

THE EDDERTON STONE CIRCLE

Doug Scott.

The Edderton site (Illus 1)

Situated on the S side of the Dornoch Firth near the village of Edderton are the remains of what could be a single or multi-period megalithic complex, (NH 709851). It consists of what appears to be a ruined circle of standing stones and one large outlying megalith called Clach Biorach, (the Pointed Stone). These are situated in an area known as Carriblair - a level plain made up of glacial drift deposits at 21m OD. To the NW of the site the land drops more than 10m and only rises to a similar height as that at Edderton near the farm of Dounie, some 2.2km away. Here is the position of another tall standing stone, now removed, (NH 694867). Between the two megaliths the land is crossed by two burns that empty into the Dornoch Firth. The coastal plain is surrounded from the SE round to the NE by hills of varying height and is dominated to the W by the Ridge of Struie.

The area was first mentioned in the Statistical Account of Scotland 1791-99 (Withrington & Grant 1981 376). It mentions a large plain with marks of an encampment, where according to tradition a battle was fought against the Danes. Clach Biorach is said to mark the burial place of a Danish prince who was killed during the battle.

The Circle

The remains of the circle consists of five small granite boulders standing in rough ground, surrounded by scrub birch, broom and gorse. The boulders vary in height between 1m and 1.5m. Of these five stones, four are still

upright, the other having fallen. They stand in a sub-circular arc which is open to the SE and has an inside diameter of 12m. Immediately surrounding the stones is the remains of a ditch, which measures c4m wide and 0.5m deep. Within the destroyed E half of the circle, near its centre, is an opened burial cist, orientated E-W.

In 1866 Rev Dr J M Joass excavated the circle and later published his findings (1867 269). He stated that there were originally 10 stones in the circle but unfortunately does not say whether this is based directly on information from the excavation. His excavation revealed that within the circle, about 6" (150mm) below the present ground surface, there was a closely paved layer of round stones. A cist was also revealed which, when opened, was found to have a double cover and to contain fragments of burnt bone, worn teeth, charcoal and a Food Vessel (Proc Soc Antiq Scot 1930 258).

Where does this stone go?

Clach Biorach

The Ordnance Survey call this standing stone Clach Chairidh, (Stone of the Burial Mound). The name Clach Biorach has been used in this paper as it is the oldest recorded name and describes the shape of this sandstone megalith (Pointed Stone). It stands 79m SW of the centre of the stone circle in a field used alternately for growing cereals and grazing. Standing 3.5m in height, 1m wide at the base and 0.5m thick, it tapers to a point. This top is cut by a v-shaped notch. The standing stone, which is angled from the vertical by 5° in a NE direction, shows no evidence of ever having fallen, nor is there any local history of that having happened.

Three of the four descriptive accounts of Clach Biorach (Statistical Account of Scotland; Stuart 1856 pB2; Maclagan 1875 135) state that the megalith was once surrounded by a circular mound twelve paces in diameter and raised about 2' (0.6m) above ground level. No trace of this mound remains, presumably due to ploughing during the last one hundred years.

Pictish symbols and other markings (Illus 2)

The flat NE side of the megalith is carved with two Class I Pictish symbols. Towards the top of the megalith is the incised carving of a salmon, whilst below it is a 'double disc-and-V-shaped rod' sic (Allen & Anderson 1903 58) symbol. The two discs lie vertically one above the other, and are embellished with internal concentric circles. Inside the lower, smallest circle, but displaced to its top, is a tiny incised circle. To the top of this is a small hole 20mm wide and 10mm deep. The double discs are connected by two crescent shapes, with the points of the crescents facing outwards. The double V-rod is inscribed from the left of the upper disc, turning at right angles to pass through the centre of the double disc symbol, then turning another right angle before finishing to the right of the lower disc.

