

## An Astronomical Assessment of the Clava Cairns.

The Clava Cairns are a ruined group of about 26 cairns located in and around the town of Inverness in the NE of Scotland.

The 15 ring and 11 passage cairns are unusual as they are the only cairns in mainland Britain which are surrounded by kerbstones and stone circles both being graded in height to the SW, the circles originally having about 12 stones. The only other example of a cairn within a stone circle is at Newgrange in Ireland.

The passage cairns consist of a centrally placed corbelled chamber, now roofless, with the straight passages aligned SSE, SSW and SW. Only the passage in the cairn at Lagmore appeared to have a bend at its mid point.

The ring cairns have a large central area with a continuous ring of small stones held within an inner and outer kerb. It is only the ring cairn at Clava that is connected to three of the standing stones by low linear mounds of unknown function.

Some of the kerb and standing stones are, and have been reported to have been, cupmarked with the cups being placed on the outer faces of the stones.

A number of the cairns have been excavated with finds of flat-rimmed pots filled with cremated human bone from the centre of the passage cairns and scatters of charcoal, quartz, black earth and more cremated bone from the ring cairns. The only indication of burials came from the centre of the passage cairn at Corrimony and the ring cairn at Daviot.

### The Survey.

From the centre of each cairn the middle of all the standing stones were sighted and the horizon altitudes noted. The inside edges of the entrances of the passage cairns were treated in the same way.

Some of the stones which have fallen will be regarded to be at or near their original positions, while others have been re-erected.

Due to some horizons being obscured by trees, all the surveys were carried out during the winter of 1990/91. This also meant that the deep mud in the ring cairn at Bruich was frozen, allowing the site to be surveyed.

Where the horizon could not be sighted, this was assessed by using OS maps of the area.

As it was impossible, due to the height of the passage cairns at Clava, Corrimony and Culburnie, to directly sight some of the standing stones, extended survey poles were sighted over the top of the cairn material.

## Conclusions.

The results of the surveys would suggest a deliberate indication by the highest stones in the southern half of the circles towards the rising and setting midsummer full moon at or near the major and minor standstills and the winter solstice. There are also orientations towards the sun's winter mid quarter dates with a distinct grouping around the equinoxes, some possibly indicating the equinoctial full moon.

The stones in the north part of the circles could be indicating the same targets at their northern extremes, but to a much lesser degree, with a large grouping of the smallest stones pointing to an area of sky outside the range of the sun, moon or planets. Although these stones may have indicated certain unknown stars, it is also possible that their function was to close the circle.

The three linear mounds at the ring cairn at Clava connecting the standing stones to the cairn, are aligned towards the setting sun at the summer mid quarter dates, 3., the equinox sunrise, 7., and the moonrise near the major standstill, 8.

Six of the cairn passages were aligned towards the rising and setting midsummer full moon at the major standstill with the other three to the setting midsummer full moon at the minor standstill. Only the two passages at Clava were aligned to the setting sun at the winter solstice. It is also considered that as the horizon can be seen from low down at the centre of the chambers at Corrimony and Clava, even allowing for the passage lintels being in place, that it may have been the same at the more ruinous sites and that the light from the sun or moon could have entered the chambers. The midwinter passage alignment and the light beam entering cairns can also be seen at Newgrange and Maeshowe in Orkney.

From a total of 23 cupmarks reported to be on the kerbs, passages and standing stones, 8 could indicate the moon at the two southern standstills, 5 the winter solstice, 1 the sun's winter mid quarter dates and 4 towards the equinoctial area of sky. Of the other 5 cupmarks, 2 could indicate the northern setting moon at the minor standstill with the other three pointing to the northern area of sky outside the range of the sun, moon or planets.

At three of the ring cairns, Tordarroch, Gask and Clava, it is suggested that the positions of the cupmarks on the kerbstones, in line with the cairn centre and a standing stone, could have been determined by use of the shadow of the stone created by the rising or setting moon. This might indicate that the cupmarks were used to record certain astronomical events.

The most important factor about these cairns is the focus on the centre.

It is at this point, either archaeological or astronomically that everything happens. This might suggest that with their limited amount of evidence for mass burial, the cairns were not used for the general disposal of the dead, but that dead were required in some ritual determined by an astronomical event such as the rising and setting of the southern extremes of the sun or moon.

