Earth and Environment, University of Leeds**

**Title: The early Toarcian extinction event and recovery: evidence from the Yorkshire coast**

Following the extinction event at the end of the Triassic period the diversity of animals in the Cleveland Basin increased steadily through the stages of the Lower Jurassic, reaching a peak in the Pliensbachian. Then, in the early part of the Toarcian stage, a major volcanic event far from Yorkshire caused a catastrophic chain of environmental changes, primarily climate warming, leading to a global extinction event. In the Cleveland Basin this extinction particularly affected animals living on the seafloor and in the sediment. Ecological recovery from this event was slow, taking place over millions of years, as the environmental conditions ameliorated. This talk will give the palaeontological and geochemical details that has been used to elucidate the early Toarcian extinction event and recovery from it.

**Sarah Steele,                    The Ebor Jetworks and Whitby Museum**

**Title: Whitby Jet – The Jurassic Gemstone**

Here in North Yorkshire, Whitby Jet, arguably the best quality Gem Hydrocarbon in the world has been utilised for jewellery and amulets for the past 5,000 years. It is collected from the Whitby Mudstone Formation over an eight mile stretch of coastal outcrop - and was also extensively mined across the North York Moors during the C19th.

Despite this illustrious history, very little geological research has been carried out on this culturally important material, and myth and folk law tend to prevail, rather than hard geological facts.

Undoubtedly a fossilized wood, Whitby Jet owes its superior gem properties to the unique environmental condition during the Toarcian stage at the time of its deposition.

**Liam Herringshaw,            Geology, University of Hull**

**Title: Exceptional carrots of Yorkshire**

Large areas of North Yorkshire are underlain by clays and shales of late Jurassic age, including the world-famous Kimmeridge Clay Formation, source rock for much of the North Sea oil. However, these shales are almost never exposed, so our understanding of their properties, and how they formed, is strongly dependent on boreholes. My presentation will explain how hunting for samples from boreholes drilled in Filey Bay and the Vale of Pickering led us to a carrot shed on the outskirts of Chartres, and how the exceptional materials locked inside have the potential to provide new insights into global climate change at the end of the Jurassic.

**Peter F Rawson,                University of Hull and University College London**

**Title: Two hundred years of geological research on the Yorkshire Coast**

The magnificent exposures of Jurassic and Cretaceous rocks along the Yorkshire coast have attracted the attention of geologists from the earliest days of our science. William Smith visited several times in the first two decades of the nineteenth century and recognised almost all the groups of strata that he had previously defined in southern England. And in 1806 The Reverend George Young moved to Whitby to become pastor of the Cliff Street Chapel. He had been a student at Edinburgh where Playfair had aroused his interest in geology. Hence when Young published his *History of Whitby* in 1817, he included an outline account of the local geology, marking the beginning of 200 years of research on our area. Then in 1822, he and local artist John Bird published *A Geological Survey of the Yorkshire Coast*. A revised edition was issued in 1828, followed shortly afterwards by John Phillips' *Illustrations of the Geology of Yorkshire; or, a description of the Strata and Organic Remains of the Yorkshire Coast* (1829). These pioneering works laid a firm though sometimes conflicting foundation for later researchers to build upon. Then the Geological Survey carried out detailed mapping of the area in the eighteen seventies and eighties, and by the end of the first century of research many successions had been described in detail, sedimentary environments interpreted and important fossil faunas and floras documented. One could be forgiven for thinking that there was not much else left to do. But in fact, as geological concepts and techniques have evolved, successive generations of geoscientists have returned to the classic exposures here, so that significant advances continue to be made.

**Briony Fox,                      Director (Polyhalite Projects), North York Moors National Park Authority**

**Title: Going Underground – a deeper understanding of regional geology through mineral exploration in the North York Moors National Park**

The development of The Woodsmith Mine outside Whitby has presented an amazing opportunity to gain a much greater understanding of the geology of the North York Moors National Park. The presentation details a five year project where data is collected during the shaft-sinking phase of the mine development and collated with other local primary and secondary geological data. This will add to the local geological knowledge and contribute to the second phase of the project where interpretive material will be created using technology to create more accurate experiential representations of what the environment of the North York Moors would have been like during the Jurassic, Triassic and Permian time periods.