Whilst describing this symbol stone, Allen (ibid) noted the circle of standing stones on the other side of the road. He remarked that Clach Biorach was in line with two of the stones in the circle, and mentioned that it seemed likely that the megalith was a prehistoric standing stone rather than one which had been erected at the time the symbols were incised into it.

The SW side of the megalith is rounded and has a deep hole 25mm wide and 130mm deep directly opposite the small hole on the NE side. At the same height, but at distances of 0.15m and 0.33m to the right of this hole, are two more holes. These are similar in size and depth to that on the NE side of the stone. About 0.15m above these holes are a series of lightly incised lines. These consist of a faint horizontal line with seven short lines roughly at right angles to it and crossing it.

On the rounded, narrow SE side of the megalith is yet another hole of similar size to those on the NE and SW faces of the stone. There are no markings on the NW edge of Clach Biorach.

There is no record in any descriptive account of the megalith of any holes or ogham-like inscriptions carved on it. It seems unlikely that if they had existed at the time of the visit by Allen in particular they would have been overlooked. About 10-15 years ago someone was seen working at the megalith. On later examination of the stone chisel marks could be seen on the SW face (I Fraser pers comm). It seems likely that this person was responsible for the ogham-like inscription. However, the holes were probably drilled at some other time during this century. They perhaps show an attempt to split the stone.

The Dounie Site

The Dounie megalith used to stand between two small glacial eskers 300m to the NE of the farm of Dounie on land used for grazing. The standing stone, which was in danger of falling, was removed about 1970 and is now lying on a clearance heap about 50m from its former position. It is roughly trapezoidal in shape, measuring 2.78m long, 1.06m wide at the base,

0.53m across the top and 0.22m thick. It was recorded as standing 2.1m in height () and the depth at which it was set in the ground can still be seen in the lighter colour at the broad base of the stone. The stone has been examined on all sides but has no markings.

An aerial photograph taken from 31,000' (9.4km) was used to plot the original position of the stone (RAF Survey F65 58/3262 15 Oct 1959). The location was checked using early editions of Ordnance Survey maps (1906 XXVIII 9) and it was possible to place the megalith's former position within a radius of 2m. There is no written description of how the flat faces of the standing stone were aligned. However, from memory, the rough alignment of NE-SW seems to be confirmed by detailed examination of the RAF photograph.

The Survey (Illus 3 & 4)

The initial survey consisted of assessing the sight lines across the stones: from Clach Biorach to the Dounie site, and from the stone circle to Clach Biorach. Subsequently all the natural features on the horizon were assessed from Clach Biorach and then from the centre of the stone circle. Observation points were established 1m SW of Clach Biorach and halfway between the two stones which are at either end of the remaining arc of the circle. Values for the sight lines were determined by establishing the altitude and degrees from true north from these observation points. This was done by taking theodolite readings of the sun as it crossed the meridian to the S of the observer at about midday. As the Edderton site is $4^{\circ}10'$ W of the meridian at Greenwich, the sun is at true south at 12.15GMT. By using

radio signals and polynomial tables for land surveyors, it was possible to establish the correct time for the position of true south, and therefore true north, to a high degree of accuracy. The sight lines were measured on several occasions to establish a mean value for each. When sight lines were obscured from the centre of the circle, because of a large tree, the observation point had to be moved to directly over the SW stone in the circle. But this meant that the same referring object could be used throughout the survey - that of the cairn on top of Tor Leathan, one of the peaks on the horizon.

All the altitudes for the horizon positions have been corrected for refraction and parallax and unless otherwise stated all declinations are for solar centres. All horizon azimuths or bearings are from true north.

By processing the values through a computer with the appropriate mathematical programme (devised by T Kelly 1984) it was possible to establish accurately the declination and the rising or setting points of any celestial body. In order to check the mathematical results, visual observations were carried out. These took place when clear weather permitted, and sun, moon or stars were at or near a solar or lunar position. The observations were photographed and these form part of the archive.

