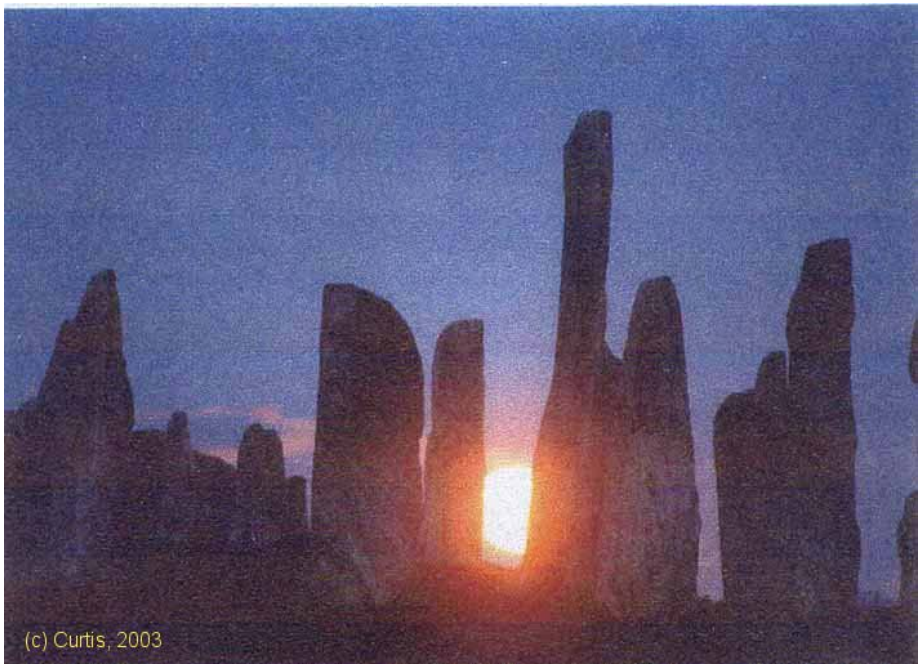
CALLANISH 2006

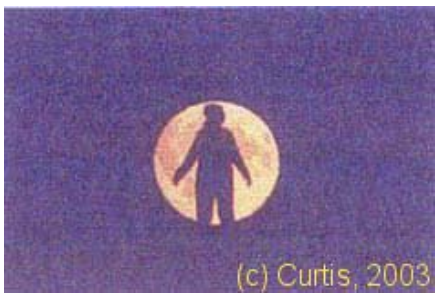


The moon gleams dramatically at the heart of the prehistoric stone circle at Callanish. Some 5000 years ago people assembled at the far end of a stone avenue to watch the moon captured by the sacred stones of the circle. This rare event can be seen only when the moon follows its extreme South path every 18.61 years, similar to the sun's midwinter path. The awesome moment when the moon shines along the avenue was captured on film at 1:30 am on 12 June 1987.

This rare and spectacular illusion created by our prehistoric ancestors can be seen again about once a month during the next few years, from the North end of the avenue.

The moon rises gently from from the Sleeping Beauty Hills	passes low at due South skimming stones of the East row.	sets into a nearby hill,	then re-gleams dramatically, but briefly, within the stone circle at the foot of the largest stone of all and at the head of a burial cairn, creating the opportunity for a 'man in the moon' ceremony with a person silhouetted against the moon.

Margaret R. Curtis and G. Ronald Curtis
Olcote, New Park, Callanish, Isle of Lewis, Scotland, HS2 9DZ
Telephone 01851 621 277



We have had a number of different inquiries concerning the moon for the next few years, eg:

- When is the very lowest moon?
- When is the lowest full moon?
- When is the lowest moon nearest midsummer?

Each question requires a different answer.

The information supplied in the table, graph and diagrams is in connection with dates and times of the brief appearance of the moon apparently INSIDE the standing stone circle at Callanish low down or at ground level each month. Extra data are given for when the moon is low among the stones, but not at ground level.
It has been taken from data kindly supplied by The Royal Observatory, Edinburgh; the Rutherford Appleton Laboratory, Oxfordshire; and The Nautical Almanac.

