The total solar eclipse of 2026 August 12

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The total eclipse in 2026 is visible from Greenland, Iceland and Spain; in the British Isles, a large partial eclipse may be seen during the early evening. This paper summarises the circumstances of the eclipse in the British Isles, Iceland and across the Iberian Peninsula.

Introduction

The totality track of the solar eclipse on 2026 Aug 12 crosses the North Atlantic Ocean, passes to the west of Ireland, and presents observers in the British Isles with an opportunity to see a large partial eclipse. The central line of the total phase begins at sunrise at 17:00 UT (Universal Time, which is used throughout this paper) over northern Siberia, at longitude 114° E, latitude 75° N. It sweeps across the Arctic Ocean, passing close to the north pole, then over the eastern strip of Greenland, the western coast of Iceland, the North Atlantic Ocean and Spain to end at sunset at 18:32 in the Mediterranean Sea, just beyond the Balearic Islands, at 5° E, 39° N. The eclipse achieves its greatest duration of totality of 2 min 18 s at 17:46, just to the west of Iceland at 25° W, 65° N, with the Sun at an altitude of 26°. The track of the eclipse is illustrated in Figure 1.

Partial phases of the eclipse – the magnitude (proportion of the Sun's diameter which is obscured by the Moon at greatest eclipse) decreasing as the distance from the track increases – may be seen from Arctic regions, much of North America, extreme western Africa, most of Europe and parts of northern Asia. The partial eclipse begins at 15:34 and ends at 19:58.

The eclipse occurs at the Moon's descending node and is the penultimate central eclipse of saros 126 in the system of eclipse grouping introduced by Georg van den Bergh in 1955.[1] This series began on 1179 Mar 10 with a small partial eclipse in the Antarctic and became central on 1323 Jun 4. The final central eclipse occurs on 2044 Aug 23 and the series ends on 2459 May 3 with a small partial eclipse in the Arctic. [*N. B.* In this paper, the change of calendar is reckoned from the Gregorian reform in 1582.]

The path of the total track and local circumstances have been calculated from the Besselian elements given by Meeus (1989).[2] The difference ΔT between Terrestrial Time (TT), a uniform time system, and Universal Time (UT), which is based on the Earth's rotation, is subject to irregular variations. These are unpredictable and can be determined only by observation. In recent years this difference has remained fairly constant at +1 min 9 s, and this is the value of ΔT which has been adopted.

The eclipse in Arctic regions, Iceland & Spain

Table 1 gives the curve of central eclipse at intervals of 10 minutes. Western longitudes are reckoned positively. The ratio is that of the Moon's apparent diameter to that of the Sun's. Azimuth is taken from north through east and the width of the track is measured perpendicular to the direction of travel of the shadow.

Figure 2 illustrates the path of totality across Iceland, the North Atlantic Ocean and Spain. The track of this eclipse presents some unusual features. Because the Moon's total shadow strikes the Earth at a high latitude (75°), the trajectory of the track is inclined in a curve running approximately north to south, instead of the more usual approximately west to east. Near the beginning of the track, the Moon's umbra is projected 'beyond' the north pole so here what is astronomically the southern limit of totality is geographically the northern limit because it lies nearer to the pole, where the eclipse attains its greatest magnitude of 0.99 at 17:05. This effect has been investigated thoroughly by Meeus (1997).[3] By the time the track reaches Spain, the situation has corrected itself, the southern limit being so both astronomically and geographically. Also, central eclipse on the meridian occurs near the beginning of the track, high in the Arctic Ocean at local apparent *midnight* (the Sun's lower transit), at 17:04 at 105° E, 85° N, the Sun's altitude being 10°.

After crossing the eastern strip of Greenland, the track reaches Iceland at 17:45. The central line of the total eclipse remains in the ocean, but the extreme west of the island is within the northern limit. At the capital, Reykjavík, mid-totality takes place at 17:49 and is visible for just 44 seconds, the Sun's altitude being 24° and the velocity of the umbra approximately 3,400 kilometres per hour. Due to the Sun's low altitude, the track is more than 260 kilometres wide along its entire length, reaching its greatest width of 318 kilometres at 18:17 just after the northern limit passes approximately 225 kilometres to the southwest of the Kerry/Cork coast in the Republic of Ireland.

