

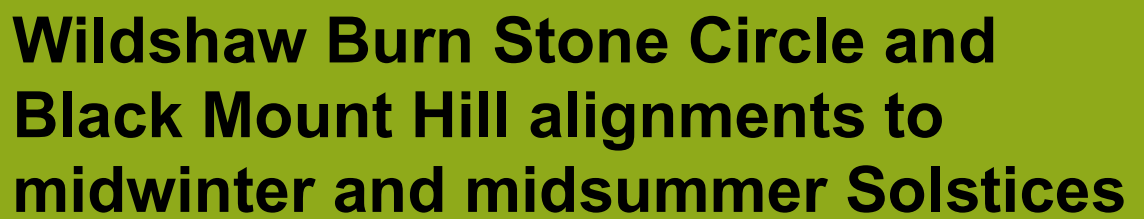
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**Wildshaw Burn Stone Circle and
Black Mount Hill alignments to
midwinter and midsummer Solstices**

by Tam Ward, 2014

Abstract

Further thoughts are given to the Wildshaw Burn Stone Circle and new data on another site, an enclosed cremation cemetery at Black Mount Hill north of the town of Biggar is presented for the first time. Both locations demonstrate convincing alignments from monuments to midwinter and midsummer solstice events.

Introduction

The Wildshaw Burn Stone Circle was discovered by Biggar Archaeology Group on 31st December 1989 and surveyed one week later to provide a plan, not of a stone circle, but one of an almost perfect stone ellipse, however for the sake of convention it will be referred to as a stone circle.

Since that time research into the site has continued as and when weather conditions allowed, principally to observe the rising and setting sun positions on the horizons, and to determine if significant solar alignments across the site could be demonstrated.

The latest report on the site; The Wildshaw Burn Stone Circle, was published in 2012 on www.biggararchaeology.org.uk and this gives the most up to date information on the site which is now a Scheduled Ancient Monument.

The writer believes that it has now be demonstrated by visual observation that at six points in the calendrical year, it would have been possible for the planners of the site to determine the Solstices, Equinoxes and even sub divide the year by eighth parts by monitoring the rising and setting sun over pairs of stones on the monument (Fig 1).

No consideration of lunar or star possibilities has been explored by the writer as that is too complicated.

Given the symmetrical plan of the monument as a true ellipse and the established solar sight lines over it, further consideration is given here to its design, which if compared with other so called elliptical stone circles in Britain, is a remarkable example in the genre.

The purpose of this paper is to understand better the minds of the people who designed, if not necessarily built the monument, which is fully described in the published report, and also to suggest a way forward to even more data being accumulated regarding the site and its context in the world of British stone circles.

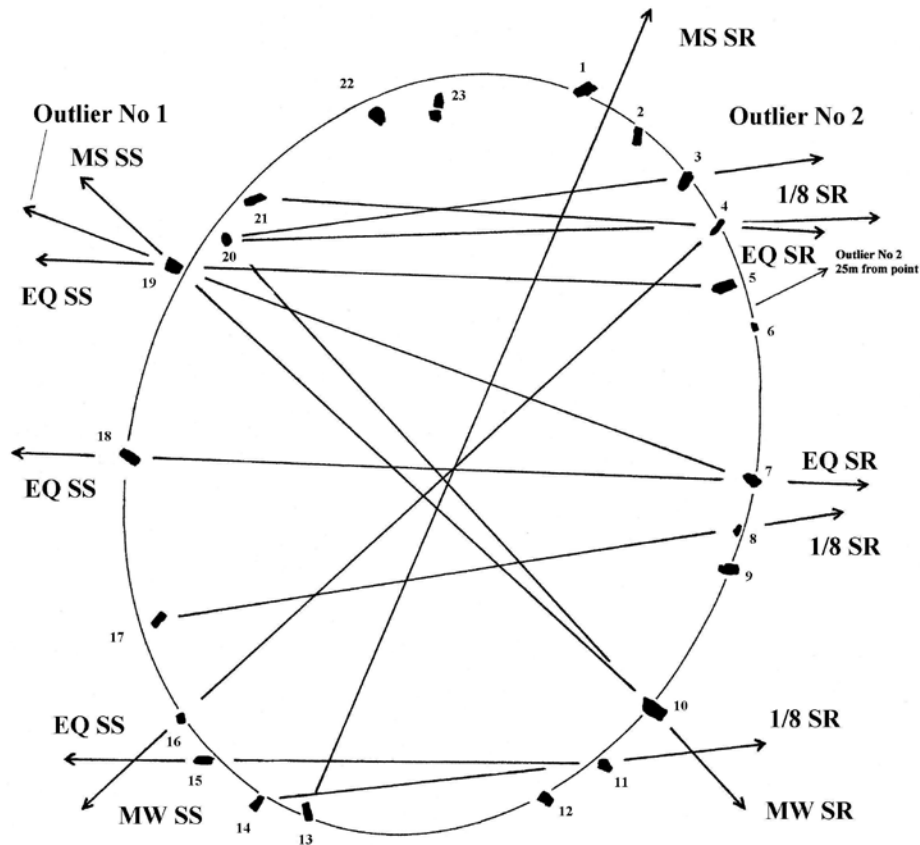


Fig 1

Stone circles in Britain.