Remember that weather or atmospheric conditions may affect the apparent altitude of the moon's path.

If you are visiting Callanish especially to see the moon low inside the standing stone circle, it would be advisable to stay for 3 or 4 consecutive nights to allow for adverse viewing conditions.

The moon's path will be up to 1 or 2 degrees higher (= 2 or 4 moon's diameters) (= 2 or 4 strips on the simplified diagrams) 24 hours before and after the dates in the table.

Because the greatest negative declination of the moon may not occur towards the South, but anywhere around the horizon - North, East, West or South - occasionally 2 consecutive moon's paths will be almost identical as shown by the closeness of the dot to the minus or plus sign (. and - or . and +) on the graph, e.g.:
March 2004, April 2005, March 2006, and August 2007.

Beware of confusing or mixing geocentric data (as in The Nautical Almanac) appropriate globally, with topocentric data as given in the table, graphs and diagrams on this page for Callanish only. It would be rather like mixing Imperial and metric measurements.

Geocentric data are for a viewer at the centre of the earth!
Topocentric data are for a viewer at a specific location on the surface of the earth.

To convert from topocentric to geocentric substract approximately 1 degree.
To convert from geocentric to topocentric add approximately 1 degree.

REFERENCES

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FURTHER INFORMATION

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MRC38GJ TEXT

DATA FOR THE MOON ON ITS LOWEST PATH EACH MONTH AT DUE SOUTH (= MERIDIAN TRANSIT = 180 DEGREES) AT CALLANISH, ISLE OF LEWIS, SCOTLAND; LATITUDE 58 DEGREES 12 MINUTES 06 SECONDS WEST; LONGITUDE 6 DEGREES 44 MINUTES 30 SECONDS WEST; NATIONAL GRID REFERENCE NB 213 330; AD 2003 - 2009

Degrees of azimuth:
North = 0 degrees East = 90 degrees South = 180 degrees West = 270 degrees

DATE
AD = Anno Domini

TIME
Universal Time = Greenwich Mean Time in hours, minutes and seconds when moon is due South =180 degrees. Deduct 1 hour during British Summer Time.

The moon takes 4 minutes to move across 1 degree of the horizon = 1 degree of azimuth.

Depending on its declination the moon will have risen from some part of the Sleeping Beauty about 1 hour 20 minutes to 1 hour 40 minutes earlier than the time given in the table.

The moon will appear in the gap by the tallest standing stone in the circle about 50 - 60 minutes later than the time given in the table depending where one stands at the north end of the avenue _ centrally, as in the diagrams, or by the end stone on the East side as in the photograph.

ALTITUDE
The (topocentric) altitude of the centre of the moon at due South (= 180 degrees) in degrees above the horizontal.

The moon is about half a degree wide = 0.5 degrees = 30 minutes = 30'
15 minutes = 0.25 degree
30 minutes = 0.50 degree
45 minutes = 0.75 degree
60 minutes = 1.00 degree

LIT PORTION OF THE MOON AT DUE SOUTH
The various phases of the moon (at due South) occur consistently every year:

- full in summer
- quarter in spring and autumn
- new, dark or invisible in winter.

For more detail see "Decoding the Callanish complex", pages 70,71.

DECLINATION

Declination is the moon's curved path across the sky incorporating azimuth and altitude.

The greatest negative declination (= the lowest path) at due South is -29.6415 degrees with an altitude at due South of 2.4496 degrees and will occur on 29 September 2006, less than an hour before the moon will appear at ground level in the circle allowing a "man in the moon" ceremony (see photograph taken on 12 June 1987, declination -29.10 degrees). The moon will appear NEAR the ground level once a month from late 2005 to late 2007.

In prehistoric times the moon's path was even lower by about half a degree.

For more detail see "Callanish: Stones, Moon & Sacred Landscape", page 29.

