

THE ATTRACTION OF MOUNTAINS

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*It's the blue Islands are pullin' me away
Their laughter puts the leap upon the lame
The blue Islands from the Skerries to the Lews
Wi' heather honey taste upon each name*

*The far Cuillins are puttin' love on me
As step I wi' the sunlight for my load.*

In 1774 the Reverend Nevil Maskelyne, Astronomer Royal, travelled to Perthshire in Scotland, part way between Loch Tummel and Loch Rannoch. He was unaware, as far as we know, of the lure of the Isles. His objective was the mountain Schiehallion. He was on science bent.

The song hadn't been written yet. Malcolm Johnson, Patuffa Kennedy-Fraser and Kenneth MacLeod did that much later.

The Reverend gentleman was cross at having to leave home in person. He did so at the request of the Royal Society, of which he was a Fellow, and with the King's permission to absent himself from his duties at Greenwich.

Two hundred and twenty two years later Jane and I drove up to Schiehallion in a small hire car. We stumbled out into the cold wind and stamped up and down shivering and reminding ourselves that this was summer. Thank God our forebears had the sense to emigrate before their bones turned to permafrost.

Maskelyne's plan was nothing less than to measure the Density of the Earth. In order to achieve this he would quantify the Attraction of Mountains. The Royal Society's Committee of Attraction was overseeing the project.

A plaque commemorates Maskelyne's experiment. He 'set up observatories on either side of Schiehallion to measure by how much plumb-lines would be pulled out of the vertical and towards the mountain by the gravitational force due to its mass...it became the first determination of Newton's Universal Gravitational Constant.'

It's all to do with weight.

Jane and I were less clear in our aims. We went to Schiehallion by accident, meandering tourists. (Shouldn't we *look* at something?) Our goal was Skye and any other photogenic landscapes in between.

We thought we knew the weight of our love. Three years curled around each other at night, hands cupping breasts. A mortgage. A silly terracotta bird bath bought on a Saturday afternoon lazy with love. A dog. Plans and hopes and you-and-me-against-the-chill-winds-of-the-world.

It was only a few months before we would separate and go our loveless ways. But we didn't know that yet.

Nevil Maskelyne was a veteran of a 1761 expedition to St Helena to observe the first part of the Transit of Venus. Remember the Transit of Venus? Captain Cook sailed south to observe the second part eight years later. Cook didn't mean to discover Australia. He was also on science bent.

From 1765 Maskelyne was Astronomer Royal and lived comfortably at Greenwich. He served on the Board of Longitude as well as the Committee of Attraction. He was a fellow of the Göttingen Royal Society and of the St Petersburg Academy. He corresponded and consulted with eminent scientific gentlemen all over the world and even some scientific women, such as Caroline Herschel, who discovered at least six comets.

Jane and I were veterans of tertiary education, protest movements, overseas travel, feminism and we knew about mountains. We might have grown up in the ancient flattened landscape of Australia but even as children we knew about mountains.

*When I was but thirteen or so
I went into a golden land
Chimborazo, Cotopaxi
Took me by the hand.*

That's WJ Turner. He met his volcanoes in books, but TV is almost as good. Jane may even have been to Ecuador. I can't remember.

The story should really start in Ecuador.

In 1738 two Frenchmen demonstrated that the volcano Chimborazo deflected their plumb-lines from the vertical. This phenomenon, predicted by Sir Isaac Newton in 1687, became known as the Attraction of Mountains. The instruments were not accurate enough to measure the effect of Chimborazo. The Frenchmen looked forward to the day when measurements could be made under better conditions closer to home. And so in 1774 Nevil Maskelyne set out for Scotland.

The weather might have been better in Ecuador than it was in Perthshire.

What did the highlanders think? By 1774 the old order was breaking down. Culloden paved the way; the sheep followed. The people fled to poverty in the city, or they were shipped to the New World. And to Australia, once Cook and Phillip had done their thing ('Oh good. I claim this').

During his four-month stay Maskelyne was visited by the Lord Privy Seal for Scotland and various professors, land owners and dignitaries. He was on friendly terms with the people of Kinloch Rannoch where he bought his supplies.

In 1996 the locals ran B&Bs and were polite to their sixteenth cousins, come from the ends of the earth to see where it all began. To try and see where it all began. Whenever the mist parted for long enough.

The locals were impervious. Scientific gentlemen, spurious tartan, American Clan Chieftains, lesbian tourists. They'd seen it all. Not to mention their own children glued to the Internet or gone train spotting.

Maskelyne had to transport a ten foot Zenith Sector, among other things. Imagine a ten foot telescope and a ten foot plumb-line (in a casing) hinged together at the top. The plumb-line should be vertical (barring attraction) but the telescope can swing out at the bottom. That's a Zenith Sector.

Burrow, the assistant and surveyor, travelled with the instruments by ship to Perth and then by road to Schiehallion, the carts heaving and jolting on the rough tracks. Maskelyne followed in June when everything was set up.