The Results (Illus 5)

Alignments marked by stones

Tor Leathan (Illus 6)

The alignment of three stones, the two extreme boulders in the arc of the stone circle and Clach Biorach, indicates the hilltop of Tor Leathan, 11.5km to the SW. The assessment of the alignment across this peak gave the setting position for the sun on two calendar dates, one at the beginning of the year, 3 February, and another at the end of the year, 7 November. This setting position has been observed and photographed. The dates are those of two of the cross-quarter days of the year. They divide the two winter quarters of the year, determined by the equinoxes and the winter solstice positions, into two halves. The same alignment when viewed in the opposite direction from Clach Biorach gave a general position for the rising moon at its maximum declination north at the minor standstill.

Spinningdale Notch (Illus 7)

The alignment across Clach Biorach to the site of the Dounie megalith indicates a notch formed by the hills above the village of Spinningdale. This would have been the setting position for the upper limb of the sun at the summer solstice, 21 June, about 3,200 years ago. However, due to the effect of the precession of the equinox the sun no longer sets at this point along the horizon. It has moved 28 arc' in declination and now sets to the S of this notch. It was calculated that today the upper limb of the sun should set in the notch if viewed from the NE stone in the circle. This was observed and photographed on 19 June 1985.

When the Clach Biorach - Dounie alignment was viewed in the opposite direction no solar or lunar positions were noted.

Struie Ridge Notch

The NE side of Clach Biorach is flat and inclined to the NW. Today it can be used to sight the lower notch at the N end of the Struie Ridge. It has been assessed that if the megalith had been placed in a vertical position the flat side would indicate the upper notch at this N end of the Struie Ridge. This was found to be aligned on the setting position of the upper limb of the moon at its maximum declination N at the minor standstill about 3,200 years ago. However, it should be noted that as the setting position of the moon is affected by parallax, which can lower its declination, it is impossible to say whether the moon would have been visible at the notch at this time.

Non-indicated horizon features

The assessment of the horizon from the Clach Biorach observation point revealed two other features where the setting sun appeared to reflect specific calendar dates.

Struie Gap

Viewed from Clach Biorach this notch is where the sun sets at the spring
and autumn equinoxes, 21/ 21/
22 March and 22 September. These date-brackets are given due to the fact that the true equinox can happen at any time during a 24 hour period. The position of the sun can therefore vary within 24 arc' against the notch of the Struie Gap.

These equinoctial setting sun positions were checked using star trail photography, as the weather was not fine enough to photograph the sun in this position today. The top star in the belt of Orion (Mintaka Delta Orionis with declination -18') sets in the check position for the sunset at the equinoxes.

Struie Hill

Viewed from Clach Biorach, the top of Struie Hill gives the setting point of the sun on two dates, 3 May and 8 August. This hilltop shares with Tor Leathan that of being a cross quarter of the year position. It splits the two summer quarters of the year established by the equinoxes and the summer solstice into two halves.

This sunset position was also checked using star trail photography. The star Aldeberan (Taurus with declination $+16^{\circ}28'$) sets at the check point for the sunsets at the cross quarter days of summer.

Although these two horizon features have no stones to indicate them from Clach Biorach, the fact that they lie within the horizon arc between the two main solar alignments at significant declination and calendar dates would seem to be more than just coincidence.

Winter solstice position

The only solar setting position that does not have an indicator today nor a natural horizon feature is the winter solstice, on 21 December. The setting point for the sun at this time lies on a horizon formed by level moorland. It is, however, the closest setting position to Clach Biorach, at a distance of only 540m.

Observations from the centre of the stone circle

Only one horizon feature appeared to have any significance when viewed from the centre of the stone circle rather than Clach Biorach, and this was the Spinningdale Notch. It was realised that the lower limb of the setting sun would have set in the notch at the summer solstice some 3,200 years ago. This compares with the upper limb of the sun setting in the same notch on 21 June when viewed from Clach Biorach at the same time.

Thus the distance between Clach Biorach and the centre of the stone circle appears to be equal to the sun's observed diameter on the ground.