MRC35 TABLE

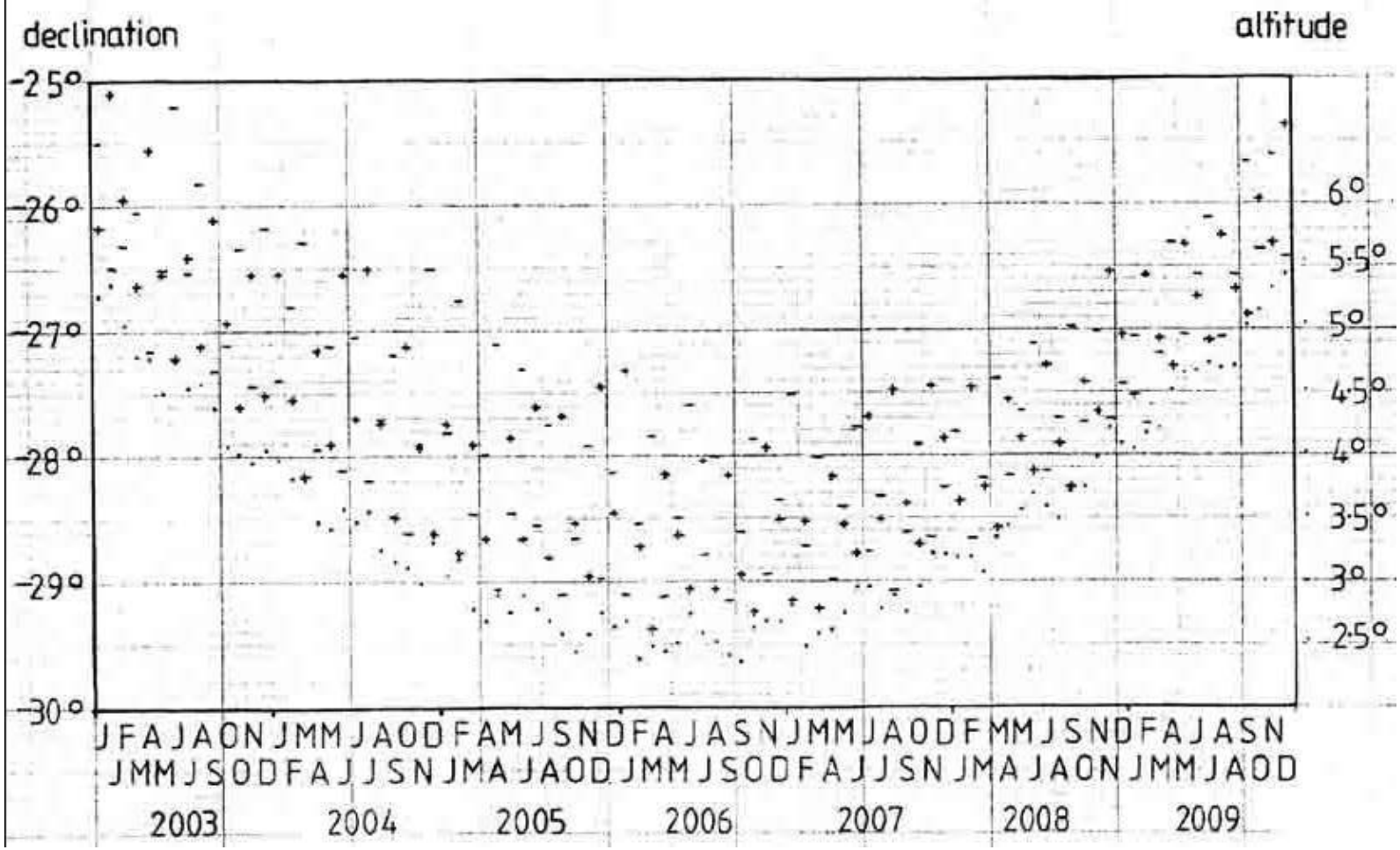
TABLE OF DATA FOR THE MOON ON ITS LOWEST PATH EACH MONTH AT DUE SOUTH (= MERIDIAN TRANSIT = 180 DEGREES) AT CALLANISH, ISLE OF LEWIS, SCOTLAND; LATITUDE 58 DEGREES 12 MINUTES 06 SECONDS WEST; LONGITUDE 6 DEGREES 44 MINUTES 30 SECONDS WEST; NATIONAL GRID REFERENCE NB 213 330; AD 2003 - 2009