Perusal of the Guide to the Stone Circles of Britain, Ireland and Brittany by Aubrey Burl, published in 1995 shows that there are over six hundred monuments classed as circles and within that number over twenty were classified as ellipses, although other specialised circles such as recumbent stone circles, four posters and ring cairns are included. Shapes can vary from true circles, elliptical, egg shaped, 'D' shaped (or flattened), horseshoe and other forms, and apart from an occasional alignment for solar or lunar positions, the reason for the diversity of shapes and sizes of these megalithic monuments seems to elude us.

Certain assumptions are made by this writer regarding the design, building and use of megalithic monuments such as stone circles.

Design

The design in terms of shape and size of the monument at Wildshaw, and crucially, its position on the landscape must have been decided upon after many years of research; presumably through trial and error, since it seems incredulous to believe that these factors could be decided upon as the final solution to the peoples requirements at an earlier stage in the process.

For determining alignments the station adopted by the observer/s would have to be outwith the monument unless there is a central feature or standing stone. In the case of Wildshaw (Fig 1); pairs of stones used as back and fore sights indicate the desired alignment to the sun at special (calendrical) times of sunset and sunrise. There would be little point in an observer taking up a position within the monument for this purpose, as any alignment could be achieved using the observer as the back station.

Wildshaw is presently seen as an isolated pre-historic monument in its landscape (Fig 2), a perception which may be false as there is a vast expanse of peat in the surrounding area; indeed it covers the ground of the feature itself. It is unknown if other monuments or sites lies below the peat cover in the general area.



Fig 2

On the assumption that it may be an isolated monument, it may be taken as being a communal one, serving the surrounding district, and not just the immediate area, the general district up to c25 miles surrounding the site has numerous prehistoric monuments and sites dating from the Neolithic to the Bronze Age, but most especially to the NE, for example between the towns of Lanark, Biggar and West Linton.

The writer believes that the megalithic builders did not require having a highly sophisticated knowledge of mathematics or geometry to create their monuments. Observation, common sense and the practical ability to use measuring sticks and ropes to create shapes on the ground was all that was necessary (Fig 3), once the difficulty of establishing a precise location on the ground was achieved, and even this could easily be done, but over an extended period of time, using temporary markers.

Moving even the largest stones over long distances has been shown (often enough) to require only muscle in the form of enough participants, and using only the most basic mechanical aids such as levers, rollers and ropes.

Precision to within a degree or two is considered here to be adequate for the purposes of solar observation in prehistory and provided that observations were made within a few days of solar events then the required result would be achieved. Weather conditions for observation of the sun and moon of course were always a determining factor whether such events could be monitored or not, doubtless there would be times when observations were not possible due to cloudy weather, and an event would be missed entirely, the observers then having to wait a full year for such times as summer and winter solstices to come round again (just as the writer has had to do over several decades merely to observe what the ancient people could be doing at Wildshaw!).