Aviemore Ring Cairn. NH 896134.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	195°	s.	1° 40'	-30° 00' S.M.S.
2.	36°	r.	0° 30'	+26° 36' N.M.S.
3.	97°	r.	4° 00'	- 0° 6' Equin.
4.	127°	r.	4° 00'	-15° 30' W.M.Q.
5. f.	156°	r.	4° 00'	-26° 48' S.M.S.

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Avielochan Passage Cairn. NH 908167.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
L.	167°	r.	3° 00'	-28° 00' S.M.S.
R.	174°	r.	2° 00'	-30° 18' S.M.S.

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Balnuaran of Clava, NE Passage Cairn. NH 756444.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.re.	231°	s.	1° 30'	-18° 24' S.Mi.S.
2.re.	276°	s.	3° 20'	+ 6° 00' Equin.M.
3.	305°	s.	4° 00'	+21° 30' Sum.Sol.
4.	340°	s.	3° 00'	+33° 15' no target
5.	12°	r.	2° 00'	+33° 36' no target
6.	42°	r.	1° 30'	+24° 54' Sum.Sol.
7.	69°	r.	1° 30'	+12° 23' no target
8.	100°	r.	4° 00'	- 1° 57' Equin.
9.	129°	r.	5° 00'	-15° 16' W.M.Q.
10.	162°	r.	4° 00'	-26° 48' S.M.S.
11.re.	197°	s.	4° 00'	-26° 54' S.M.S.
12.	211°	s.	2° 00'	-24° 48' Win.Sol.
L.	211°	s.	2° 00'	-24° 48' Win.Sol.
R.	215°	s.	2° 00'	-24° 13' Win.Sol.

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Balnuaran of Clava, Ring Cairn. NH 757444.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	233°	s.	1° 30'	-17° 30' S.Mi.S.
2.	291°	s.	3° 00'	+14° 6' S.M.Q.
3.	355°	s.	2° 35'	+35° 8' no target
4.	28°	r.	1° 30'	+29° 42' N.M.S.
5.	61°	r.	1° 00'	+15° 54' S.M.Q.
6.	95°	r.	4° 00'	+ 0° 36' Equin. cm.k.
7.	130°	r.	5° 00'	-15° 41' W.M.Q. cm.
8.	165°	r.	5° 00'	-26° 19' S.M.S.
9.	198°	s.	4° 00'	-26° 48' S.M.S.

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Balnuaran of Clava, SW Passage Cairn. NH 756443.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.re.	234°	s.	1° 30'	-17° 00' S.Mi.S.
2.re.	261°	s.	3° 00'	- 2° 00' Equin. cm.
3.re.	291°	s.	5° 00'	+15° 18' S.M.Q.
4.re.	322°	s.	3° 30'	+28° 18' N.M.S.
5.	347°	s.	3° 00'	+34° 30' no target.cm?
6.re.	11°	r.	2° 00'	+33° 48' no target
7.	36°	r.	1° 30'	+27° 6' N.M.S.
8.	104°	r.	5° 00'	- 4° 54' Equin.M.
9. f.	140°	r.	5° 00'	-19° 36' S.Mi.S.
10.	172°	r.	4° 00'	-28° 6' S.M.S.
11.	199°	s.	4° 00'	-26° 36' S.M.S. cm?
L.	212°	s.	2° 00'	-25° 12' Win.Sol. cm.
R.	216°	s.	2° 00'	-23° 53' Win.Sol. cm.

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Bruich Ring Cairn. NH 499414.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	224°	s.	4° 30'	-18° 36' S.Mi.S.
2.	255°	s.	4° 00'	- 7° 00' Equin.M?
3.	287°	s.	3° 20'	+11° 48' no target
4.	331°	s.	3° 40'	+31° 24' no target
5.	43°	r.	0° 30'm.	+23° 30' Sum.Sol.
6.	84°	r.	3° 00'	+ 5° 42' Equin.M.

Bruich Ring Cairn.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>	
7.	122°	r.	3° 30'	-13° 24'	no target
8.	142°	r.	3° 00'	-22° 12'	Win.Sol?
9.	164°	r.	4° 00'	-27° 12'	S.M.S.
10.	207°	s.	4° 00'	-24° 12'	Win.Sol.
11.	192°	s.	3° 40'	-28° 6'	S.M.S. cm.k.
12.	303°	s.	3° 20'	+19° 54'	N.Mi.S. cm.k.