Continuing across the North Atlantic Ocean, the track reaches the northern coast of Spain at 18:27 and sweeps over the

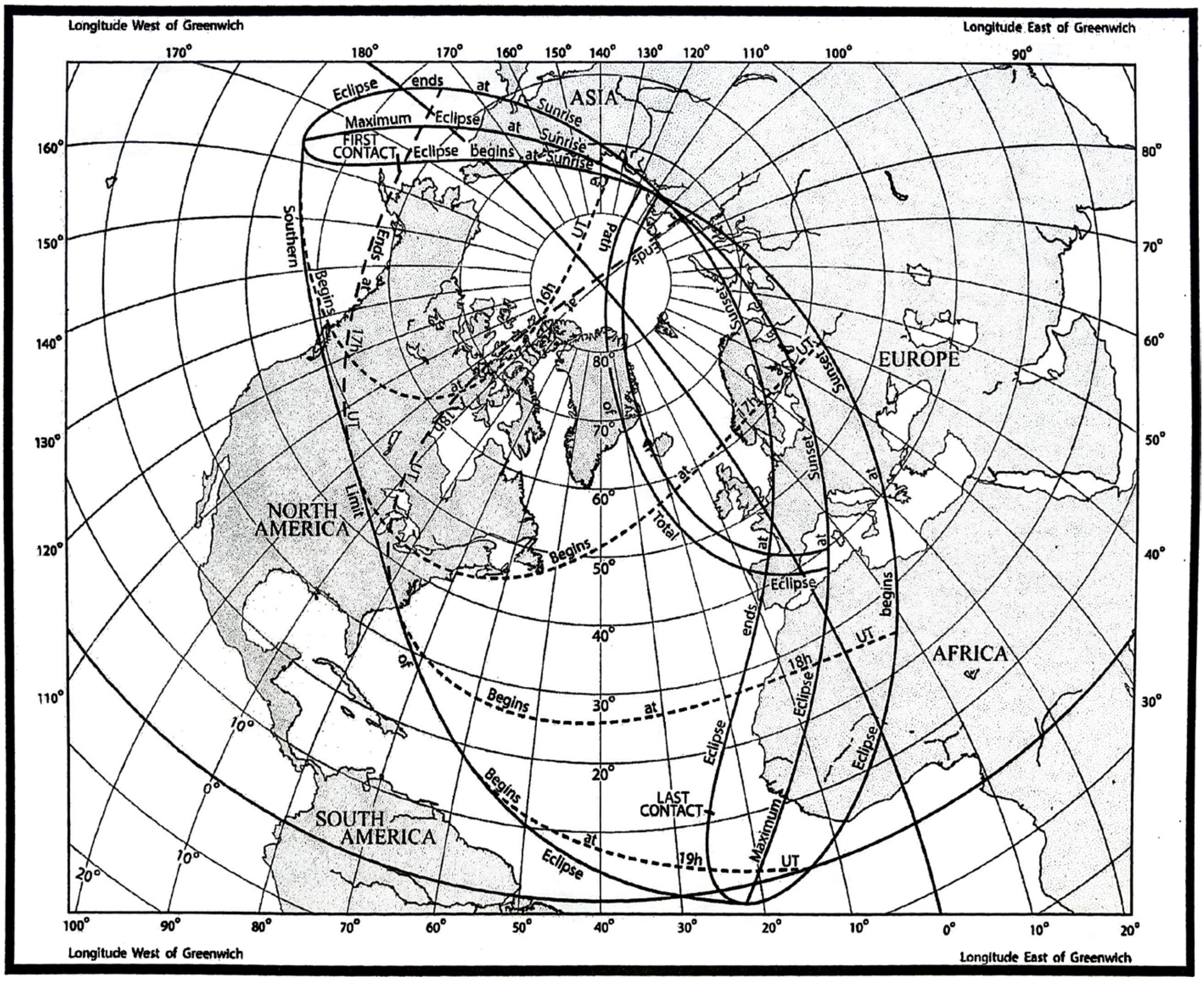

Figure 1. The track of the eclipse across the surface of Earth, showing the total path and the limits of the partial eclipse. *(Reproduced by kind permission of HM Nautical Almanac Office / US Naval Observatory[4])*