Much later an intrepid Queen Victoria passed this way. She admired the view of Loch Tummel from 'The Queen's View' and was gratified that it had been named after her. No-one mentioned that it had been known by that name long before her accession. It honoured an earlier Scottish queen. Margaret perhaps. They made tea for the current queen in her travelling tea set.

We carried high tech Wilderness luggage. No chains or theodolites. No tea sets. We flew. We caught trains buses and taxis. We drove. Only the last few steps of our journey required any human effort. Unless you count the jet lag of a twenty hour flight.

Anne Boothe wrote to her daughter in the 1600s: 'I hope you will be soe carefull of your Selfe that, where the wayes are dangerous to rid, you will light and goe afoot. I hope you have Goloshues with you'.

Anne's cousin George would go on to become Nevil Maskelyne's great grandfather.

If only we'd had our Goloshues.

It was not our favourite B&B. The florals clashed and the bed needed airing. Better still would have been 'a ffire made in the roome and the bed lad on the flour before it and turned often to besure that it maye be very well aiered'. There's nothing worse than lying in a moist bed, as Anne Boothe made clear three hundred years earlier.

It is a disincentive to passion when the sheets smell musty.

We lay side by side. Rain beat against the window.

'What shall we do tomorrow?'

No-one ever admits how much time they've spent overseas wishing they weren't.

By June, when Maskelyne arrived at Schiehallion, a bothie had been built for him on the side of the mountain. No electricity, no electric blanket and the weather in October was appalling. Perhaps he had a hot water bottle. Or a fire inside the bothie. Very smoky.

In fact the bothie burnt down during the farewell celebration. Duncan Robertson's fiddle was destroyed. Red-headed Duncan, Donnaeha Ruadh, was the cook and cleaner.

Maskelyne later sent him another fiddle.

A B&B is better than a youth hostel. In a youth hostel the beds are too short and the sheet bag tangles up your feet so that you dream you've been leg roped. All the other women in the dormitory snore.

A youth hostel is better than a bothie full of smoke.

'Talk to me! Do you want to walk back to that pub for dinner? Do you want to see what the Ceilidh's like? Do you want to go back to London? What are you angry about? Is this because I didn't like that tartan shawl?'

'God I hate it when you go on and on like this. I Don't Know What The Matter Is. Okay?'

Maskelyne was no stranger to conflict. For a start there was his Schiehallion assistant, the simmering Reuben Burrow. Maskelyne recommended Burrow for the project. However, the Royal Society feared that the results would be less credible if undertaken by Burrow alone 'on account of his inferiority of education and situation in life'. Or so Maskelyne notes. Maskelyne was prevailed upon to undertake the work himself.

Burrow was later to claim that he had done most of the work and received none of the credit.

Then there was the Harrison affair.

An Act of 1714 offered a reward of £20,000 for the discovery of an accurate method of measuring longitude. John Harrison made the first clock to keep time on a long sea voyage. His clock maintained a standard time with which local time (determined astronomically) could be compared. The difference determined the longitude.

Harrison claimed success and was embroiled for many years in a dispute with the Board of Longitude over the reward. The matter was not settled until 1774 when Harrison was eighty. He died less than two years later.

Harrison blamed Maskelyne for withholding the reward.

Maskelyne was, of course, a gentleman. But he started out as a younger son and a curate. Not necessarily wealthy.

£20,000 was a lot of money. It only cost Maskelyne £59.6.9 to provision his expedition to Schiehallion for four months, including 'wine & other liquors' from Perth.

'I'm sick of all this meat. It's disgusting. It's a wonder they don't all die of colon cancer or constipation or something. Haggis!'

'You don't eat it.'

'Yeah, but you do.'

The meat consumed in one B&B breakfast in the British Isles would feed a normal Australian lesbian feminist household for ten years.

When it's a relief to find that the B&B doesn't have a double bed then you suspect that things are not good. Especially if you can't admit it to each other.

When you'd rather stay in a youth hostel than alone together in a B&B then you know the relationship is in trouble.

If you turn the magnets around they spring away from each other. The Repulsion of Turned Magnets.

We knew more or less what to expect from the Cuillins on Skye. We'd seen pictures of their blue mass hanging above the island. Schiehallion we were not prepared for. A rather dry rocky looking mountain,

'What sort of rock?' my father would later ask. He's a geologist.

'Sort of greyish looking,' I ventured.

He looked at me sadly.

Schiehallion is very conventionally triangular. It rises from the flattish land away from the loch. Hard to frame an interesting photo. We made do with the plaque. In addition Jane took my photo with the freezing grey waters of Loch Rannoch in the background. I was wearing my new woollen Edinburgh jumper. It wasn't enough.

Schiehallion's shape was most satisfactory for Maskelyne's purposes. Its East/West axis is longer than its North/South axis. It is sufficiently isolated from other mountains which might also attract.

The weather was not perfect, even in those summer months. Night after night Maskelyne waited for the clouds to part so that he could measure the distance between the moon and the stars. Not for nothing is it called Schiehallion, *Constant Storm*.

