

BUILDINGS AT RISK

Black and white – looking for coal and finding salt

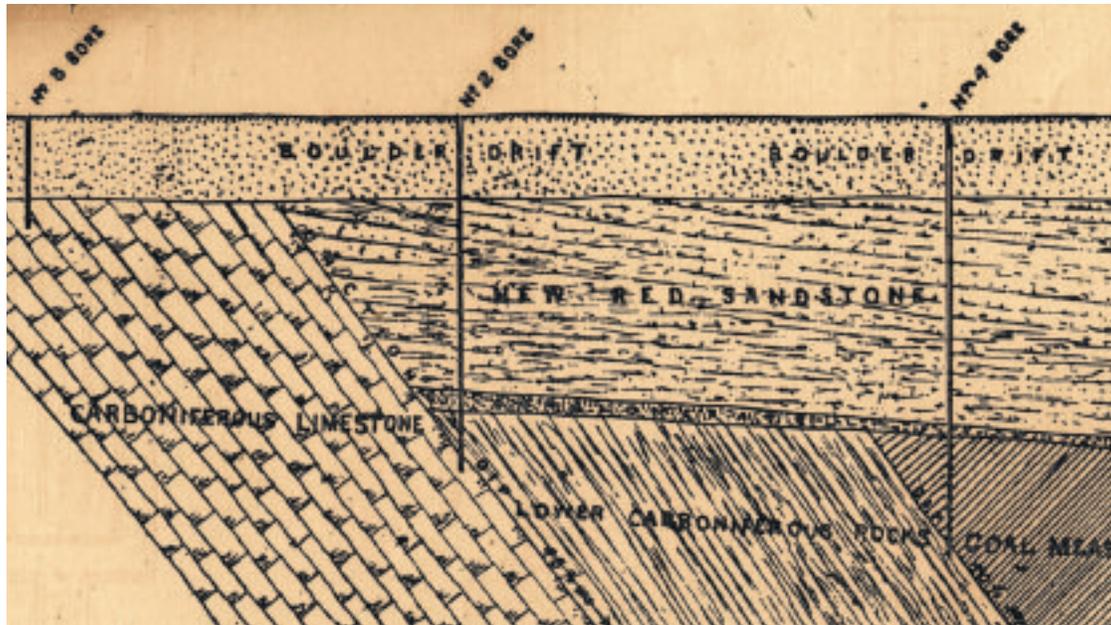
Buildings at Risk covers buildings and structures on our Island. This week, **Dave Martin** of the *Isle of Man Natural History and Antiquarian Society* begins a short series on how we have used some of our natural resources and the evidence which remains.

Many are aware of the Isle of Man's rich mining heritage, mainly for metal ores - but our interaction with the island under our feet goes much deeper (pun intended), extracting materials, processing them and using them.

One of the long-standing problems with our island was, and still remains, lack of on-island fuel for heating and cooking. Those with access would cut turf on the uplands or in the currags, some would have access to relatively scarce firewood, others would burn gorse bons.

Coal was a preferred, but expensive, fuel imported from neighbouring coasts by sea. It was occasionally found on the shore - possibly sea-coal from undersea sources (as happens on the Firth of Forth) or maybe from wrecked cargoes.

As late as 1931, Harry Kinrade recalled cannel coal (a type of shale coal) being col-



An illustration of a cross-section of the geology under the northwestern coast of the island. The western bore (No. 3) is at the Lhen; No. 2 is below Gobb Gorry; and No. 4 is below Knock-e-Dhooney. Note - the vertical scale is exaggerated in this section, while 'coal measures' means potentially coal-indicating geology, not necessarily mineable coal

lected on the northern shores after the steamer Frost was wrecked on Jurby Head.

There have been many prospecting campaigns for coal onshore, including one promoted by Charles, 8th Earl of Derby in 1699; all with no real results, although some

speculators may have profited briefly.

Exploration focussed around where it was thought coal had been seen at first; and the sometimes convoluted geology around Derbyhaven gave rise to several false starts (and maybe a scam or two?).

It is known that jet - the coal-like material sometimes used to make jewellery, as typified by Whitby Jet - was found in the Ronaldsway area, so that may have given a false clue.

There were no real deep drillings, but in 1793 there was great trumpeting that coal had been found at Derbyhaven only 60 feet below the surface - although after a century or more, and probably a number of disappointed investors, nothing was ever found.

Stray finds of coal along the northwest coast prompted drilling somewhere near Peel (exact location unknown) in about 1870 - they drilled down to 381 feet but no coal was found.

