

## STANDING STONES



The Outer Isles: The Standing Stones of Callanish

The mysterious Standing Stones of Callanish are on the west coast of the Isle of Lewis, in the Outer Hebrides, on the very edge of Europe, looking out over the North Atlantic. Travel due west and the first land you will encounter is northern Labrador, east of Ungava Bay. Thanks to the Gulf Stream it is rarely cold and rarely warm, but it is almost always windy. The landscape is covered by a sodden blanket of peat, and may reasonably be described as bleak. It is particularly bleak on Sundays. Sunday is a serious business on Lewis. Shops and restaurants are shut, and you can't buy petrol. As a dispensation you may be able to get a meal in a hotel, but only if you've had the foresight to buy petrol because there is no bus service. And, before you ask, you can't buy booze, either.

So much for modern man in the Outer Isles. What of the people who chose to erect the marvellous stone circle? When and why did they build it? Strangely, stone circles are a speciality of Britain and Ireland. There are about 1000 stone circles and 80 henges – circular earth-works – in these islands, but only a handful elsewhere in Europe, mainly in Brittany and the Basque country. Why the ancient Brits were so keen on stone circles remains a mystery, but it does suggest that they were in this respect socially cohesive from a very early time. The most famous stone circle by far is Stonehenge, in the South of England, a World Heritage site and one of the most visited tourist destinations in the UK. It stands in open, gently rolling chalk grassland, in a relatively lightly populated region (for southern England) called Salisbury Plain, about 120 km west of London. It is visible from a long way off, and although it stands in a fork between two busy main roads, the conservation authorities have ensured that no modern buildings intrude on its isolation. I went there by push-bike when still at school and was deeply impressed, the great angular trilithons, a unique triumph of prehistoric engineering, contrasting starkly with the gentle downland in which they stand.

Construction at Stonehenge began about 5100 years ago, with the building of a circular henge. One thousand years later 82 'bluestones', the largest weighing 4 tonnes, were installed in two incomplete circles. In the late 1980s some of these were investigated petrographically and chemically. Eleven were dolerites and four were rhyolites and tuffs. The nearest match for the majority was in the Preseli Hills in southwestern Wales, nearly 200 km away. Suggestions that they were derived locally from glacially transported material found little favour because the effects of glaciation are trivial in southern England. It is thought that they were probably transported by sea, on rafts up the Bristol Channel, but in archaeology, science and speculation tend to merge seamlessly together. The final stage of construction, about 4000

years ago, was the installation of the great Sarsen stones, the largest weighing 50 tonnes. They were assembled into a continuous ring with lintels, now incomplete, and the five great trilithons, which dominate the present structure, were erected in a U-shape. It is estimated that 500 men would have been needed to move the largest blocks of sandstone, most probably using sledges, ropes and rollers, from a quarry some 30 km to the north.

Callanish is more modest, but the wildness of its setting and the hardship of life we can imagine for the people who built it, give it a magical feel. It is built of blocks of the local stone, Lewisian Gneiss, at least 3 billion years old – a fragment of Laurentia left behind when Pangaea broke up. To my eye it seems the builders selected naturally broken, rather platy blocks, unlike the quarried Sarsen stones at Stonehenge. Construction began between 4900 and 4600 years ago, and pottery suggests that the main stones were erected 4200 years ago. For some reason the people of Callanish were extremely keen on stone circles – within a few kilometres there are no less than 19.



Stonehenge

So, the big question: why put so much effort into all this circle-building? Get into the more spiritual side of stone circles on the Web and you will read some extremely strange stuff. It does, however, seem certain that the alignments of the stones at Stonehenge had an astronomical function. Gerald S. Hawkins, Professor of Astronomy at Boston (Massachusetts) University, showed that its stones and archways point to the Sun and Moon as they rise and set during the year<sup>1</sup>. As summer progresses the Sun rises further to the north each day, and the heel-stone predicts its position at the summer solstice with the remarkable precision of 0.2°. The complex arrangement of stones can be used to predict eclipses of both the Sun and the Moon, and takes account of the slow wobble in the Moon's orbit.

Hawkins later looked for astronomical alignments at Callanish<sup>2</sup>, at the time one of the few megalithic monuments in Great Britain for which plans had been published, commenting that it was 'rather desolate'. Again he found evidence for astronomical alignments, with even better accuracy than Stonehenge. He also noted that the high latitude of Callanish corresponds closely with the Arctic Circle for the Moon, the latitude where the Moon at its extreme declination remains hidden just below the southern horizon. At the time, Hawkins would not have been aware of the high concentration of circles near Callanish, and one wonders whether the Neolithic astronomers were fine-tuning the position of their circles. There is no doubt that these Stone Age Britons were bright cookies – I wonder what *their* Sundays were like?

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1 Hawkins GS (1963) *Nature* 200: 306

2 Hawkins GS (1965) *Science* 147: 127-13