DATE	TIME	ALTITUDE	LIT PORTION	DECLINATION
2 January2003	121227.0	5.2402	0.002	- 26.7208
30 January2003	105912.9	5.3196	0.047	- 26.6392
26 February2003	08 52 47.6	5.0135	0.225	- 26.9538
25 March2003	06 47 57.9	4.7784	0.479	-27.1959
22 April2003	05 38 03.5	4.7588	0.638	-27.2162
19 May2003	03 22 36.3	4.4931	0.875	- 27.4906
15 June2003	010151.8	4.7545	0.994	- 27.2206
12 July2003	23 46 39.5	4.5314	0.989	-27.4510
8 August2003	21 33 33.2	4.5628	0.867	- 27.4185
5 September 2003	20 27 08.3	4.3783	0.751	- 27.6095
2 October 2003	18 21 49.8	4.0657	0.497	- 27.9338
29 October 2003	161142.7	4.0145	0.233	- 27.9871
26 November 2003	145740.9	3.9615	0.105	- 28.0423
23 December 2003	12 33 29.0	4.0484	0.002	-27.9519
20 January2004	11 1656.3	3.9733	0.030	- 28.0300
16 February2004	09 02 23.0	3.8292	0.201	-28.1802
14 March2004	06 55 34.9	3.8215	0.454	-28.1882
11 April2004	05 51 29.6	3.4870	0.605	-28.5384
8 May2004	03 39 27.0	3.4366	0.846	-28.5914
5 June2004	02 26 14.4	3.5836	0.943	-28.4371
2 July2004	00 02 43.4	3.4963	0.995	- 28.5287
29 July2004	224815.0	3.5677	0.950	- 28.4537
25 August2004	20 33 05.5	3.2651	0.767	- 28.7720
21 September 2004	182520.1	3.2051	0.513	-28.8353
19 October 2004	17 22 06.0	3.1549	0.365	- 28.8884
15 November 2004	151052.2	3.0344	0.129	- 29.0160
12 December 2004	124941.6	3.3354	0.006	- 28.6978
9 January2005	11 3138.6	3.0911	0.019	- 28.9558
5 February2005	09 09 38.0	3.2194	0.180	- 28.8201
5 March2005	080047.1	2.8353	0.323	- 29.2277
1 April2005	05 53 45.6	2.7498	0.591	-29.3190
28 April2005	03 46 34.9	2.9551	0.829	-29.1002
26 May2005	023808.1	2.8179	0.928	- 29.2462
22 June2005	00 18 37.2	2.9441	0.997	-29.1118
19 July2005	230245.1	2.8363	0.963	- 29.2266
15 August2005	20 42 44.3	2.7407	0.789	- 29.3287
12 September 2005	19 32 57.4	2.6576	0.648	-29.4177
9 October 2005	172531.8	2.5134	0.382	- 29.5727
5 November 2005	15 1922.8	2.6475	0.149	- 29.4285
3 December 2005	14 1046.8	2.8061	0.053	- 29.2588
30 December 2005	11 5138.3	2.6986	0.008	- 29.3737