In the nearest known (and exploited) coalfields to the island in Cumbria, the coal layer/seams were found sandwiched beneath a distinctive sandstone - known as St

Bees sandstone - and beds of limestone.

Manxfolk were certainly aware of the Cumbrian coal mines, including via the 'West Cumberland Post and Wares Whitehaven Advertiser' newspaper which used to be one of the main off-island publica-

tions read here.

Some Manxfolk may also have been aware of profits that could be made from Cumbrian coal.

John Christian, of Ewanrigg/Milntown stock who owned mines at Ellenfoot and Maryport, had married into the Curwen family who eventually had collieries in Workington, Harrington, Seaton and Clifton, including the Jane Pit which followed a seam seaward towards the Isle of Man.

Even in 1688, it was reported that the coal mines earned Curwens a not inconsiderable £200 per annum.

In the late 1880s, there was increasing speculation that coal might be found under the island and Messrs Craine Bros of Liverpool launched a campaign of experimental drilling to see if there was an exploitable seam of coal under the north of the island.

The miners in the Cumbrian pits, when they went to work, went down and then followed the seams westward under the sea - for up to three or four miles - towards the Isle of Man.

Looking at the compass direction that the seam was heading from the Cumbrian coalfields, it looked as if the seam might continue as far as the island.

It is also tempting to think that the investors may have

been seduced by perceived parallels between the successful Flintshire colliery at the Point of Ayr, the northernmost point of the Welsh mainland, and the apparently similarly named Point of Ayre at the northern tip of the Isle of Man.

Not only did the compass direction lead towards Manx shores, it was thought the dip indicated that, if the seam continued at a similar level, it might have been found perhaps a mere 300 feet below the surface.

If the Cumbrian seam did go as far as the Isle of Man, it was thought it might graze the coast possibly in the area between the Point of Ayre and the Lhen, so that was where the test borings were made.

A drilling rig and crew was therefore procured and brought to the island in 1891, under the direction of engineer John Todd.

Until the late 1800s, most drilling was with a solid bit (like using a masonry bit) or by driving a hollow tube down like pile-driving (such as the 'Abyssinian tube well' driven to get water at Douglas Steam Railway Station).

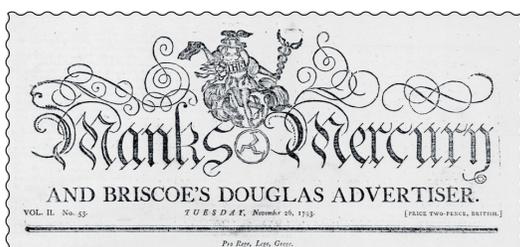
The diamond-toothed hollow drill patented in 1876 allowed rotary drilling with recovery of intact cores - just like we see cores through glaciers on TV nowadays - and hence the 1891-93 campaign could really investigate what lay beneath the island's northern coast.

They knew that the northern plain was 'the Gift of the Glaciers' and had much 'glacial till' overburden (sand, gravel, boulder clay) left behind by multiple ice ages, through which they would have to drill.

To minimise the depth of overburden and stay as close as possible to the projected coal seam, they chose to drill at the head of the beach just above the high-water mark.

The drilling rig and all its support was taken from Ramsey for the first test boring at the Point of Ayre.

They were surprised at the thickness of the glacial/sea-bed debris (298 feet) but they continued through a series of layers of marl (clay) to a depth of 615 feet when the drill stem suddenly dropped a couple of feet. Further drilling indicated



DOUGLAS, TUESDAY NOV. 26.

WE feel unspeakable pleasure in being able to announce to our readers, that a stratum, or bed of coal, has been discovered near Derbyhaven, in this island, at the depth of about 60 feet from the surface of the earth. —Should the layer of this useful fossil prove of any considerable extent, it will open to the inhabitants of this isle a source of wealth hitherto unknown, and at the present juncture altogether unlooked for.

Spreading the 'news' of coal at Derbyhaven (before the promoters sought investors?)

iMuseum

IS THERE COAL AT DERBYHAVEN?

To the EDITOR of the MANX SUN.

SIR,—There can be no possible objection to a party of gentlemen amusing themselves by making a boring in search for coal at Derbyhaven at their own expense. But as I read the Secretary's statement it was contemplated that this amusement should be enjoyed at other people's expense. Now in this statement there are serious errors of fact; and knowing as I do of the prodigious waste of money and labour that there has been in searching for coal, when it could not exist, I felt bound to speak out. I do not think it unreasonable to hope yet, before launching out into such an enterprise, the promoters might be induced to take the advice of a good geologist; not of one of the so-called "practical men," who from their limited experience, and hasty generalisations have been mainly instrumental in inducing small capitalists to bore for coal; but of a first-rate geologist, like Ramsay or Hull.