Table 1. Curve of central eclipse

UT (h m)	*Long.* (° ′)	*Lat.* (° ′)	*Ratio*	*Mag.*	*Sun's alt.* (°)	*Sun's az.* (°)	*Width* (km)	*Major axis* (km)	*Minor axis* (km)	*Velocity* (km/h)	*Dur. of totality* (m s)
17 00.1	–113 32.5	+75 04.5	1.031	1.015	0	7	268.3	–	105.1	–	1 34
*17 03.9	–105 17.2	85 08.6	1.034	1.017	10	0	273.2	666.3	115.1	9141	1 51
17 10	+ 1 52.9	86 51.4	1.036	1.018	16	255	274.0	447.8	120.7	5891	2 01
17 20	27 06.8	79 47.1	1.037	1.019	21	234	276.5	351.0	125.6	4414	2 10
17 30	27 52.8	73 41.7	1.038	1.019	24	238	281.1	315.1	128.3	3819	2 16
17 40	26 29.2	68 15.5	1.039	1.019	26	244	287.8	300.4	129.5	3523	2 18
17 50	24 21.4	63 11.0	1.039	1.019	26	251	296.4	298.5	129.4	3399	2 18
18 00	21 38.5	58 17.1	1.038	1.019	25	258	306.2	308.7	128.1	3434	2 15
18 10	18 07.7	53 23.2	1.037	1.019	22	265	315.2	336.7	125.4	3707	2 10
18 20	13 08.0	48 13.9	1.036	1.018	17	273	318.0	408.5	120.7	4601	2 01
18 30	+ 3 21.8	41 51.8	1.033	1.016	8	283	294.0	828.1	111.1	10742	1 45
18 32.2	– 5 23.0	+38 39.5	1.030	1.015	0	289	260.9	–	103.2	–	1 33

* Central eclipse at local apparent midnight

country in a gentle curve, racing across Asturia, Old Castile and Aragon in about four minutes, the duration of totality on the central line decreasing from about 1 min 50 s to 1 min 40 s. The track then passes over the Gulf of Valencia to make its last landfall in the Balearic Islands. The path of totality across Spain is illustrated in Figure 3. Gijón lies not far from the central line; mid-eclipse occurs at 18:28 with a duration of 1 min 44 s. Santander, lying towards the northern limit, sees one minute of totality at 18:27. At 18:30, the southern edge of the total track just clips the northeastern tip of Portugal over the Sierra de la Culebra and two minutes later, at 18:32, the Spanish capital Madrid lies tantalisingly just beyond the southern limit of totality, seeing a partial eclipse of magnitude 0.999. Zaragoza has a totality of 1 min 23 s with mid-eclipse at 18:30, while Valencia sees about one minute of totality, mid-eclipse occurring at 18:33. Barcelona lies just beyond the northern limit of totality and witnesses a partial eclipse of magnitude 0.996 at 18:29.

By then it is early evening, and the Sun has become low in the western sky. For most observers on the mainland, and for all in the Balearics, it sets with the final partial phase of the eclipse still in progress. On the centre line at 18:30, the duration of totality is 1 min 45 s, the Sun's altitude is 8°, and the speed of the Moon's shadow has increased considerably to approximately 10,700 kilometres per hour. The four large Balearic Islands all lie within the track of totality, Palma on Majorca being almost on the centre line. Here, mid-totality occurs at 18:32 with a duration of 1 min 36 s, but with the Sun just 2° above the horizon. The Sun sets 17 minutes later, at 18:49.

