

The Lunar Aligned Passages of the Clava Cairns.

Located in the area around Inverness are the group of cairns known as the Clava Cairns. The cairns take their name from three of the best preserved of their type 7km to the E of Inverness at Balnuaran of Clava NH 757444. Of this group of cairns, 11 are known to have passages leading to a central area (Henshall 1963). It has been suggested by Thom 1967 that the two passages at Balnuaran of Clava were both orientated to a position on the south-western horizon where the sun would have set at the winter solstice. In order to determine if the other 9 Clava Cairn passages showed a similar orientation, a survey of 8 of the cairn passages was carried out between August and November 1986. One site, the cairn at Lagmore NJ 176358, was excluded from the survey as the passage appeared to have a sharp bend in its construction.

#### The Survey

The survey at each site was carried out by establishing an observing position (OP) as near the centre of the cairn where possible. The OP was centrally aligned to the passage and measured from the outside edge of the two entrance stones. From the OP the inside edges of the two entrance stones were sighted by a theodolite, this being the indicated azimuth range (IAR). The IAR was levelled to the horizon and the altitudes noted. The IAR was then divided in two and the central horizon altitude noted. The position from true north (TN) was established using Plate Bearing Zero (PBZ) to a Trig Point or a known landmark taken from Ordnance Survey maps of the area. The latitude of each cairn site, azimuth from TN and the altitudes as indicated by the IAR were processed by a Spectrum computer with a program by Terry Kelly giving the resulting declinations.

Site	Indicated Azimuth Range			Declinations			
Avielochan	167°	171°	174°	-28°8	-30°3	-30°5	Rise
Croftcroy	190°9	194°	197°	-28°88	-28°69	-28°2	Set
Carn Urnan	192°5	196°	199°5	-31°14	-30°5	-29°94	Set.
Druidtemple	170°5	174°	177°5	-29°	-29°3	-29°46	Rise
Dores	176°	182°	188°	-29°8	-29°97	-29°65	Rise
Dalcross	228°	232°	236°	-20°6	-18°9	-17°14	Set
Carn Daley	221°5	226°	230°5	-22°	-19°63	-17°28	Set.
Corrimony	226°5	228°	229°5	-19°13	-18°22	-17°86	Set

The declinations indicated that three of the passages, Corrimony, Carn Daley and Dalcross, were possibly orientated to the setting position of the full moon at its minor standstill (-18°).

The other five cairn passages were possibly orientated to the full moon at its major standstill (-28°). Two of the cairn passages, Carn Urnan and Croftcroy, were orientated to the setting moon, the other three were for the rising moon.

#### Conclusions.

As the majority of the Clava type cairn passages would seem to have been orientated to the moon at both its two southern extremes, (the minor and major standstills) it is possible that the two winter solstice orientated passages at Balnuaran of Clava may also have been used for the setting moon.