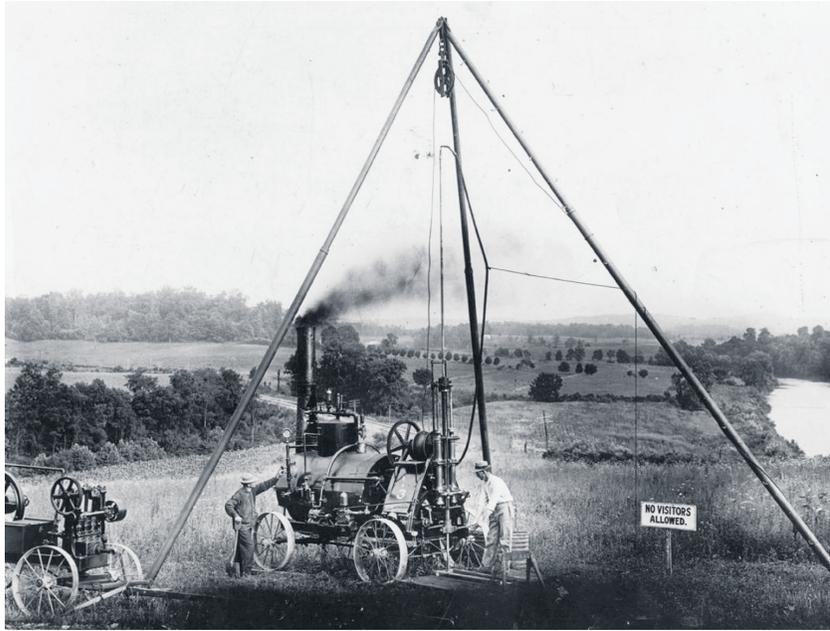
I dare not go into all the errors of Mr Corkhill's statement and letter; or I should occupy too much of your space. Suffice it to say that the Silverburn sandstones are not the "new red sandstone," which so often lies over coal; that it is not unusual in the carboniferous limestone of the north of England for beds of coal shale, quite valueless, to intervene; but that the existence of a workable seam at the horizon of the Derbyhaven rocks is quite unknown.

It is difficult to see the bearing of the latter part of Mr Corkhill's letter containing some information about the Madley colliery. No one doubts the fact that the coal measures vary in details in different parts of England; the question is whether a workable seam of coal has ever been found below the carboniferous limestone.

Mr Corkhill need not be annoyed at my letter (which was certainly not intended to give annoyance), if, as his letter implies, the total preliminary work is done at the expense of the promoters. On the contrary, when he succeeds, he will have the additional satisfaction of having disproved the gratis opinion of a more theorist. May I beg him, in the interests of science, to keep an accurate account, or send to some local museum specimens of all the strata passed through in the boring. This result may be of real value.—I am, Sir, your obedient servt.,
Ragby, May 21, 1872. J. M. WILSON, F.G.S.

A geologist attempting to debunk speculators in 1872

Manx Sun via iMuseum



A view of the type of rig used, where there was better access (Illinois State Geological Survey)

they had hit a pocket of brine below which was alternating layers of marl and salt, before they hit pure marl again at 680 feet.

No coal was found, but they knew there was sandstone further west, such as at Peel, so they then went to the far end of the line at the Lhen where they found limestone at 233 feet and abandoned that test.

It will be remembered that the Cumbrian coal is found sandwiched between sandstone on top and limestone below. so hitting limestone was taken that no exploitable coal would be found there.

That limestone was a lot closer to the surface than they expected and it meant the geology must change significantly in the five miles or so they had come down the coast, so they would have to make further test bores in between.

To clarify the geology between the Lhen and the Point of Ayre – and hopefully find coal – three more tests were conducted back up the coast towards the Point of Ayre.

The extremities of their survey line were accessible by rough roads but they wanted to continue drilling at the head

of the beach, so the rig was moved by sea.

A small steam coaster/puffer - the Dolphin - carrying the drilling rig, drill pipe, engine plus fuel and boiler water was driven ashore at high water and beached wherever they wanted to drill, laying a kedge (stern) anchor some way offshore on her way in.

At low water, they unloaded the rig and fuel onto the beach from whence it was dragged up above the high water mark by local farm horses. They would then wait for the next high water when the Dolphin would kedge off (go astern and pull themselves off using the kedge anchor).

When drilling was finished at that spot, the Dolphin would return, beach on a rising tide, load the rig at low water and then kedge off again at the next high tide.