Some local circumstances for places within the totality track are given in Table 2. *P* indicates the angle of the Moon's centre reckoned from the north point of the solar disc through east,

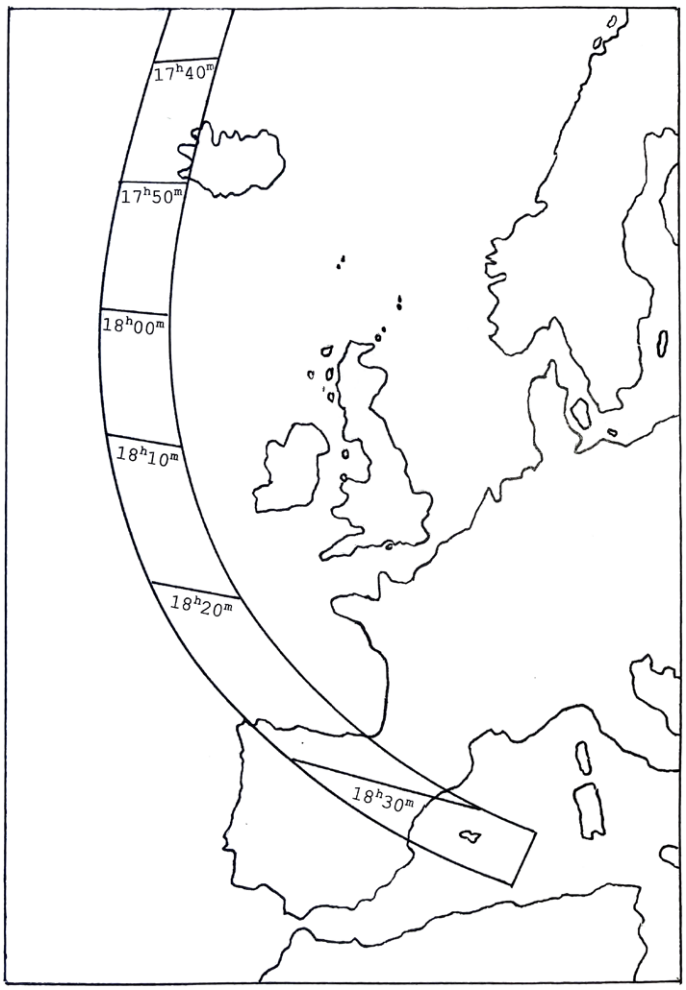

Figure 2. The track of totality across Iceland, the North Atlantic Ocean and Spain.