Circumstantial visual observations

On 30 May 1984 the moon passed through the ascending lunar node and partially eclipsed the sun, the sun and moon thus being within the ecliptic limit of the node. Four days later on 3 June, at 01.20 hours, the lower limb of the/moon set perfectly in the Spinningdale Notch, the summer solstice sunset position when viewed from Clach Biorach.

When this lunar setting in the Spinningdale Notch was assessed it was realised that the notch could mark the half-way point between the maximum declinations N for the moon at the minor and major standstills.

Interpretation

It is suggested that the positions of these stones at Edderton and Dounie were specifically chosen to reflect the sunset positions at certain times of the year. By general observation of the sky it would have been possible to assess the horizon for possible use. A viewing site could have been established to give the rough position for such a complex. This could be later refined by watching the sun at the solstices and other divisions of the year.

A possible sequence of construction can be suggested for the complex at Edderton, although there are several possible alternatives. A line of posts could have been established to indicate the upper limb of the sun setting in the Spinningdale Notch at the summer solstice. Six months later an attempt could have been made to establish a winter solstice position using Tor Leathan. However, in order to achieve this they would have had to lose the other sunset points along the horizon. Tor Leathan was

therefore presumably abandoned as a winter solstice sightline. It should be noted, though, that as the winter solstice position is the closest to the site it would have been a simple matter to mark this point ~~later~~ with a cairn or standing stone once the main alignments had been established. No such indicator remains today although the area was searched thoroughly. Instead, using Tor Leathan for the next calendar date of significance would have given two extremes with which to follow the year, those of the winter cross quarter days. This seems to have been a favoured alternative and posts could have been set up in line with this sunset position. Where the two alignments crossed would give the position to set up Clach Biorach.

The Dounie stone would have been set up to provide a permanent viewing line to the Spinningdale Notch from Clach Biorach. It is recognised that the distance of the Dounie megalith from the Edderton complex, some 2.2km, may mean that it did not form part of the indicating alignment for the summer solstice sunset. However, given minimum vegetation cover, it would have been clearly visible in pre-sunset conditions from Clach Biorach. The stone would have been framed on either side by small eskers, and the site can be seen from Clach Biorach today.

The Spinningdale Notch may have been important in the establishment of the stone circle to the NE of Clach Biorach as well. Its centre may have been set at the crossing of the alignment across Clach Biorach to Tor Leathan and the line marking the setting position of the lower limb of the sun at the summer solstice in the Notch. Having established the centre of the circle, two of the boulders could have been set up to

provide a permanent viewing line across Clach Biorach to the sunsets at the winter cross quarter days. However, any further use of the stone circle in this complex cannot be unravelled until the site is excavated and the other stone holes are accurately located.

The importance of the Edderton complex does not lie in the method of its establishment though, but in its maximum use of the horizon as a solar calendar, with minimum construction on the ground. At present it would appear to be unique in providing the greatest number of possible solar markers so far noted at a prehistoric site in Scotland. Other sites have been intensively investigated, including Kintraw (MacKie 1974 179), Ballochroy (Thom 1967 142), and Brainport Bay (MacKie et al 1985 158), but they apparently reflect the importance of a single specific time of year. At Kintraw this is the midwinter sunset, at Ballochcroy the midsummer sunset, whilst at Brainport Bay it is the midsummer sunrise.

It is also rare for such small sites to be aligned on lunar as well as solar extremes. Sites such as Callanish (Somerville 1912) and Stonehenge (Hawkins 1965) may indeed reflect a variety of alignments. But for the unimposing complex at Edderton to include lunar as well as solar indications could be described as another unusual characteristic. It has already been mentioned that the largely unpredictable movements of the moon may mean that one of the indicated alignments from Clach Biorach may not have existed some 3,200 years ago. However, there is less question over the other lunar alignment from Clach Biorach. Both Thom (1971) and Wood (1978) have suggested that that the S and N extremes of the lunar path may have been significant to prehistoric societies. But the smaller sites which have been put forward as having lunar importance, such as Temple Wood

(Thom 1971 50) do not appear to have solar alignments as well.