Below Gob Gorry (Blue Point) they drilled to a depth of 700 feet where they found a 20-foot thick bed of limestone; below Knock-e-Dhooney (just west of Rue Point) where they

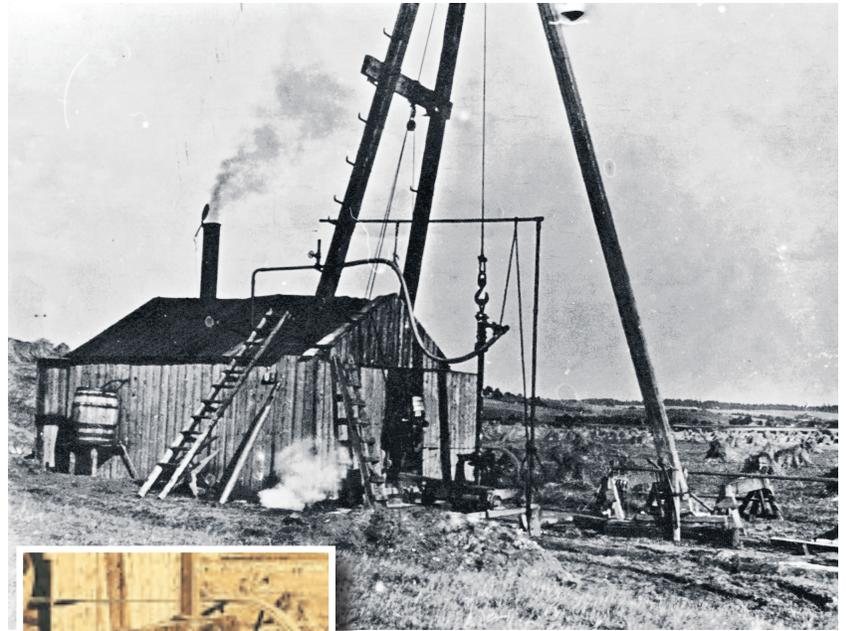
got to 970 feet before finding limestone beds; and finally below Ballaghenny where they eventually found coal but it was only six inches thick, at just over 1,000 feet deep; and it was shortly followed by solid limestone beds.

Prior to this exploration campaign, it was known that to the north of hills – effective north of what became the TT course between Kirk Michael and Ramsey – there was no bedrock on the surface.

It was understood that the northern plain was composed of glacial debris - sand, clay and gravel - and that in places the clay stopped water draining away, or even preserved giant elk skeletons or tree trunks. But there was no real understanding of how deep that went, or what it rested on, and there was no real indication it was anything other than uniform.

As well as the primary purpose of looking for coal, or the sandstone and limestone that might sandwich it, the drillers kept very detailed records of each layer or material they encountered.

This would of course be useful if they ever had to con-



Taken whilst in use on another site in Scotland, this drilling rig was used on the north of the Isle of Man, possibly for this 1891-93 coal exploration campaign. In this Scottish location, a temporary shelter was erected around the steam engine. (Inset) a close-up of the flat-belt drive from the steam engine to the drill-head and associated gearing Frank Cowin collection

sider sinking colliery shafts, but it also contributed enormously to our understanding of the geology under the island's northern plain.

In particular, the fact that limestone was too deep to be found at the Point of Ayre (in this campaign at least), but was only 233 feet from the surface at the Lhen, 700 feet at Gob Gorry/Blue Point (less than a mile away) and nearly 1,000 feet deep another half-mile up the coast below Knock-e-Dhooney, indicated significant topography.

The records of what was found in the cores as each test bore was made are remarkably detailed; for example they recorded near 100 layers in the cores from the Knock-e-Dhooney test – some of those layers were tens of feet thick, but they recorded one layer only three inches thick!

As well as John Todd, the engineer who supervised the drilling, the results were scrutinised by the likes of Sir

William Boyd Dawkins (the first Professor of Geology at Manchester University) and George William Lamplugh, the father of Manx geology.

The results are illustrated in cross-section drawing and further analysis allowed a suggested plan view of the major layers to be first found be-

neath the glacial till (debris).

The sandstone/limestone sandwich was empty, the six-inch seam of coal obviously wasn't worth exploiting, but the presence of brine gave promise of a return

Next time we will look at how the brine was extracted, used and processed...



(Below) Trays are used to collect the cores, some of which – when drilling through glacial till / boulder clay – are quite fragile. (Above) A section of the 4-inch drill core from the test bore below Knock-e-Dhooney



Perceived underlying geology after the 1891-93 coal exploration campaign