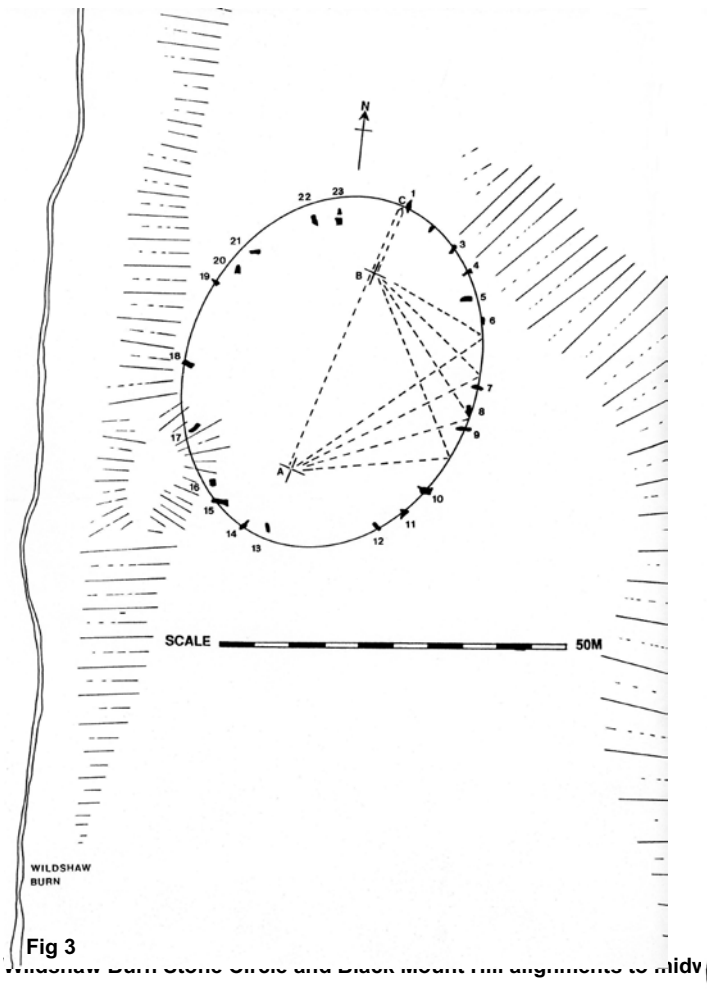


Fig 3

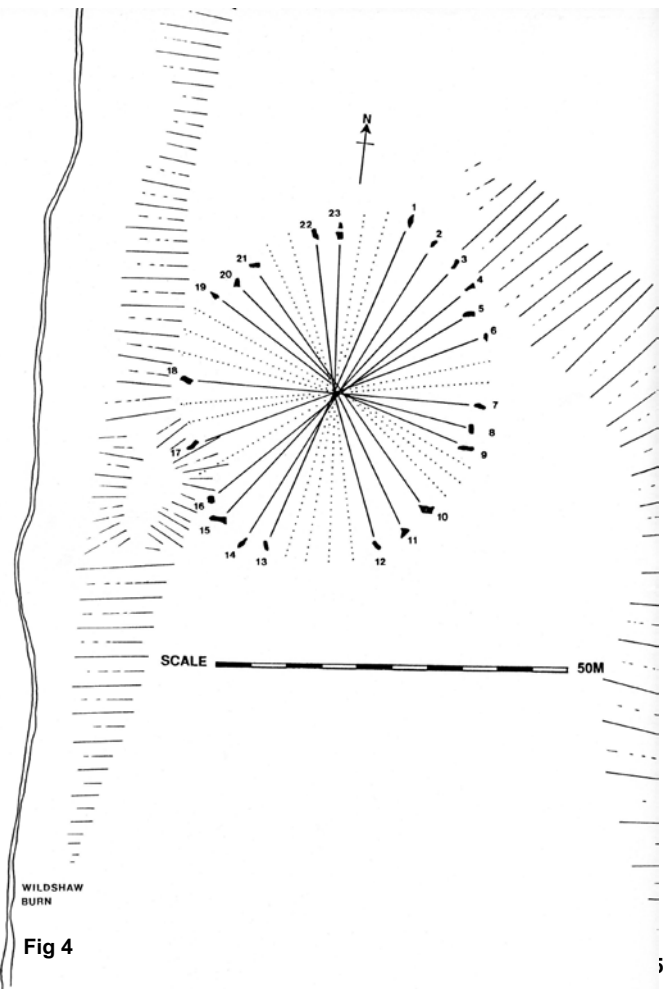


Fig 4

Wildshaw Burn Stone Circle and Black mean... arguments to midv

Fig 3 shows how the site could easily have been laid out with two pegs on the ground and a loop of rope around them, pulled out to form an elliptical shape by walking around the pegs and keeping to loop taught. Variations in both size and shape are also easily obtained by varying the distance between the pegs and/or the length of rope.

Fig 4 shows the symmetry of the site and the evenly distributed stones and blank positions around the perimeter.

More precision in monitoring the sun or moon could of course be achieved in monuments like the chambered tombs of Maes Howe (midwinter sunset only) and Newgrange {midwinter sunrise only}, which clearly were designed to determine such events with a higher degree of accuracy and certainly with more theatrical effect.

Given the data from sites such as the two examples above where the evidence is crystal clear, and in many other monuments in various parts of the world and from different periods, time marking through observable events is easily demonstrated; it is likely that all stone circles were envisaged to do the same for at least one aspect of their *raison d'être*.