The complex movements of the moon have led some researchers (Heggie 1981 178) to suggest that only rough lunar alignments could have been established in prehistoric times anyway. This is presumably the case at Edderton, where the main alignments appear to have been concentrated on calendrical points marked by the sun. Such a rough lunar alignment as that suggested, with certain reservations, across the flat face of Clach Biorach to the Struie Ridge Notch could possibly have been emphasised by man. It is stressed that there would have been difficulty in predicting the line of the flat face of the megalith to the moonset at its maximum declination N at the minor standstill, as the lunar cycle takes 18.61 years. As the horizon had already produced pronounced peaks or notches for seven of the solar divisions of the year it seems unlikely that the horizon could provide yet another feature conveniently placed to mark this moonset. Could it be that the Struie Ridge Notch is artificial?

The possible solar calendrical complex at Edderton could have held its importance for much longer than the Bronze Age though. Recent work by Burl () and MacKie (1981 141) suggests that the traditional division of the year into eight parts could have continued into the Iron Age, to be reflected in the Celtic festivals. Each of the solar indications at Edderton falls about the time of a major festival celebrated by the Celtic peoples of Europe (Fraser 1912). These include Imbolc or Bride in early February, Beltane in early May, Lughnasa or Lammas in early August and Samhain in early November.

The specific dates of these festivals drifted to conform to the social and religious needs of the time, altering slightly as is shown in Irish

legends which reflect the possible calendrical events (Squire 1905). The accuracy of such solar indicators would not therefore have depended so much on the date of the solar occurrence but on its happening (Heggie 1981 225). So it is suggested that the difference between the observed dates of the festivals today and the dates of the solar settings viewed from the Edderton complex is not significant. Indeed the difference in dates could well reflect the basic difficulties that the premedieval and medieval cultures had in keeping an accurate calendar system (Wilson & Grant 1980).

The importance of the sun at Clach Biorach could then have been passed on as a tradition through the Iron Age to be reflected in the symbols carved on the megalith during the Pictish period of the sixth and seventh centuries AD. Or did the Picts simply use the megalith for their own purposes because it was smooth and flat?

Certainly towards the end of the second millenium BC the climatic conditions deteriorated from one of a generally warm/dry period to that of cooler/wetter weather. This cool/wet period lasted through the Iron Age until about the fifth century AD when it is suggested that the climate became drier (Pennington 1969 84; Evans 1975 174). The warmer/drier conditions during the Pictish period may well have given the clear skies required for solar and lunar observations, and there may have been a resurgence in specific interest in them.

It is suggested here that the double disc-and-V-rod symbol on Clach Biorach represents the solar importance of the Edderton complex at this time. If each disc of the double disc symbol represents a sun disc, the symbol could depict the sun at its two setting extremes - the summer and winter

solstices. The top disc could be the summer solstice and the lower disc the winter solstice. The two crescents connecting the upper and lower discs might represent the first and last phases of the moon during the lunar month. The double V-rod is similar to the symbol used on modern star maps for the sun's path, the ecliptic. Where the double V-rod bisects the main symbol could indicate the point halfway between the solstices - the equinoxes. Alternatively, the double V-rod could show the path of the moon in the sky over the period of the lunar month. When the moon is observed during its monthly cycle it traces a zigzag pattern across the sky, moving from maximum N positions to maximum S positions during that time. The small circle to the top of the lower concentric disc could depict an eclipse of the sun at or near the winter solstice by the moon.

If these inferences are accepted then perhaps there are other double disc symbols which reflect this solar symbolism.