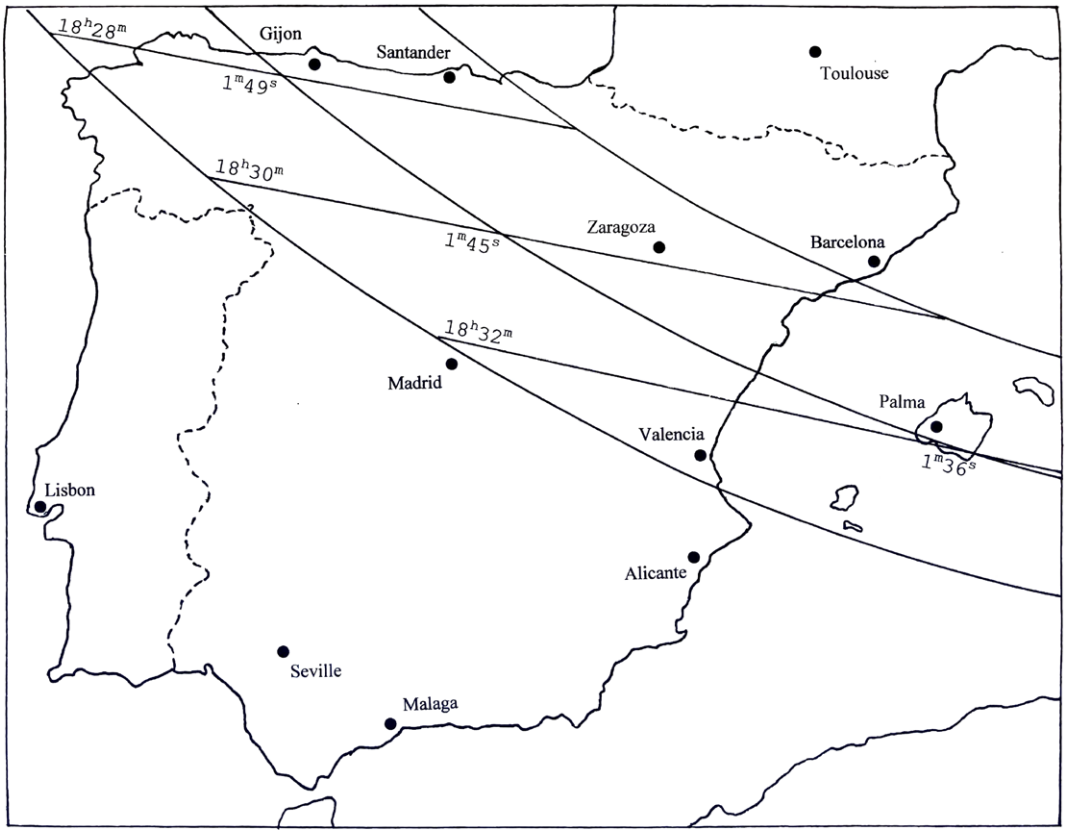

Figure 3. The track of totality across Spain.

while V gives the corresponding angle measured anticlockwise from the vertex of the solar disc.

The eclipse in the British Isles

In the British Isles, a very large partial eclipse is visible during the early evening, the magnitude ranging from 0.90 in Shetland to 0.98 along the Kerry/Cork coast. The extent of the penumbra over the British Isles is illustrated in Figure 4, from which it is possible to obtain the time (solid lines) and magnitude (broken lines) of greatest eclipse for any location. For example, we see that at Edinburgh maximum eclipse occurs at 18:06 with a magnitude of 0.92, while at Greenwich the greatest phase takes place at 18:13, the magnitude also being 0.92. While the eclipse is visible from beginning to end for all observers in the British Isles, the Sun's altitude is becoming low – at mid-eclipse nowhere does it exceed 16° – therefore an essential requirement is a good westerly horizon. Table 3 gives the local circumstances for several places.

With a total track passing not far from the west coast of Ireland, there is likely to be a considerable darkening of the sky around the time of greatest eclipse, not just in the Republic but over the whole of the British Isles, and Venus, shining brilliantly at magnitude –4.4, should be clearly visible in the southwestern sky. The appearance of the Sun at greatest eclipse for some places is illustrated in Figure 5. From this it is seen that at Cork just a sliver of sunlight remains, while as far east as Lerwick, a very large proportion of the Sun is hidden.

The next solar eclipse to be visible in the British Isles occurs on 2027 Aug 2.

The sky at totality

The eclipse takes place with the Sun just entering Leo, and at magnitude +1.3 Regulus, that constellation's brightest star, may just become visible in the darkening sky. Figures 6 & 7 illustrate the visibility of the naked-eye planets and stars during totality at

Table 2. Local circumstances (total)

	First contact				Greatest eclipse						Last contact			
	UT	*P*	*V*	*Sun's alt.*	*UT*	*Dur.*	*P*	*V*	*Sun's alt.*	*Sun's az.*	*UT*	*P*	*V*	*Sun's alt.*
	(h m)	*(°)*	*(°)*	*(°)*	*(h m s)*	*(m s)*	*(°)*	*(°)*	*(°)*	*(°)*	*(h m)*	*(°)*	*(°)*	*(°)*
Reykjavík	16 47	298	276	31	17 48 49	0 44	209	183	24	253	18 48	119	92	18
Gijón	17 31	299	250	20	18 27 41	1 44	208	161	10	281	19 21	118	73	1
Palma	17 38	298	246	12	18 31 54	1 36	207	157	2	287	–			
Santander	17 31	298	250	19	18 27 29	0 59	208	161	9	282	19 20	118	73	0
Valencia	17 38	299	247	15	18 33 00	1 02	27	337	4	286	–			
Zaragoza	17 35	298	248	16	18 29 47	1 23	208	159	6	285	–			

Table 3. Local circumstances (partial)