Certain people within the society must have been charged with this responsibility, and no doubt they became highly respected and possibly privileged as a consequence of their knowledge. In prehistory the knowledge must have been passed on to others orally, but perhaps more likely by demonstration. Whether this group within a society became elitist and could be called priesthood is purely conjectural, but is often assumed as fact in most literature on the subject.

Observation, coupled with memory, would in a few years surely establish the character of the sun's motions over the cycle of a year, since it simply repeats itself year in year out – unlike the motions of the moon, even though its serendipity like wanderings were understood by the ancients, as appears to be demonstrable at some sites, for example in the north east recumbent stone circles.

The location of a stone circle may in part be determined by the availability of suitable rock from which to build it, although it would appear that most sites lie within a few miles of their building resources.

Only once established would a specific sight line become predictive, science is not necessary to do this, simple observation over time could achieve it. A single occasion would be easy and perhaps even a double event such as the case of Midsummer sunrise and Midwinter sunset may be even easier, since that is achieved by simply turning through 180°, or, in other words – looking over your shoulder in the opposite direction, after one half of the double occurrence has been established (see below).

Theoretically Wildshaw could have been created on any spot from where there is a good view and it is conceivable that its present position on the ground may have been temporary (more below).

For astronomical purposes some monuments appear only to have been designed and required to establish a single event (as in the tombs above), such as one of the solstices, it would appear that Wildshaw was a more sophisticated place.

“To judge claims for time-reckoning at any period, it is necessary to show either a system of notation with a patterning closely related to that of the movements of heavenly bodies, or clear evidence of astronomical observation” [Colin Renfrew, Paul Bahn, *Archaeology, Theories Methods and Practice*, p408, Thames and Hudson 2004]. The writer believes this has now been achieved at Wildshaw by observation and recording since 1989 when the site was discovered. The results of records presented by him are demonstrable and repeatable and if professional archaeo-astronomy was now applied to the site with more scientific rigour than he is able to do, then the Wildshaw Burn Stone Circle would surely become one of the most important megalithic sites in Britain.

On balance the writer believes that Wildshaw was never actually built, but rather was laid out fairly accurately in preparation of final construction. The theory having been worked out, the shapes, size and position of individual stones having been determined, perhaps along with the large outlier, some if not all stones having been brought to the site, all that was needed was perhaps some final ‘tweaking’ of the position, and then erecting the stones. Only further archaeology could prove if stone holes exist and if the stones had or had not been erected.

If that theory is correct it makes the site even more remarkable and could allow for an even better understanding of how stone circles were actually created.

The Landscape around Wildshaw

The prehistoric landscape of Wildshaw is still an apparent void of known close proximity archaeological sites or monuments (Fig 2). The nearest locations are the hill top and isolated cairns on Auchensauch Hill (NS 953 156) 4km to the west; much robbed but which appears to be an alignment from the circle, and the prominent cairn on Wildshaw Hill itself (NS 891 339) 2km to the NE, although the latter is not visible from the circle. Interestingly and most likely coincidental, a further 8km to the NE and forming an almost straight line between the circle and cairn on Wildshaw, but also not visible from Wildshaw, is the massive hill top cairn of Tinto (Fig 6) (of which more below).

Only a short distance uphill from the circle is a supposed enclosed cremation cemetery (Leslie, 1990) although the true function and date of the site are uncertain. The general area but much further to the south, east and west does have a dense scatter of Bronze Age sites in the form of unenclosed platform settlements, cairns and burnt mounds (RCAHMS 1978 & Ward 1992 and 2013), and the Neolithic is represented by a Class II henge at Crawford (RCAHMS, op.cit.) while Early Neolithic pottery has been found at Crawford (Banks 1995) and at Daer valley (Ward, 2013 op.cit.), and recently found within sight of Wildshaw has been some Late Neolithic pottery at Duneaton Quarry (no ref), while more was discovered only 6km to the east at Roberton (Armit et al 1994).

However, the extraordinary triangle of sites and monuments to the NE and dating from the Early Neolithic to the Bronze Age and between Lanark, Biggar and West Linton (RCAHMS 1978 op.cit and www.biggararchaeology.org.uk) show that the area there at least was intensively occupied throughout the period of stone circles in general. Having said that, the huge henge like monument of Blackhouse Burn near Lanark (RCAHMS op.cit. & Lelong & Pollard 1998) may have been the ritual centre for that entire district.

Wildshaw as seen in the broader district wide landscape is therefore fairly centrally positioned but locally appears as isolated, having a limited outlook to the west, south and south east. As a consequence, the presently perceived enigma of its location is somewhat baffling- unless a handy supply of appropriate stones is partly the answer.

