

THE HISTORY OF TIREE IN 100 OBJECTS - no. 40

GUNTER'S CHAIN

This rusty chain, found in Heylipol, does not look much. But in its day, this was a revolutionary piece of equipment that transformed the appearance of the island.

When the Campbells took control of Tiree in 1679, they found a medieval landscape. Farm boundaries snaked across the island from rock to rock, loch to loch. Fields were a convenient size for the horses and ploughs of their day. Villages grew up next to the most fertile land and near a water supply. In other words, the farms had evolved around the landscape. And these irregular areas of land were measured by how productive they were, using an ancient measure only used on Tiree, Coll and Orkney: the mail-land. Four mail-lands gave a tenant grazing for twelve cows, twelve horses or sixty sheep. The 1776 Census of Tiree had the approving entry for Middleton: "John McLean is a good tenant for four maile land; he has five cows and five horses".

Around 1760, the fifth Duke of Argyll became determined to drag Tiree into the modern age, at a time of agricultural revolution known as 'Improvement'. He turned to two members of a new profession: the surveyors James Turnbull and George Langlands. They used a Gunter's chain like this one with a surveyor's compass to accurately measure distances and areas for the first time. Placing a ranging rod at the corner of a field, the chainman lined his chain up, pulled it taut, pinned the end link into the ground and pulled it round to start again. The surveyor noted in his logbook the number of chains and links between the starting point and the ranging rod. With two edges of the field, he was able to calculate its area. Longer distances were calculated using triangulation. A triangle with measured baseline and angles was staked out. A distant feature like a hilltop was sighted and its angles from both ends of the triangle measured. With these numbers, the surveyor was able to calculate how far away the hilltop was. The Ordnance Survey started chain triangulation of the country in 1783, and the system of 'trig points' was born.

The surveyor's chain had been invented in 1620 by the English clergyman and mathematical genius Edmund Gunter, who went on to become a professor of astronomy and invented an early version of the slide rule (younger readers, ask your parents). Gunter's chain, as it became known, has one hundred links and was twenty-two yards long. Eighty chains made one mile, and crucially an area ten chains by ten chains was ten acres. This made calculations of field sizes much simpler.

Tiree, with its flat landscape, must have been surveyor heaven. Turnbull was able to produce the first accurate map of Tiree in 1768, with farm sizes measured in acres, roods (a quarter of an acre) and falls (1/160th of an acre). Starting around 1800, Langlands laid out a grid of rectangular crofts with planned sizes: the crofting landscape we know today. The 1851 Census now had the entry for Balephuill: "Alexander Sinclair, crofter four acres". Crofting sideroads were plumb straight, crofts usually close to a neat rectangle, and tenants could look over their walls and think for the first time: my neighbour has six acres, while I have only four". Modern, commercial 'farming', for good and ill, had come to Tiree, all made possible by the invention of a simple chain.

These rusty links were probably last used last to measure ditches, when they were still cleaned by hand. The chain as a unit of length is no longer used, except on the railways, where the 'chainage' from the main station on a line is still used to identify bridges and level crossings. And the cricket pitch: one chain long!

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