

A climate horror story

Christopher Elliott

Browsing through the booksellers in Tobermory one afternoon, too wet and windy to be at sea, a volume, perhaps not unreasonably, caught my eye: *Hutton's Arse* by Malcolm Rider.

Who was Hutton? Why the reference to (presumably) his backside, was it a Gaelic word for something less offensive? Reading on, it had the subtitle: *Three Billion Years of Extraordinary Geology in Scotland's Northern Highlands*.

I was intrigued enough to buy the book, no doubt was the purpose of the title, but it then lay unread on *Otter's* bookshelf for a couple of years. Why buy a book if you were not going to read it? So, during a damp week this summer, I set about it.

At this point, another strand weaves its way into this tale. Almost universally, charts of the Western Isles of Scotland have the phrase 'raised beach' written somewhere on the coastlines and, on some charts, many times. From the sea, a raised beach looks inconsequential and it took a number of years before we found the time to venture ashore to actually examine one.

Raised beach on Jura. Note the figure highlighted for scale



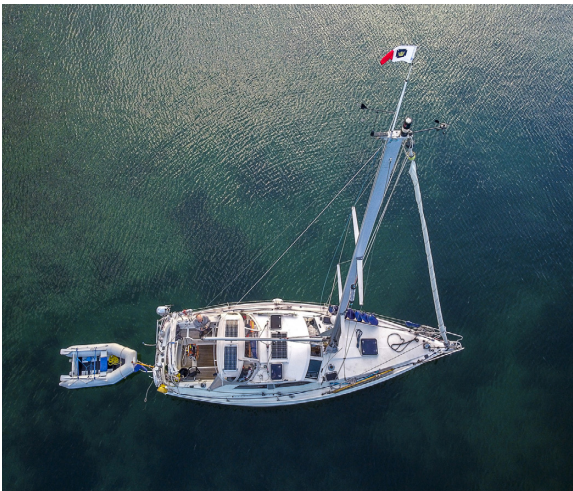
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We had been missing something. Especially on the west coast of Jura, raised beaches are things of wonder. They are much bigger in contact than when seen from afar, rising up steeply 60 – 100 feet, composed of clean, melon-sized rounded stones. Bone-white, they recall that chilling necropolis of a million skulls, piled high at Fleury on the battlefield of Verdon after the slaughter of the First World War had ceased.



Otter at anchor in the Sound of Jura

Half way up and hard going



Research revealed that these raised beaches were formed as the land quickly rose upwards and the sea receded. But what was a little startling about them was their uniformity, they looked as though they were all made in a single pass.

So that was that and, during most seasons, we find a moment to scale a raised beach and wonder at them again.

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But to return to *Hutton's Arse*. This is a book celebrating James Hutton. He was a part of the Edinburgh Enlightenment when, between 1750 and 1800, that city was styled the 'Athens of the North'. It must be quickly added that the same 'enlightenment' also evangelised the schemes for land improvement that led directly to the miseries inflicted by the Highland Clearances.

Hutton wrote his *Theory of the Earth with Proofs and Illustrations* in 1778, a book which, in geological terms, was to be as ground breaking as Darwin's *On the Origin of the Species* a century later. Hutton's treatise became the basis of modern geology, ejecting previous Neptunist theories that mountains and landscape were thought to be the result of divine design. Compiling the evidence for his new approach, Hutton rode many hundreds of miles through the Highlands on horseback and was renowned for complaining about his sore backside. Hence the title, although without that pain, there would have been no treatise.

Rider's paean to Hutton is engagingly written and I rattled through the first chapters at speed, interested enough to learn of volcanoes on Mull and how the ice sheet carved away the northern Flow Country, leaving the isolated islands of Quinag, Foinaven, Stac Polly and Suilven, which had been tall enough to poke through the top of the ice, resulting in their extraordinary smooth, steep-sided shapes today.

But things came to a sudden halt in Chapter 5: *The Coming of the Ice Age*. Here Rider explains that a little ice age in the years 10,500-9,500 BC produced an ice sheet half a mile thick covering the west side of Scotland, from Assynt to Glasgow and known as the Younger Dryas Ice Sheet. 'Dryas' because it could be identified by the remains of a particular cold-weather plant of that name and 'Younger' because previously there had been a similar occurrence also marked by the plant. Rider noted that this happened at a time when villages were already developing in the Fertile Crescent region of the eastern Mediterranean, so it occurred within the human timeframe.

But here's the punch line. Well-recorded in the Greenland Ice Core Project, sometime around 9,500 BC global temperatures rose a massive 7°C in only 50 years and 'the world went from ice-house to greenhouse in a generation'. Pause to take that in, a global rise of seven degrees centigrade in fifty years! And all without human interference or stimulus, perhaps putting our current anxieties about global warming, of maybe 2°C in 100 years, into perspective. It suggests that, whatever else happens, even bigger geological events are going to roll over us in time and we have to find the ingenuity to survive them.

The Younger Dryas Ice Sheet (half a mile thick) seems to have existed for about one thousand years, but it disappeared in just fifty, producing 'unimaginable flooding and chaos' with huge river flows 'as vast ice-dammed lakes suddenly emptied'. The glens of the Highlands are choked with large boulders and rocks as evidence of the forces involved. And elsewhere, one of these dam-breaks is thought to have been of sufficient size to have produced a flood of fresh water into

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the saline North Atlantic that slowed or stopped the Gulf Stream. This weakening of the 'Atlantic Meridional Overturning Circulation' makes Europe colder but, paradoxically, the planet overall is warmed dramatically, because less heat is taken down into the ocean depths. It can trigger 'two decades of rapid global warming'.

Which brings us back to raised beaches. These were formed in such a uniform way because, when the weight of a half mile of ice was suddenly removed from above in only 50 years, the land rose back up rapidly over a similar timescale.

In his final flourish, Rider projects those events forward into our present time and he finishes with a chilling postscript, literally, to his book *Hutton's Arse*. He points out that we currently exist in an inter-glacial period, that is between major ice-ages, and that 'we are enjoying the best climate for 120,000 years'. He goes on '...be this by man's doing or natural, we don't yet know, but it will not last. There is a coming ice-age'.

Think about that next time that you struggle to the top of one of these wonderful natural phenomena. *Profiter du présent!*

Christopher on top of Sgurr of Eigg