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Carn Daley, Passage Cairn. NH 494314.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>	
1.	46°	r.	3° 20'	+24° 54'	Sum.Sol.
2.f.	98°	r.	2° 20'	- 2° 18'	Equin.
3.	158°	r.	1° 30'	-28° 24'	S.M.S.
4.f.	194°	s.	3° 20'	-28° 6'	S.M.S.
L.	221°	s.	2° 12'	-19° 6'	S.Mi.S.
R.	230°	s.	3° 00'	-17° 30'	S.Mi.S.

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Corrimony Passage Cairn. NH 383303.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>	
1.	244°	s.	3° 00'	-11° 12'	modern
2.	276°	s.	5° 00'	+ 7° 24'	modern
3.	308°	s.	4° 00'	+23° 12'	Sum.Sol.
4.	339°	s.	3° 00'	+33° 24'	no target,cm.
5.	7°	r.	3° 30'	+36° 12'	no target
6.	48°	r.	3° 00'	+24° 00'	Sum.Sol.
7.	69°	r.	0° 30'm.	+11° 00'	no target
8.	99°	r.	0° 30'm.	- 4° 00'	modern
9.	124°	r.	4° 30'	-13° 42'	modern
10.	154°	r.	8° 00'	-21° 30'	no target
11.	187°	r.	8° 00'	-24° 42'	Win.Sol.
12.	211°	s.	7° 00'	-21° 42'	no target
L.	226°	s.	3° 00'	-19° 00'	S.Mi.S.
R.	229°	s.	3° 00'	-17° 48'	S.Mi.S. cm capstone.

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Culburnie Ring Cairn. NH 491418.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>	
1.	213°	s.	4° 00'	-22° 54'	Win.Sol.
2.	255°	s.	3° 00'	- 5° 24'	Equin.M.
3.	300°	s.	3° 00'	+18° 24'	N.Mi.S. cm.
4.	339°	s.	2° 48'	+32° 48'	no target
5.	9°	r.	0° 30'm.	+32° 30'	no target
6.	45°	r.	1° 00'm.	+23° 12'	Sum.Sol.
7.	128°	r.	3° 00'	-16° 36'	W.M.Q.
8.	169°	r.	3° 00'	-28° 42'	S.M.S.
	148°	r.	2° 30'	-24° 00'	Win.Sol. cm.k.

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Culdoich Ring Carn. NH 751437.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>	
1. f.	226°	s.	1° 30'	-20° 30'	S.Mi.S.? cm.
2.	111°	r.	6° 00'	- 5° 54'	Equin.M. cm.k.
3.	263°	s.	3° 00'	- 1° 42'	Equin. cm.k.

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Dalcross Passage Cairn. NH 779484.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>	
1.	177°	r.	3° 00'	-29° 24'	S.M.S.
2. f.	209°	s.	0° 30'm.	-27° 30'	S.M.S.
L	228°	s.	0° 30'm.	-20° 00'	S.Mi.S.
R	236°	s.	0° 30'm	-17° 00'	S.Mi.S.

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Daviot Ring Cairn. NH 727411.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>	
1.	163°	r.	5° 00'	-25° 54'	S.M.S.?
2.	193°	s.	3° 00'	-28° 30'	S.M.S.

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Delfour Ring Cairn. NH 844085.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	219°	s.	2° 00'	-23° 30' Win.Sol.

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Druidtemple Passage Cairn. NH 685420.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	207°	s.	2° 10'	-26° 24' S.M.S.
2. f.	251°	s.	1° 00'	- 9° 00' no target
3.	278°	s.	1° 30'	+ 5° 30' Equin.M.
4.	308°	s.	0° 00'	+19° 18' N.Mi.S.
5.	349°	s.	0° 10'	+31° 54' no target
6. f.	42°	r.	0° 00'	+23° 18' Sum.Sol.
7.	75°	r.	1° 00'	+ 8° 48' no target
8. f.	105°	r.	2° 00'	- 6° 12' Equin.M.
9. f.	129°	r.	3° 00'	-17° 00' S.Mi.S.
10.	161°	r.	3° 00'	-27° 30' S.M.S.
L	173°	r.	3° 00'	-29° 12' S.M.S.
R	178°	r.	3° 00'	-29° 24' S.M.S.