Of approximately 200 Class I Pictish symbol stones (RCAHMS 1985) 44 have simple double discs. The majority of these are without complex embellishments and only one appears to have the depiction of an eclipse as described above, that at Newton House, Grampian (Allen & Anderson 1923 178). However, there are similar shapes cut into the discs at Inchyra, Tayside (Proc Soc Antiq Scot 19) which are squared rather than rounded and therefore cannot be explained in terms of representations of eclipses. There is also a single example of discs being decorated with simple spiral motifs at Dunnichen, Grampian (), which might have solar significance, as suggested below.

On standing stones?

Very few in England and the north could be interpreted as such.

Double discs also occur on Pictish metalwork, and four of these are embellished with spirals, such as

The double disc continued to be used on Class II symbol stones. Of about 60 such stones, 32 have double discs which are embellished with various motifs, which include 16 with spirals. It is thought that the use of spirals within these discs could reinforce an interpretation of the solar symbolism of the disc.

The Aberlemno Churchyard stone, Tayside () has a single disc placed at the crossing of the arms of the Christian cross which is decorated with spirals. This/could be interpreted as indicating its importance as a symbol. It could represent Christ as the centre of the Christian faith, for a common theme in Christian belief is that Christ is the light of the world . Other examples of Christian solar symbolism include

With the possible exception of two Pictish crosses (Allen 1887 149) the early Christian Picts apparently avoided showing the figure of Christ at the crucifixion. This may have been an aversion to the portrayal of the divine aspect of Christ in human form (Finlay 1973 111), or because a crucifixion was a criminal punishment rather than representing Christ's sacrifice (A Ritchie pers comm). Is it therefore possible that these

Christian Picts used symbols of traditional importance to them for this function? Could it be that the disc with its spirals on the Aberlemno Churchyard stone was just that symbol?

Other examples of spirals being used at the centre of Christian crosses do exist

Taking this one step further, if the remnants of solar beliefs (Glob 1970 99) survived in some form or other until the emergence of the Christian faith in Britain, is it not possible that the Christian church may have used its own form of solar symbolism in its conversion methods? This might well explain part of the Confession of St Patrick (MacCana 1970 32). Here the worship of the sun, which rises by the command of God, is contrasted with the worship of the true sun which is Christ. One led to pain and damnation whilst the other led to eternal life.

Other examples of the use of solar symbolism can be found in the Bible, particularly that of solar eclipses being equated with evil forces. An example occurs in the Testaments of Matthew, Mark and Luke, which describe the death of Jesus. In particular, the latter states:

"It was now about the sixth hour and, with the sun eclipsed, a darkness came over the whole land until the ninth hour" (Jones 1966 121)

Another example occurs in the apocryphal Gospel of Nicodemus where the Jews explained that the eclipse of the sun happened according to its usual custom, a reflection of

().

The use of spirals as a form of solar symbolism was probably not restricted to the Christian Pictish period. Spiral patterns can be traced back through the Iron Age to the Bronze Age and Neolithic periods. They are thought by some to have their origins in solar patterns such as the helix (Hendry 1974). Spirals have certainly been interpreted as sun symbols at Newgrange (O'Kelly 1982) where they occur on passage and entrance stones of this neolithic monument.

Such putative solar symbolism interpretations for neolithic spiral designs might also be reflected in the commonplace cupmarked stones found throughout Britain, ~~which resemble the Pictish symbols~~ resembling in very simple form the discs of the Pictish symbols, but that is another area for investigation.

Conclusions

It has been suggested that at Edderton there are possibly two cultural expressions of the importance of the sun, separated by some 2,000 years in their execution. If the double disc symbol was a social statement involving solar events it is possible that the Picts knew of the original function of the site. It is suggested here that this original function was as an indicator of solar events at particular times of the year, which could have been associated with economic, social or religious events some 3,200 years ago.

Dr Henderson (1976) has suggested that the origin of Class I symbol stones should be found around the Dornoch and Moray Firths. If this is the case then perhaps Clach Biorach at Edderton reflects a continuity of use through 2,000 years and carries one of the earliest examples of Pictish symbolism.