Looking further afield we see that Wildshaw is the only known stone circle in south central Scotland (Fig 5) and apart from the peculiar five boulder small monument in the garden of Harestanes in Peeblesshire (RSCAHMS, 1967), the dot to the NE on Fig 5 and which per se is hardly a site which can be described as a stone circle, then Wildshaw is indeed the only example, although other standing stones in Peeblesshire may hint at former stone circles there (RCAHMS, 1967, op.cit.)

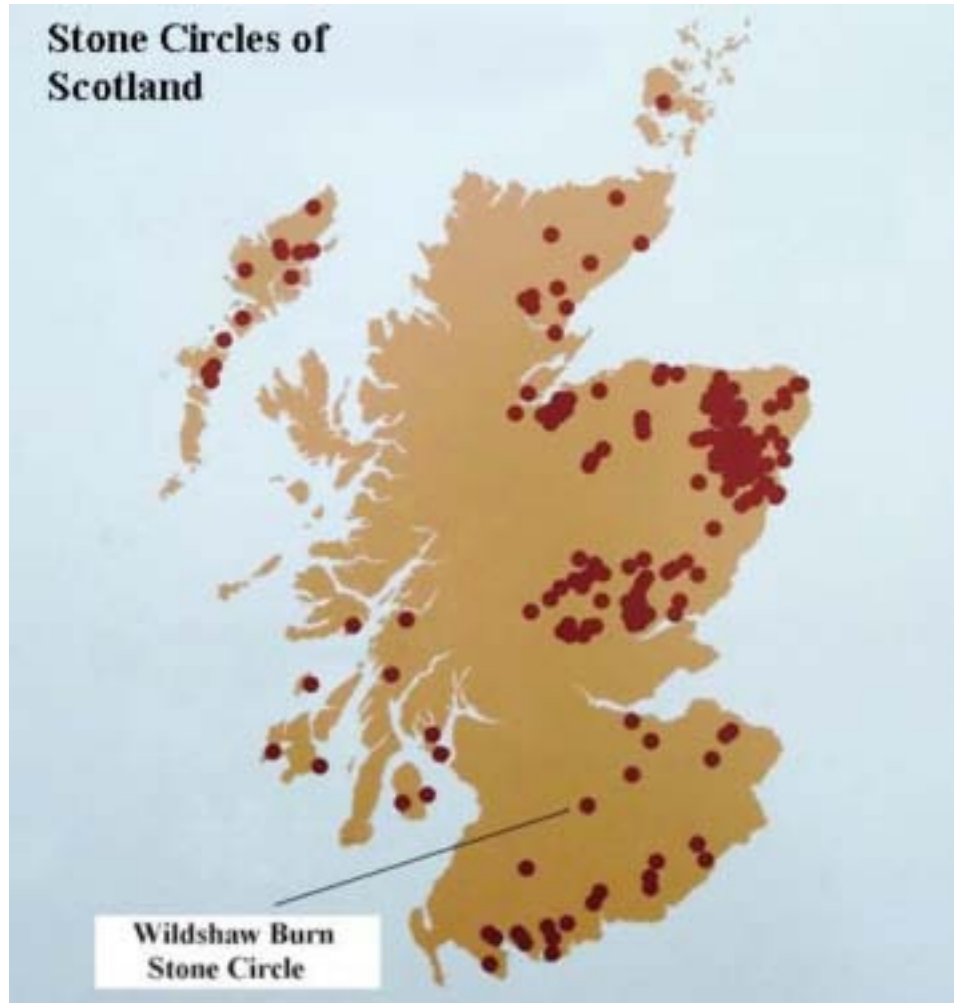


Fig 5

Wildshaw therefore fills an important gap in the distribution of such sites. Further south and spreading along Galloway and Dumfriesshire there is an impressive range of stone circles of varying size and shape, indicating a strong tradition of such monuments in Southern Scotland (Fig 5). However, it must always be borne in mind that the lonely Wildshaw may have been one of several circles in south central Scotland and which have now been removed without record over the years.

Astronomical alignments, scientific measuring and Ley Lines

Ley Lines as suggested by Watkins (1925) and Thoms famous 'megalithic yard' (Thom & Thom 1978) are not considered to be real by this writer, but it seems to him that the full snobbery of archaeology was applied to both in times gone by, but in reverse terms, poor Watkins was reviled while Thom's ideas of the super accurate measurements by the builders of megalithic monuments, presumably because of his scientific achievements in other disciplines, was seldom challenged. The early archaeological 'profession' similarly repudiated with some scorn the pioneering work of people such as Lockyer (1909) in establishing astronomical alignments over monuments. Very few people working in any pursuit of knowledge get everything correct at the beginning (apart it seems from some elitist and prominently self important professional archaeologists - hopefully of past generations). As far as archaeo-astronomy goes, the writer is a firm believer, having witnessed several events at different sites.