History does not state whether or not he had with him his quilted silk multi-layered Observing Suit, a sort of pyjama with built in feet and a long matching jacket, very stylish. His brother in law, Robert Lord Clive, sent it from India. It would have got rather grubby in four months of living in the bothie. Perhaps Duncan washed it for him.

Maskelyne started his observations on the southern side of the mountain. He found the latitude of this point from the stars using the Zenith Sector.

You focus the telescope on a particular star. The angle between the plumb-line and the telescope is the same as the angle between the star and the zenith, the point directly overhead. That's the angle you need in order to work out your latitude.

In mid-August, having observed more than thirty four stars from several positions Maskelyne moved to the northern side of the mountain and repeated his observations.

It took twelve men a week to move everything from one side of the mountain to the other.

Maskelyne used land surveys to measure the actual difference in latitude between the two sides of the mountain.

The difference between the astronomical measurement and the surveyed measurement was caused by the attraction of Schiehallion.

Maskelyne passed on the results of his observations to Charles Hutton, Professor of Mathematics at the Royal Military Academy, Woolwich. Hutton's job was to calculate the density of the Earth. For the purposes of this calculation he assumed that Schiehallion had the uniform density of 'common stone', two and a half times the density of water.

In one of the secret languages of the nineteen fifties a stone butch was a woman who made love to her femme partner but did not show her own vulnerability. Perhaps a woman who found orgasms difficult.

Two and a half times the density of water.

I know how she felt.

'Touch me. Don't touch me.'

While Maskelyne was gazing at the stars, Reuben Burrow was conducting the land survey in order to determine the exact size and latitude of Schiehallion. He worked his way around the mountain from baselines on flat ground.

Charles Hutton, in his work based on the Schiehallion results, used surface contour lines. That was the first use of such lines, which we now take for granted.

We take an awful lot for granted as we race around the surveyed, sealed, cambered roads of the Highlands.

Or squeal to a stop.

'Wow. They must be Highland cattle.'

'Oh lovely. Do you think they'll get off the road before dinnertime?'

We left Schiehallion and went on to Skye, adopted home of my McPhee ancestors. Maybe.

We passed Eilean Donan Castle (rebuilt in the nineteenth century) where they filmed Braveheart. I think. I sent Allan the thirty seventh postcard of a series. The messages were getting shorter. 'Braveheart??'

We passed Kyle of Lochalsh.

'Hamish McBeth?'

From there we could see Skye and the Cuillins but something was wrong.

Where there should have been a bonny boat speeding like a bird on the wing there was a bridge. A bloody great bridge. Arching across the horizon and destroying a seal colony. Oh well. When in Scotland. We crossed the bridge.

Maybe God overlooked Skye on the third day when he was separating the dry land from the waters-under-the-firmament. It was wet.

I sat on the side of the Cuillins, weighed down. I oozed tears. The mountain oozed tears. My feet were soaking.

I remembered laughing with Jane. I remembered the curve of her body, my hand tangled in her hair. I remembered all the hope.

Once the waters begin to rise you can only cry.

Is a wet mountain heavier than a dry mountain?

Maskelyne went home to Greenwich in October leaving the hardly-done-by Burrow to finish up. Maskelyne had demonstrated the Attraction of Mountains. He had also shown that the Earth is heavier in the middle than at its crust. A final contradiction to the previous belief that the Earth is a hollow sphere.

For this work the Royal Society awarded him its highest honour, the Copley Medal.

'Weighing the Earth', Thomas Carlyle called it, 'from the flanks of Schiehallion.'

It would be another ten years before Maskelyne married and fathered his only child. Nevertheless he was by nature a family man. He shared his knowledge of the stars with his sister and his daughter. His great grand daughter Mary Arnold-Forster describes her own mother in old age, wrapped in a white shawl, with a telescope on a tripod, teaching a group of children about Saturn, about Galileo and about Maskelyne Mountain on the moon.

Jane and I flew back to Australia.

We had demonstrated that a relationship is a sphere filled with tears.

Ours dissolved.

We had proved that love weighs more than a mountain and makes breathing impossible.

We had proved that a dog and a house and a bird bath weigh nothing at all and can float away.

Four years later I looked up Nevil Maskelyne in the library. He's famous. It's because of him that Greenwich is longitude zero, Mean Time etc. It's all in:

Nevil Maskelyne – The Seaman's Astronomer by Derek Howse and

Basset Down – An Old Country House by Mary Arnold-Forster.

Greenwich Observatory is now championing Harrison at Maskelyne's expense. The wheel turns, the clock ticks on.

I have convened a Committee of Attraction. It meets inside my head whenever the need arises and argues interminably.

'Be careful, be careful.'

'But the hand on the knee, the pressing together of bodies...'

'The pressing cannot, of course, increase the weight.'

'Ah, but it may alter the volume.'

'Consider the density of a fluid-filled sack of semi-permeable skin...'

'The skin has some degree of elasticity...'

'The bony framework, however...'

Desire passes.

I wear my Goloshues everywhere.