27 January2006 23 February2006 22 March2006	10 3341.7 08 1434.1 06 04 20.4	2.7620 2.4691 2.5772	0.070 0.288 0.560	- 29.3059 - 29.6205 - 29.5040
19 April2006 16 May2006 12 June2006	04 58 00.3 0251 56.1 004103.5	2.5236 2.5830 2.7986	0.709 0.909 0.996	-29.5616 - 29.4978 - 29.2668
9 July2006 5 August2006 2 September 2006 29 September 2006 26 October 2006	23 26 36.0 21 08 37.4 1953 14.3 174258.8 153758.3	2.6562 2.5991 2.4889 2.4496 2.6943	0.980 0.834 0.693 0.426 0.184	-29.4192 - 29.4804 -29.5990 - 29.6415 - 29.3784
23 November 2006	14 29 48.4	2.7573	0.077	-29.3110
20 December 2006	122023.2	2.7471	0.003	- 29.3219
16 January2007 13 February2007 12 March2007	10 05 48.6 084741.9 0635 15.7	2.8745 2.5712 2.6626	0.091 0.222 0.490	-29.1859 -29.5104 - 29.4123
9 April2007 6 May2007 2 June2007	052251.3 03 18 17.8 01 1325.8	2.6902 2.8046 2.9985	0.655 0.872 0.987	- 29.3828 - 29.2604 -29.0541
30 June2007	00 00 52.4	2.9991	0.994	-29.0535
26 July2007 23 August2007 19 September 2007 16 October 2007	214939.8 20 32 22 8 182102.3 1613 57.8	2.8398 2.9526 2.8083 3.0116	0.892 0.767 0.508 0.250	- 29.2229 -29.1028 - 29.2565 - 29.0401
13 November 2007	150211.2	3.2531	0.120	- 28.7846
10 December 2007	125758.9	3.2396	0.008	- 28.7988
6 January2008 3 February2008 1 March2008	105106.4 093429.5 07 23 40.7	3.2219 3.2243 3.1110	0.042 0.143 0.387	-28.8176 -28.8150 -28.9348
28 March2008	05 1448.5	3.3639	0.659	- 28.6678
25 April2008 22 May2008 17 June2008	03 59 53.3 01 5527.3 235122.8	3.4634 3.5830 3.7027	0.809 0.963 0.993	- 28.5632 - 28.4377 -28.3124
15 July2008 11 August2008 7 September 2008 5 October 2008	223734.5 20 30 14.3 182138.8 170412.6	3.6178 3.5168 3.7201 3.7540	0.946 0.772 0.519 0.347	-28.4013 - 28.5071 - 28.2942 - 28.2588
1 November 2008	145705.5	3.9903	0.122	-28.0123
29 November 2008	134242.5	4.2088	0.033	-27.7852
26 December 2008	113827.4	4.0927	0.011	- 27.9058
22 January2009 19 February2009 18 March2009	09 33 42.6 081801.4 06 09 39 8	4.0440 4.1747 4.1954	0.134 0.277 0.547	- 27.9564 - 27.8206 -27.7990
14 April2009 12 May2009 8 June2009	04 00 20.2 02 43 45.0 003743.3	4.4977 4.6365 4.6489	0.800 0.917 0.998	- 27.4859 - 27.3424 - 27.3296
4 July2009 1 August2009 28 August2009 24 September 2009 22 October 2009	223331.5 212042.4 19 15 10.0 170638.3 154837.6	4.7044 4.6659 4.6798 4.9948 5.1147	0.946 0.853 0.628 0.360 0.202	- 27.2724 -27.3121 - 27.2977 - 26.9730 - 26.8497
18 November 2009	1338 10.2	5.2922	0.034	- 26.6674
16 December 2009	122258.5	5.3854	0.001	-26.5718

CALLANISH, ISLE OF LEWIS, SCOTLAND; 58°12'6" NORTH, 6°44'30" WEST.
GREATEST NEGATIVE DECLINATION AND ALTITUDE OF CENTRE OF MOON
AT DUE SOUTH EACH MONTH 2003 - 2009.

greatest declination (·) 24hours earlier (-) 24hours later (+)



MRC38FJ MOONSET

SIMPLIFIED DIAGRAM OF MOON'S LOWEST PATH EACH MONTH. AD 2003 - 2009, AT DUE SOUTH AND AT MOONSET. AT CLANNISH, ISLE OF LEWIS, SCOTLAND; (LATITUDE 58 DEGREES 12 MINUTES 6 SECONDS NORTH; LONGITUDE 6 DEGREES 44 MINUTES 30 SECONDS WEST; NATIONAL GRID REFERENCE NB213 330)
AS SEEN FROM THE CENTRE OF THE NORTH END OF THE AVENUE LOOKING TOWARDS THE CIRCLE.

The curved lines represent the declation, the moon's curved path across the sky on various dates.

HOW TO USE. Take the altitude of the centre of the moon for the required date from the table and locate it on the altitude axis, then follow the curved path towards moonset.