Suffice to say in this paper that observations given here and made from Wildshaw and Blackmount can be repeated by anyone wishing to take the time and effort do so, and compare their results with those submitted by the writer.

The writer, to satisfy himself regarding ley lines, notes that although it will be inevitable that such straight lines will intersect some monuments if there are enough sites in an area, the general theory does not appear to hold true in this part of the world, where numerous ancient sites of similar periods have now been recorded, and ought therefore to be able to test the hypothesis, it does not appear to work convincingly.

Nevertheless, and as a matter of record, it is noted here that by using the OS 1:50,000 Second Series Landranger No 72, Upper Clyde Valley map, several such lines can be drawn through significant monuments, albeit only a selective few of the whole.

The Appendix of this report gives details of two sites discovered and recorded by the writer and published here for the first time. Site No 1 is almost certainly an enclosed cremation cemetery while Site No 2 (PI 3) is probably such a site. Each, using the circular features as back sights, gives convincing alignments to midwinter sunset and Site No 1, being higher on the hill also aligns perfectly in the opposite direction with midsummer sunrise. It can be demonstrated that if Site No 1 was moved only a few metres to the east or west, no alignments to meaningful solar events would be given, to suggest the site was located co-incidentally and exactly achieve the two alignments; midwinter sunset and mid summer sunrise in prominent horizon positions, seems crass to say the least (but see reports below).

Among the almost plethora of pre historic monuments and sites now known in the Biggar area, lines can inevitably be drawn through many to form co-incident(al?) alignments, and Fig 6 attempts to demonstrate this but also shows that others do have significance.

Explanation of Figure 6

The Fig is not to scale and is diagrammatic only, but the information can be accurately confirmed by using a 1:50,000 OS map as described above. Only No's 4 & 5 are not on OS maps but their NGR's are given in the appendix.

The key to sites is:

- 1 Wildshaw Burn Stone Circle
- 2 Wildshaw Hill cairn
- 3 Tinto Hill cairn
- 4 Site No 2 on Black Mount Hill
- 5 Site No 1 on Black Mount Hill
- 6-8 Nether, Upper and one further cairn near West Linton
- 9-11 Easton Long Cairn, Burngrange Chambered Cairn, Greens Moor Long Cairn

The cairns are all large and prominent and the Tinto cairn is one of the most conspicuous monuments in Scotland.

1-3 make a perfect alignment although none are inter-visible.

4-3 makes a perfect alignment to midwinter sunset behind Tinto cairn.

5-3 makes a perfect alignment to midwinter sunset behind Tinto cairn and also to mid summer sunrise across a notch in Black Mount to Mendick Hill in the NE. The viewpoints from Sites 1 & 2 are taken making a central line through them towards the events.

6-8 makes a good alignment with Tinto Hill cairn but are not inter-visible to it.

9-11 align east/west with each other but only Burngrange and Greens Moor cairns are inter-visible.

The Figure is presented to make two points;

- 1 that sites will align where there are numerous examples but which may not have obvious, if any significance, because of their alignment and,
- 2 that some alignments between sites or between sites and horizons, often prominent, are unmistakably and demonstrably deliberate, and point to astronomical events.

