

Earth Heritage

The Geological and Landscape Conservation Magazine



**A little nose around
Trwyn y Parc**



**The Making of
Ynyslas:
extolling
geodiversity
with creative
writing**

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**ProGEO—
with a global
perspective!**

**Northumberland
Rock Festival**



**Geoconservation
highlights of the
first year of the
Black Country
UNESCO Global
Geopark**



Cover: Exposures of the Port Askaig Tillite on Islay with the quartzite peaks of the Paps of Jura in the distance. The Dalradian geology in this area is not only an excellent teaching resource but provides insights into late Precambrian geology, covering a fascinating period of time corresponding to a 'Snowball Earth' glaciation. Find out more on p.57. Photo by David Webster



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On the Trail of Scotland's Shale

Dr Robin Chesters, Director, Almond Valley Heritage Trust

Beneath the fields of West Lothian lie seams of a rather unusual mineral that for almost a century supported a remarkable and important industry. Oil shale is found across an area centred in West Lothian that extends north to Fife and south into Lanarkshire. The area over which oil shale is found corresponds generally to the boundaries of Lake Cadell, a freshwater lake that existed at various times during the Carboniferous period. Something rather unusual about the geography and biology of the lake resulted in occasional blooms of microscopic algae that became buried within anaerobic muds on the lake floor. These deposits have matured into seams of oil shale in which the carbon of ancient algae survives chemically bonded to the mineral matrix. When heated within the controlled conditions of a shale retort, a crude oil very similar to liquid petroleum is released.

Oil shale was first mined and processed in the early 1860s and gave rise to an industry that continued for a century. Activity was initially focussed on the West Calder and Broxburn areas, where the richest seams cropped out at the surface. As the scale of operations grew, mining pushed out into less accessible areas and exploited deeper seams.

Following the First World War, the shale industry ceased to make any economic sense, but was sustained by a combination of national pride and strategic interest. After a long period of decline, the final oil shale mines and works were closed in 1962. The industry has however left its mark on



The section of the Shale Trail that follows the Union Canal towpath, overshadowed by one of the bings of Broxburn Oil Works.

Waymarker No.5 on the Shale Trail at Gavieside, with a view across to the surviving buildings of Westwood Oil Works and the Five Sisters bing beyond. This giant bing, which is both a memorial to the shale-oil industry and symbol of West Lothian, is a scheduled monument.

All photos by Dr Robin Chesters





The southern terminus of the Shale Trail, facing the former Cooperative drapery shop at Union Square West Calder in West Lothian, an important centre for the shale-oil economy in the 19th and 20th centuries.

the landscape. In many areas the pattern of settlement was shaped by shale-oil interests, and many houses built to house the workforce of pits and works still provide solid homes. In country areas the informed eye can still make out traces of pitheads, mines and mineral railways, however the most prominent and impressive monument to the industry are the giant ‘bings’ of spent shale.

For every ten tons of shale extracted, over eight tons remained as waste once the oil and ammonium sulphate had been extracted. Huge man-made mountains of this ‘spent blaes’ grew up around each oil works, engulfing farms, fields and countryside. As these have aged, iron compounds in the waste shale have gradually oxidised to produce the distinctive rusty pink colour. Many great bings have been quarried for use in road building, paths and playing fields and others have been reshaped and disguised in greenery. However two of the most distinctive bings have now been protected as scheduled monuments. The Greendykes bing, visible from the Winchburgh end of the Shale Trail, is an amalgam of bings from several works that accumulated between the very start of the industry in 1860s through to the 1950s. The other scheduled monument, the Five Sisters bing, is a landmark at the West Calder end of the Shale Trail. It is just a youngster in bing terms, having been built up between 1942 and 1962. Its unique shape is a consequence of a mechanised tipping system used nowhere else in the shale fields.

Between these two great landmarks runs the Shale Trail, a walking and cycling route running for 16 miles and linking the shale villages of Winchburgh and West Calder. The work of creating the trail is down to a collaboration between a greenspace trust, a local authority, a number of community development trusts, and a museum. It was funded through the West Lothian LEADER programme and the National Lottery Heritage Fund.

The project linked a sequence of using existing footpaths, undertaking improvement works where required, and fully signposting the route. The route snakes its way through many of the old shale mining centres, starting at the shale-oil village of Winchburgh, following the canal towpath through the shadow of the Broxburn bings, past the site of the Pumpherston refinery, and eventually reaching West Calder—the capital of the southern shale fields. Geology has not always been cooperative along the route, with the Trail needing to cross a couple of miles of shale-free land where volcanic rocks intruded later in the Carboniferous Period. The absence of mining in this gap was one reason why, in the 1960s, Livingston was chosen as the site of a new town. The Trail follows a pleasant green riverside route through the heart of the modern town.

The end points and a mid-way point of the Trail are marked by interpretative panels and artworks, while waymarkers are placed at points along the journey. Every waymarker has a story to tell. QR codes on each post link directly to pages on the Shale Trail website and provide a little insight into a particular aspect of the shale-oil story, from geology and technology through to tales from the communities that served the industry. There are separate QR codes linking to a children’s Shale Trail featuring interesting activities and classroom resources.

For those who want to dig a little deeper, the Shale Trail website links directly to ScottishShale; the online resource maintained by the Museum of the Scottish Shale Oil industry, which gives access to the museum’s collections and archives, and provides a seemingly endless source of insight into shale and everything associated with it

COVID restrictions put paid to plans for a high-profile launch of the Trail, but the new route has nevertheless captured the public imagination and attracted great attention. For local folk it is a reminder of the history behind familiar places, while shale trail-ers come from many parts to walk or cycle the route and breathe in its special heritage

The project has also awakened an appetite to do more and plans are afoot for further partnerships to explore the wonders and heritage of West Lothian.

 www.shaletrail.co.uk
www.scottishshale.co.uk

Right: The Five Sisters bing (or at least some of it) formed from the spent shale produced by Westwood Oil Works between 1942 and 1962. The mechanised tipping system used only at Westwood resulted in the unique shape of this gigantic pile, or bing, of spent shale.

Below: An alternative way of enjoying the Shale Trail. Passing waymaker No.16, close to the site of the refinery at Broxburn Oil Works.