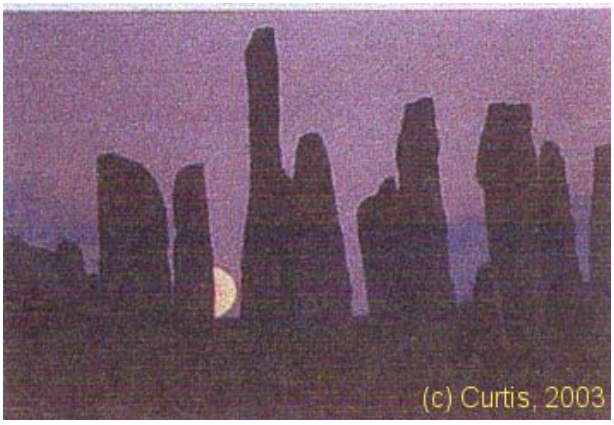
eg a moon with its centre at an altitude of 4.4 degrees at due South would pass behind the top of the tallest standing stone in the circle. Therefore the earliest date to see this would be 5 September 2003, altitude 4.3783 degrees

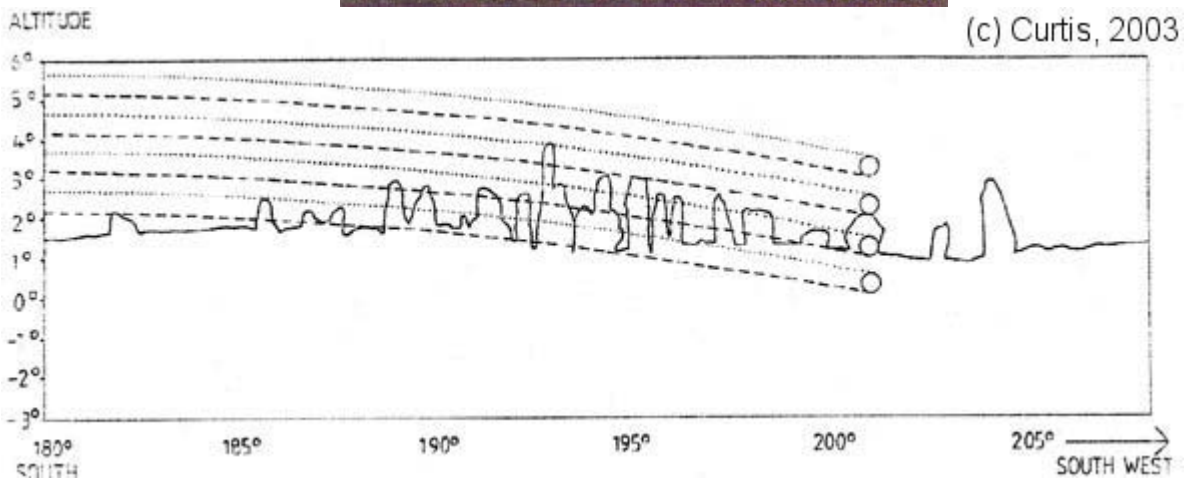
eg a moon with its centre at an attitude of 3 degrees at due South would pass inside the standing stones of the circle. Therefore the earliest date to see this would be 15 November 2004, altitude 3.0344 dgerees . As the moon would be almost invisible it would be safer to wait for a half moon on 5 March 2005, altitude 2.8353 degrees.

eg a moon at ground level in the circle.
In prehistoric times the moon's path was lower by about half a degree, its altitude at due South being about 1.9 dgerees. The lowest path would have "hung" under the lowest dashed line on the diagram, creating the illusion of the moon at ground level in the circle, and giving opportunities for a "man in the moon" ceremony.

The lowest path in the next few years will be for the moon with its centre at an altitude of 2.4496 degrees at due South on 29 September 2006. Almost as low moons will occur when the centre of the moon is at an altitude of 2.4691 degrees at due South on 23 February 2006 and at an altitude of 2.4889 degrees at due South on 2 September 2006.

None of these three will be full moons.