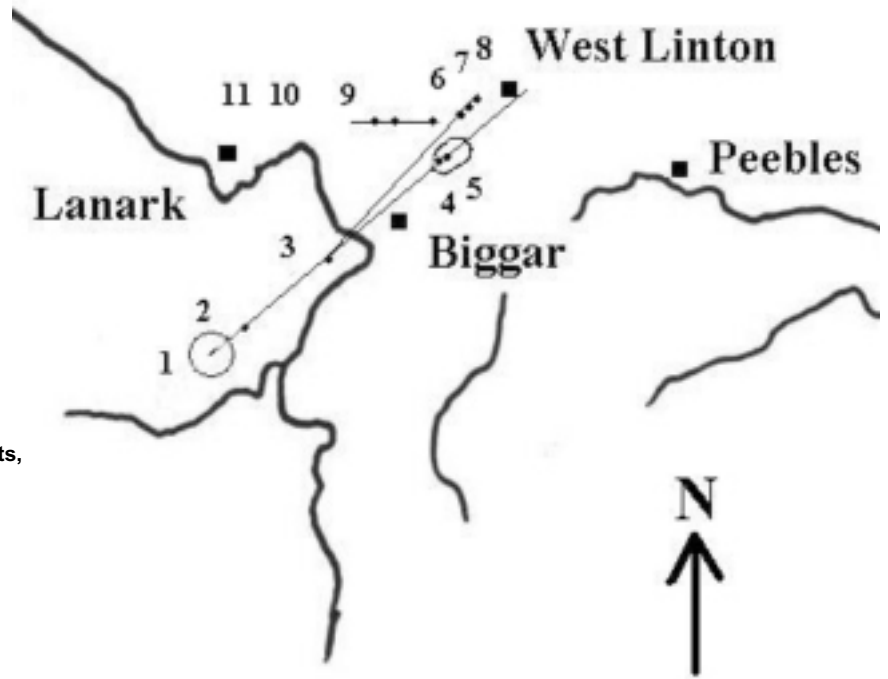


Fig 6 showing various alignments of monuments, No's 4&5 on Black Mount



Pl 1 showing midwinter sunset on Tinto cairn from Site No 1

Plates 3 & 4 showing first sunlight rising in a notch on the west flank of Black Mount Hill and with summit of Mendick Hill in the notch as viewed from Site No 1 on 22nd June 2001 at 4.36am.

The Wildshaw ellipse Figs 3 & 4

There can be little doubt as to what was being conceived at Wildshaw; the symmetry is extremely convincing in its shape and in the spatial distribution of the extant stones. The stones are evenly spaced and the longer gaps can be sub divided by the same lengths of 3.6m. Twenty three stones exist but if the monument was completely fitted with stones, there could be forty two evenly spaced around the perimeter of the ellipse.



PI 2 showing Tinto Hill and Site No 2 (centre) viewed from summit near Site No 1



PI 3



PI 4

Further work

By applying astronomy to the sites given here and especially to the stones at Wildshaw which at present are not shown to have significant alignments but still appear to be part of the overall design, and – to the positions where ‘missing’ stones may have been intended, a far better picture may be achievable regarding the intended design of that site, and therefore potentially any missing part of that design (i.e. missing stones). The present layout seems to allow for such enquiry, and of course if lunar or other predictions could be shown to be possible as a result of more detailed mapping of potential and actual events, the monument would have even more importance. Similarly if professional astronomical application could be made to Black Mount Hill and perhaps other selected sites in the area then a great advance in prehistoric studies of southern Scotland and Britain may be achieved. Such work is beyond the expertise or resources of the writer.

Discussion / conclusion

Wildshaw Burn Stone Circle and certainly Site No 1 at Black Mount remain remarkable monuments in the southern Scottish landscape. If further work could be achieved (as described above) then a considerable more data on both the sites, but perhaps more importantly on stone circles of Britain in general could be accomplished. Although archaeology is seldom repeatable or even in truth factual, as far as interpretations are concerned, the application of science in the form of astronomical observations and predictions are now seen as the way forward at these sites, if some one or organisation can be convinced to undertake it. An outcome would be guaranteed regardless of the results of any further investigation since even negative information would allow a better assessment of the sites to be made.

APPENDIX

Tam Ward February 1999

Black Mount Survey 1998 part of Pre-History North of Biggar Project

Introduction

Black Mount is a prominent and isolated massive to the west of the village of Dolphinton on the A 702 road and north of the village of Elsrickle on the A 721 road. The hill is composed almost exclusively of Trachyte, an igneous extrusive rock of Lower Old Red Sandstone. The summit is at 516m OD. Above 300m the hill is predominantly heather covered with coarse grazing but cultivation and improved grasslands reach 300m OD and considerably higher on the SW 'tail' of the hill above the village of Elsrickle.

The following two sites are extracted from the above report:

Site No 1	Plates 1 - 4
NT 07334595	Ring Enclosure. Probable Enclosed Cremation Cemetery Solar alignments to mid winter sunset and midsummer sunrise

Lying 650m W of the summit of Black Mount and near the eastern extremity of a ridge which slopes gently down from Borland Hill, there is a ring enclosure within which there is a cairn. The site lies at 380m OD.

The 19m diameter enclosure is composed of an earth bank measuring 3m broad by 0.5m high. The grassy bank has no visible stone and it has a flattish top about 1m wide. There is an apparent depression around the summit of the bank, this may be attributable to animals walking around the top of it or may represent an aspect of the monument construction.

The cairn is 5m diameter by 0.3m high and is offset within the west side of the enclosure having a gap of 1m between it and the internal edge of the surrounding bank. The stony cairn has a flattish top but there is a 1m diameter depression in the centre, this is about 0.1m below the top of the cairn.