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Gask Ring Cairn. NH 679358.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	209°	s.	2° 00'	-26° 6' S.M.S. cm.
	213°	s.	2° 00'	-24° 48' Win.Sol. cm.k.
2. f.	271°	s.	2° 00'm.	+ 2° 12' Equin.
3. f.	338°	s.	2° 00'	+33° 6' no target,cm.
4.	8°	r.	1° 00'	+33° 6' no target
5. f.	36°	r.	1° 00'	+26° 42' N.M.S.
6.	73°	r.	1° 40'	+10° 00' no target
7. f.	107°	r.	2° 00'	- 7° 18' Equin.M.
8. f.	139°	r.	3° 00'	-20° 00' S.Mi.S.
9. f.	176°	r.	2° 20'	-30° 6' S.M.S.

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Kinchyle of Dóres Passage Cairn. NH 621388.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	208°	s.	1° 54'	-26° 54' S.M.S.
2.	252°	s.	4° 30'	+ 0° 54' Equin.
3.	299°	s.	4° 00'	+18° 42' N.Mi.S.
4. f.	4°	r.	2° 00'	+34° 54' no target
5.	60°	r.	1° 00'	+16° 42' S.M.Q.
6. f.	86°	r.	3° 30'	+ 5° 6' Equin.M.
7. f.	120°	r.	4° 30'	-11° 48' no target
8.	165°	r.	3° 24'	-28° 18' S.M.S.
L	176°	r.	2° 54'	-29° 48' S.M.S.
R	188°	r.	2° 54'	-29° 36' S.M.S.

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Newton of Petty, Ring Cairn. NH 734485.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1. f.	132°	r.	3° 00'	-18° 21' S.Mi.S.
2. f.	160°	r.	2° 40'	-27° 46' S.M.S.
3.	191°	s.	2° 20'	-29° 30' S.M.S.
4.	217°	s.	1° 00'	-24° 28' Win.Sol. cm?
5.	245°	s.	1° 00'	-12° 15' no target
6.	272°	s.	0° 40'	+ 1° 30' Equin.

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Marionburgh Ring Cairn. NJ 183364.



• Tordarroch Ring Cairn. NH 679334.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	202°	s.	3° 00'	-26° 54' S.M.S. cm.k.
2. f.	261°	s.	0° 30'	- 4° 24' Equin.M.
3.	288°	s.	4° 10'	+13° 10' no target
4.	327°	s.	1° 35'	+28° 25' N.M.S.
5.	358°	s.	1° 00'	+33° 36' no target
6.	33°	r.	0° 15'	+27° 00' N.M.S.
7.	55°	r.	1° 35'	+19° 18' N.M.S.
8.	117°	r.	7° 00'	- 8° 00' no target
9.	164°	r.	3° 40'	-27° 40' S.M.S.

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Carn Urnan Passage Cairn. NH 566523.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	261°	s.	1° 00'	- 4° 00' Equin.M.
2.	304°	s.	1° 00'	+18° 22' N.Mi.S. ↘
3. f.	329°	s.	2° 30'	+29° 47' N.M.S.
4.	16°	r.	1° 00'	+32° 30' no target
5. f.	49°	r.	0° 40'	+21° 00' no target
6. f.	86°	r.	0° 30'	+ 1° 30' Equin.
7. f.	127°	r.	0° 00'	-18° 48' S.Mi.S.
8.	174°	r.	1° 20'	-31° 00' S.M.S.
L	193°	s.	0° 36'	-31° 00' S.M.S
R	200°	s.	0° 36'	-29° 50' S.M.S.

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Lagmore Passage Cairn. NH 176358.

	<u>Azi.</u>		<u>Alt.</u>	<u>Decl.</u>
1.	213°	s.	12° 00'	-15° 48' W.M.Q.
2.	263°	s.	4° 00'	- 0° 6' Equin.
3.	16°	r.	0° 00'	+32° 00' no target
4.	45°	r.	1° 30'	+23° 41' Sum.Sol.
5.	84°	r.	4° 30'	+ 7° 00' Equin.M.?
6. f.	159°	r.	2° 30'	-27° 36' S.M.S.
L	176°	r.	6° 00'	-26° 54' S.M.S
R	182°	r.	8° 00'	-24° 54' Win.Sol.?

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