MRC38CJ MOONRISE

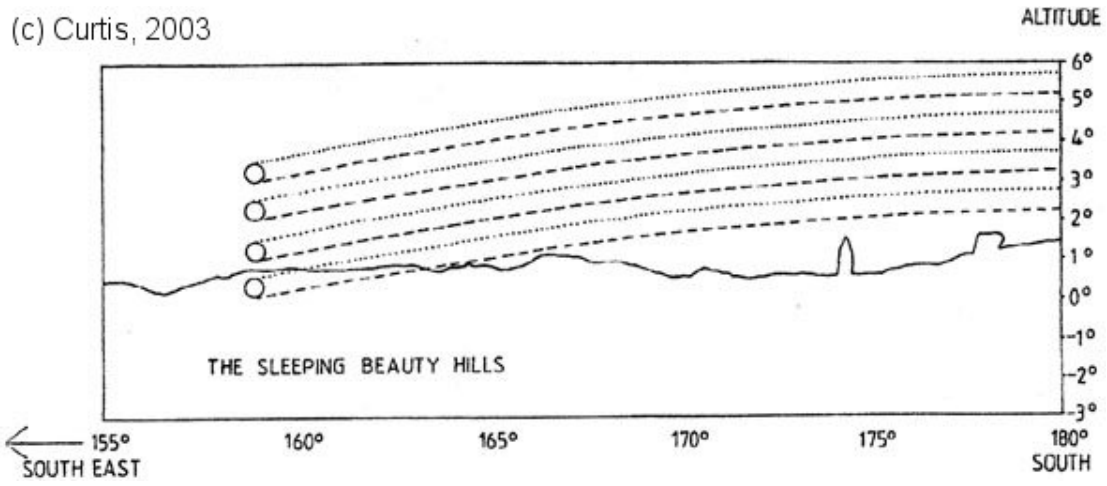
SIMPLIFIED DIAGRAM OF MOON'S LOWEST PATH EACH MONTH. AD 2003 - 2009, AT MOONRISE DUE SOUTH AND AT DUE SOUTH. AT CLANNISH, ISLE OF LEWIS, SCOTLAND; (LATITUDE 58 DEGREES 12 MINUTES 6 SECONDS NORTH; LONGITUDE 6 DEGREES 44 MINUTES 30 SECONDS WEST; NATIONAL GRID REFERENCE NB213 330) AS SEEN FROM THE CENTRE OF THE NORTH END OF THE AVENUE LOOKING TOWARDS THE SLEEPING BEAUTY IN THE SOUTHEAST.

The curved lines represent the declination, the moon's curved path across the sky on various dates.

HOW TO USE. Take the altitude of the centre of the moon for the required date from the table and locate it on the altitude axis, then follow the curved path towards moonrise.

eg The earliest date to see the low moon's path skimming the Sleeping Beauty hills would be when the centre of the moon is at about 3 degrees altitude at due South in winter 2004 / 2005.

eg The earliest date to see the low moon rise out of the Sleeping Beauty hills would be when the centre of the moon is at about 2.75 degrees altitude at due South on 1 April 2005, attitude 2.7498 degrees.



