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LANDMARK SERIES, No 2

Some of our members have suggested that we publish a series of articles about historic sites associated with Miller. We did in fact begin this process with an article about the reopening of the East Kirk in the previous issue (No 11). We continue with a piece about a local landmark, well known to residents but little noticed by the wider world.

Hugh Miller and the Coalheugh Well at Cromarty

By Michael Taylor (National Museums Scotland and University of Leicester) and Hugh Torrens (University of Keele)

Cromarty’s architecture is rightly famous, but the Coalheugh Well of Miller’s The Old Red Sandstone has been, we think, unjustly neglected. It is a rare, and possibly unique, upstanding survival of a failed ‘pre-scientific’ coal prospecting venture from before the time of William Smith (1769-1839).

Location

The Well, more correctly an aquifer source, lies below the site of St Regulus's chapel, where Hugh and Lydia Miller’s eldest child Eliza is buried. It is easily accessible where the Reeds Path Loop to the water processing plant crosses the Old Chapel Burn debouching from the ‘den' or wooded ravine in the old sea-cliff.

The wellhead is a mossy masonry dome about chest-high to an adult, with an outlet on one side: plainly there is enough pressure to produce a head of at least a metre or so above ground, giving ‘one of the finest specimens of a true Artesian well which I have anywhere seen’ (Miller 1841, p. 181).

Then as now, ‘t[the waters are not strongly tinctured, - a consequence, perhaps, of their great abundance; but we may see every pebble and stalk in their course enveloped by a ferruginous coagulum, resembling burnt sienna, that has probably been disengaged from the dark red sandstone below, which is known to owe its colour to the oxide of iron’ (p. 182).

The colour, and the traditional depth of the bore (below), indeed suggest that the water is passing through Old Red Sandstone rather than the overlying Ice Ages and modern deposits. Like Miller, we can infer the underlying geology of Old Red Sandstone nodular mudstones and shales (including Miller’s famous fossil fish bed), from the outcrops in the stream bed, and along the nearby beach.

Origin

Perhaps based on oral tradition, Miller ascribed the Well to George Mackenzie, first Earl of Cromartie (1630-1714) – probably wrongly, David Alston notes in his history My little town of Cromarty. But whoever the 17th or 18th century landowner was, he or his advisors, as Miller plausibly suggested (1841, pp. 180-181) were misled by abundant plant remains and occasional bitumen in the grey shales in the stream bed ‘into the belief that coal might be found ... He accordingly brought miners from the south, and set them to bore for coal in the gorge of the ravine'.

But this was before the last years of the 18th and first years of the 19th century when William Smith developed his key insights, firstly that sedimentary rocks occurred in a recognisable geological sequence, secondly that rocks of the same type (such as shale) could occur at many positions in that sequence (so that rock type was no guide to position), and thirdly that the rocks of a particular stratigraphical position could be reliably recognised only by their constituent fossils.

Smith’s insight helped distinguish the true coal measures from barren rocks elsewhere in the sequence which looked superficially similar, for instance in containing bits of coal-like lignite (fossil wood). Given the huge, and growing, importance of coal, this was of immediate, and enormous, use, in guiding what should at once have become – but too often did not - a scientifically based search for coal. There was then too great a gap between what scientists knew and what coal miners did.

Before Smith’s insights, the Cromarty prospectors were blind to the fossil evidence, even the very notion, that they were dealing with rocks below the Carboniferous Coal Measures. As Miller put it, ‘there might be some possibility of their penetrating to the central fire, but none whatever of their ever reaching a vein of coal.'
But 'they were prevented from ascertaining, by actual experience, the utter barrenness of the formation ... They had bored to a considerable depth, when, on withdrawing the kind of augre [auger] used for the purpose, a bolt of water, which occupied the whole diameter of the bore, came rushing after like the jet of a fountain, and the work was prosecuted no further; for, as steam-engines were not yet invented, no pit could have been wrought with so large a stream issuing into it; and as the volume was evidently restricted by the size of the bore, it was impossible to say how much greater a stream the source might have supplied.

'The spring still continues to flow towards the sea between its double row of cresses, at the rate of about a hogshead [variable measure – usually by then 52.5 gallons, just under 200 litres] per minute, - a rate considerably diminished, it is said, from its earlier volume, by some obstruction in the bore. ... the recollection of it is ... preserved by tradition ... and by the name of the well, which is still known as the well of the coal-heugh, - the old Scotch name for a coal-pit’ (pp. 181-182). Heuch or heugh is Scots for a pit or mine - but also for a cliff or high bank (Concise Scots Dictionary), and is therefore doubly appropriate here, whatever the original intention. David Alston kindly informs us that the modern local pronunciation of Coalheugh is ‘callie-shoch’.

Other trials for coal would be carried out in the district, even after Smith’s work, for, as well as the Old Red Sandstone, the Jurassic black shales at Eathie were also temptingly lignite-bearing. One wonders how often the same mistakes were made. But we know very little about them except for trials carried out against Miller’s advice at Eathie about 1852 (traces of at least one shaft are visible north of the bothy).

David Alston kindly points out that the Well was later used to supplement the unsatisfactory town supply through an iron pipe run from the well around 1859-63, while, more recently, in The Cromarty We Knew, Eric Malcolm recalls the tap on the garden wall of Clunes House, “spring water piped from the Collie well ... always cold, but it tasted most strongly of iron ... very handy after a hot game of tennis iron water or not.” Today, however, the water flows freely to the burn and thence to the sea.

A final comment

The Well is a very special reminder of the economic importance of geology, complementing the oil platforms so often parked within sight in the Firth.

As so often, Miller (1841, p. 183) gives an admirable last word:

'... geology, in a peculiar manner, supplies to the intellect an exercise of ... [an] ennobling character. But it has also its cash value. The time and money squandered in Great Britain alone in searching for coal in districts where the well-informed geologist could have at once pronounced the search hopeless, would much more than cover the expense at which geological research has been prosecuted throughout the world.'

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Further reading