There is no apparent gap in the circuit of the bank and judging from the uniformity of the enclosure as it survives, it is unlikely that there was an entrance gap in the bank. There is no evidence of turf stripping around the enclosure as is sometimes seen at ring enclosures and which indicates the area where the construction materials were taken from. Similarly the interior appears to have the same angle (almost level) of sloping surface as the exterior ground surrounding the site. Therefore it appears that the bank material, whether originally soil or turf, has been brought to the site. A circa 0.75m irregular stone is showing above the ground level outside and on the immediate western side of the enclosure, it may be outcropping rock, it has no obvious significance.

There is some rush infestation, mostly in the form of a patch on the east side and on the bank at that side, there is also some patchy heather around the bank, otherwise the vegetation on and surrounding the site is short cropped grass.

On the 20th December 1998, and as viewed from the centre of this site, the sun was observed to set within 10 to the left of the summit of Tinto Hill (2310magnetic at that time) and the prominent cairn which lies there. The last glimpse of the sun disappeared before reaching the summit cairn at approximately 15.30 pm. Tinto Hill is 16.5km to the SW and the cairn is at 707m OD.

The event makes a convincing mid winter solstice sunset alignment, and implies that the enclosure may have been deliberately sited to facilitate observation of this event.

Furthermore, if a straight line between Tinto Hill and the enclosure is extended to the NE, the prominent summit of Mendick Hill (510 magnetic in 1998), 6.8km distant and 451m OD, can be seen centrally within the cross over of the NW flank of Black Mount and a subsidiary summit (PI 1 above).

T Ward visited the site No 1 on 19th June 2000 to record the sunrise. A video was taken of the event which was unsuccessful due to cloud on the horizon. However the sun was noted to progress from about 530 magnetic to 540 over a given time.

Standing in the centre of the ring enclosure the bearing to the summit of Tinto Hill was 2310 and to the summit of Mendick Hill it was 510 magnetic.

It was conjectured that this alignment would be a close indicator of mid summer sunrise, and this was later observed (on video) to be true. On 22 June 2001 at 4.36am the sun was observed to rise just left or west of the summit of Mendick Hill which is seen centred within the notch of the crossover on the western flank of Blackhill (PI's 1 & 2).

It is therefore possible to observe and record the longest and shortest days of each year from the ring enclosure.

Furthermore if the site was located only 50m to the east, the summit of Mendick Hill does not appear in the valley on the flank of Blackmount as viewed from the enclosure. Only 100m to the west is the summit of the area upon which the enclosure lies, at this point the views to the NE and SW are radically altered and would not produce the effects as described. If the enclosure was required to have mere prominence on the landscape, the summit would have been chosen as the most visible part of the immediate landscape, having excellent views in all directions. The actual location of the monument is set down from the summit to achieve the view points to the NE and SW where the observation of mid winter sunset and midsummer sunrise can be observed by prediction, the views in other directions from the enclosure are extremely limited. However, from the local summit both Site No 1 and Site No 2 are visible.

Site No 2

NT 06484580

Ring Enclosure. Possible Enclosed Cremation Cemetery

Solar alignment to mid winter sunset

Lying 1.5km W of the summit of Black Mount and on the western flank of the same hill, on a slightly elevated knoll where the ground immediately drops down to the Winter Burn on the NE, there is a ring enclosure. The site lies at 300m OD.

The site principally consists of a double bank of stone but which has been modified on the SW side. The alteration to the original circular enclosure has extended the size of the site and now appears as an entrance.

By reference to the plan (originally surveyed at 1: 100) it can be seen that the original enclosure/s may have measured 20m in overall diameter, while the internal bank may have been 16m in overall diameter. Each of the two banks consist of angular stone up to 0.25m, none of the exposed stone being earth fast and there is no indication of a wall face or kerb. The banks are no higher than about 0.3m when measured from the interior which is featureless apart from a slight hummock (A) within the southern side of the enclosure. Each of the banks vary in width from 1m to 2m, although the widest part of the exterior bank is probably due to subsidence of the sloping ground on the W side.

The apparent alterations which are now seen as a gap on the southern side appear to respect the principal of the original double bank, being extended outwards by up to 5m, running parallel with what may have been the original line of the enclosure and then curving inwards again to form an entrance.

The grass covered site is surrounded by heather, making it distinctive, especially when view from the higher slopes to the NE.

On the 20th December 1998, from this site, the sun was observed to set exactly on the summit of Tinto Hill and behind the prominent cairn which lies there. The sunset began at 15.21 and was complete at 15.27 GMT. Tinto hill is 16 km to the SW and its cairn is at 707m OD.

The event makes a convincing mid winter solstice sunset alignment, and implies that the enclosure may have been deliberately sited to facilitate observation of this event.

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