MRC38DJ SITE 3

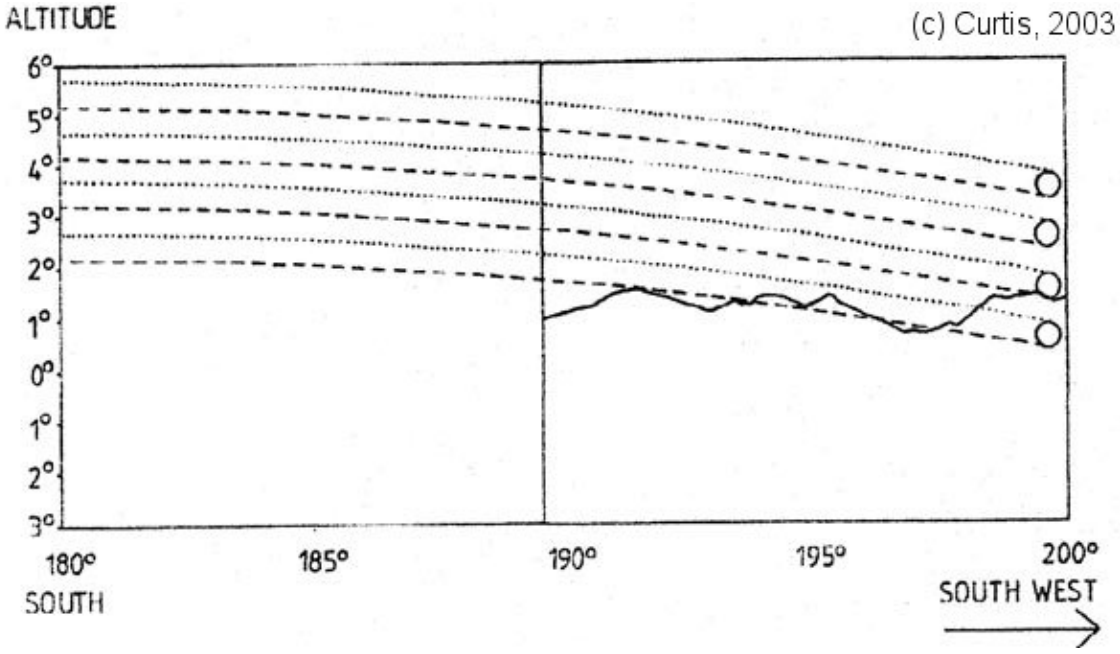
SIMPLIFIED DIAGRAM OF MOON'S LOWEST PATH EACH MONTH, AD 2003 - 2009, AT DUE SOUTH AND AT MOONSET, AT CALLANISH 3; ISLE OF LEWIS, SCOTLAND, (LATITUDE 58 DEGREES 11 MINUTES 46 SECONDS NORTH; LONGITUDE 6 DEGREES 43 MINUTES 24 SECONDS WEST; NATIONAL GRID REFERENCE NB 225 327)
AS SEEN FROM CALLANISH 3 LOOKING TOWARDS MOONSET.

The curved lines represent the declination, of the moon's carved path across the sky on various dates.

The moon never disappears, then reappears in the valley, as seen from other sites. But the moon will be low enough to see a "man in the moon". See "Callanish: Stones, Moon and Sacred Landscape", pages 12,13.

HOW TO USE. Take the altitude of the centre of the moon for the required date from the table and locate it on the altitude axis, then follow the curved path towards moonset.

A moon with its centre at about 2.5 degrees at due South would appear low in the valley. Therefore the earliest date to see this would be 9 October 2005, altitude 2.5134 degrees at due South, but not again until 22 March 2006, altitude 2.5772 degrees at due South.



MRC38EJ SITE17

SIMPLIFIED DIAGRAM OF MOON'S LOWEST PATH EACH MONTH, AD 2003-2009, AT DUE SOUTH AND AT MOONSET, AT CALLANISH 17, ISLE OP LEWIS, SCOTLAND, (LATITUDE 58 DEGREES 11 MINUTES 24 SECONDS NORTH; LONGITUDE 6 DEGREES 42 MINUTES 5 SECONDS WEST; NATIONAL GRID REFERENCE NB237 320)
AS SEEN FROM CALLANISH 17 LOOKING TOWARDS MOONSET IN THE SOUTHWEST

The curved lines represent the declination, the moon's curved path across the sky on various dates

HOW TO USE. Take the altitude of the centre of the moon for the required date from the table and locate it on the altitude axis, then follow the curved path towards moonset.

A moon with its centre at about 2.5 degrees at due South would regleam in the valley. Therefore the earliest date to see this would be 9 October 2005, altitude 2.5134 degrees at due South, but not again until 22 March 2006, altitude 2.5772 degrees at due South.

Site 17 is on top of the hill, a good 10 minutes' walk from the road (see "The Stones Around Callanish", pages 40,41). But if you wish to see the moon reappear in the valley after seeing it in the circle at Site 1, then drive to the bend on the A858 at Garynashine and park safely on the verge near the large brown and white road sign. Either stand by this sign, or climb to the fence above the road. If you stand so that the road sign is below the valley you may be able to see Callanish 4, (nearly 1 degree below the base of the valley) spot lit by the moonlight. Alternatively, go down from the large brown and white road sign onto the old road.