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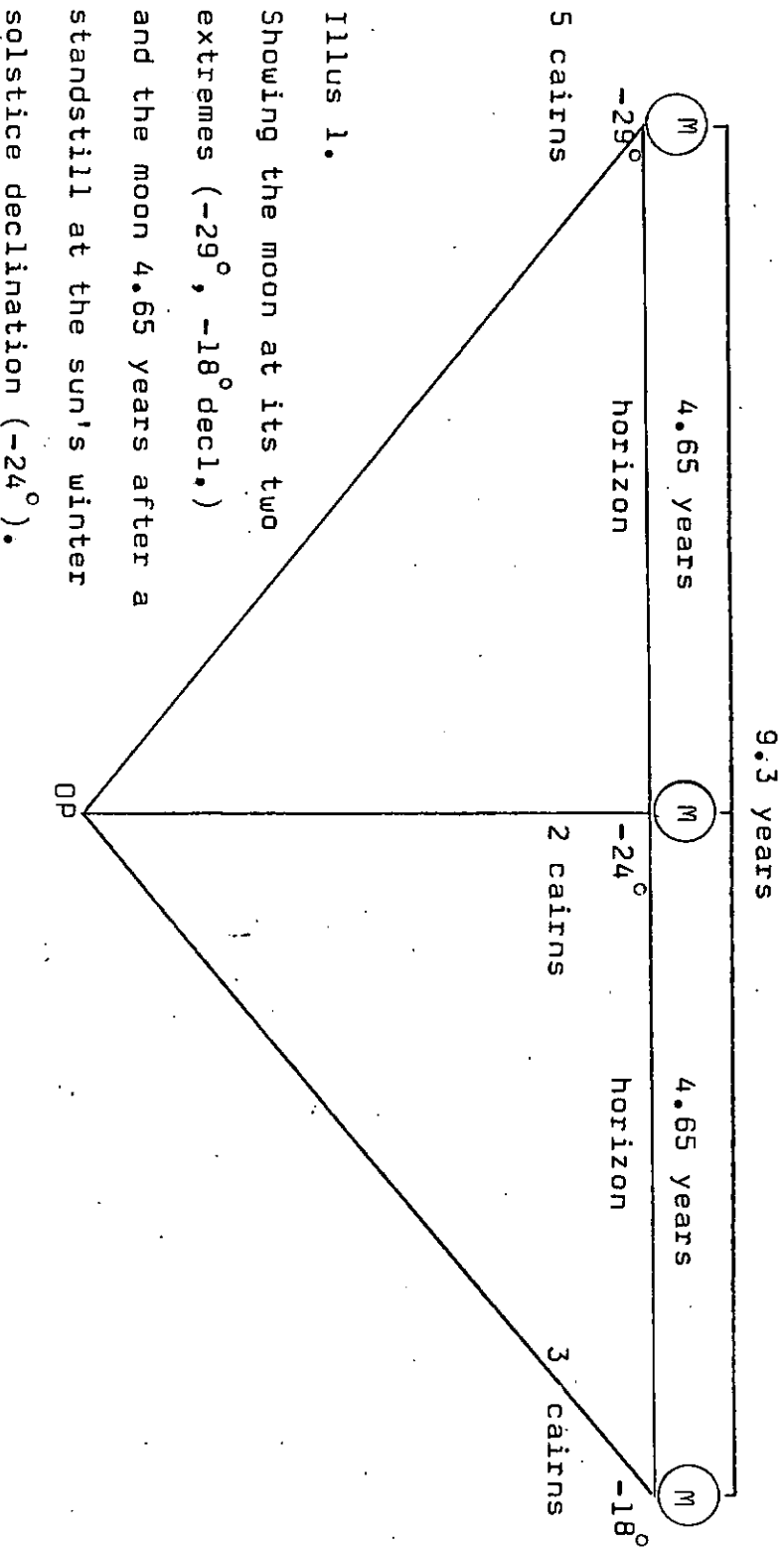
The sun's declination at the winter solstice ( $-24^{\circ}$ ) lies in the middle of the range of the declination for the moon at its standstills. Illus 1. As the moon takes 9.3 years to move between its standstills, this would that 4.65 years after a standstill the moon would set in the sun's winter solstice position. It is at this time when the sun, earth and moon lie in a straight line to each other that lunar eclipses can occur. Although the lunar orientations of the cairns may reflect other social activities, if the midsummer full moon setting in the sun's winter solstice position was an important feature in the lives of the people who used the cairns at Clava, they would have seen the moon be partially or totally eclipsed as it entered the earth's shadow.

Doug Scott.

#### References

Henshall, A.S. (1963) The Chambered Tombs of Scotland vol 1. Edinburgh

Thom, A. (1967) Megalithic Sites in Britain. Oxford.



Illus 1.

Showing the moon at its two extremes (-29°, -18° decl.)

and the moon 4.65 years after a

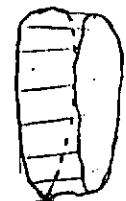
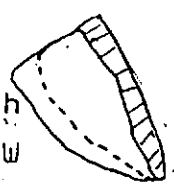
standstill at the sun's winter

solstice declination (-24°).



AS THE ORD. CAIRN

1.10m high  
angled c5 W



1.20m high  
angled c15 E

1m high

angled  
c30 NNE



angled  
c30 NW



0.7m

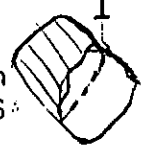
vertical

8.86m

0.86m high  
angled c20 S



0.90m high  
angled c20 S



- Achinduich Stone Circle.

GR NC 5845 0084

Lat. 57 58min

PBZ The Ord cairn Azi.346 TN.

19/12/86 R.&D. Scott.