	First contact				Greatest eclipse						Last contact			
	UT	*P*	*V*	*Sun's alt.*	*UT*	*Mag.*	*P*	*V*	*Sun's alt.*	*Sun's az.*	*UT*	*P*	*V*	*Sun's alt.*
	(h m)	*(°)*	*(°)*	*(°)*	*(h m)*		*(°)*	*(°)*	*(°)*	*(°)*	*(h m)*	*(°)*	*(°)*	*(°)*
Aberdeen	17 07	292	258	21	18 04	0.91	207	174	14	276	18 58	123	90	6
Armagh	17 11	295	258	24	18 09	0.94	208	171	15	274	19 04	122	86	7
Belfast	17 11	294	258	23	18 08	0.94	208	171	15	275	19 03	122	86	7
Birmingham	17 15	293	254	20	18 12	0.93	208	169	12	279	19 05	122	85	4
Cardiff	17 17	294	254	21	18 14	0.94	208	168	12	279	19 07	121	84	4
Cork	17 15	296	257	24	18 13	0.96	208	169	15	274	19 08	121	82	7
Dublin	17 13	295	257	23	18 11	0.94	208	170	15	275	19 05	121	85	7
Edinburgh	17 09	293	258	22	18 06	0.92	208	172	14	276	19 00	122	89	6
Exeter	17 18	295	254	21	18 15	0.95	208	168	12	279	19 09	121	83	4
Glasgow	17 09	293	258	22	18 06	0.92	208	172	14	275	19 01	122	88	7
Greenwich	17 17	293	253	19	18 13	0.92	207	168	10	281	19 06	122	85	2
Inverness	17 06	293	259	23	18 03	0.92	208	174	15	274	18 58	122	90	8
Kirkwall	17 03	292	260	22	18 00	0.91	207	175	15	274	18 55	123	92	8
Lerwick	17 01	291	261	21	17 58	0.90	207	176	14	275	18 53	123	94	8
Liverpool	17 13	294	256	21	18 10	0.93	208	170	13	278	19 04	122	86	5
Penzance	17 19	296	254	22	18 16	0.96	208	167	13	278	19 10	121	81	5
Portree	17 05	294	260	24	18 03	0.93	208	174	16	273	18 58	122	89	9
St Mary's	17 19	296	255	23	18 17	0.96	208	167	13	277	19 11	120	81	5
Stornoway	17 04	293	261	24	18 02	0.93	208	175	16	272	18 57	122	90	9
York	17 13	293	255	20	18 09	0.92	207	171	12	279	19 03	122	87	4

Reykjavík and in central Spain, respectively, the latter calculation being for the centre line at 18:30 – longitude 3° 22′ W, latitude 41° 52′ N – where the Sun is just 8° above the horizon. Planets are indicated by their initials (and second letters where necessary), while the limiting magnitude for stars is +1.5. The ecliptic is represented by the dashed line.

For observers in both Iceland and Spain, Venus is the brightest object in the sky, shining magnificently at magnitude –4.4 some 46° east of the Sun. From Iceland, Mercury, Mars and Jupiter are also visible, while Saturn is below the horizon. In Spain, Mercury and Jupiter are so low in the west as to be practically invisible, while both Mars and Saturn are below the horizon. The horizontal coordinates of the Sun and planets in Reykjavík and in central Spain are provided in Table 4.

Table 4. Visibility of the planets

			Reykjavík		Central Spain	
	Elong. (°)	*Mag.*	*Alt.* (°)	*Az.* (°)	*Alt.* (°)	*Az.* (°)
Sun			24	253	8	283
Mercury	15 W	–1.0	22	269	0	296
Venus	46 E	–4.4	21	203	26	239
Mars	49 W	+1.3	11	303		
Jupiter	10 W	–1.8	23	264	3	292

Weather prospects

In Iceland the conditions are not very favourable. The warm and humid air from the Gulf Stream meeting the cold water from the Arctic produces a cloudy and wet climate. Clear skies are almost unknown. The least amount of cloud is found towards the south of the island, so a site close to Reykjavík might be considered the most favourable, or perhaps the least unfavourable.

Spain is known for its summer sunshine and probably offers better prospects. One choice would be to observe the eclipse from the north coast, where the Sun is higher in the sky (about 10°) and where it may be possible to see the approach of the umbra from the northwest across the ocean and perhaps even shadow bands. Central Spain becomes very hot, and a risk here will be thunderstorms, which would eliminate the possibility of observing the eclipse. The Balearic Islands, where rain is expected on just a few days in August, appear to offer a good chance of clear skies. However, it must be remembered that during totality the Sun's elevation is just 2° above the horizon.

Discussion & final remarks

With the eclipse being so large in the British Isles, it is likely to arouse considerable interest. For all observers in these islands, the magnitude is at least 0.90 and there will be a noticeable darkening of the sky, particularly in the west.

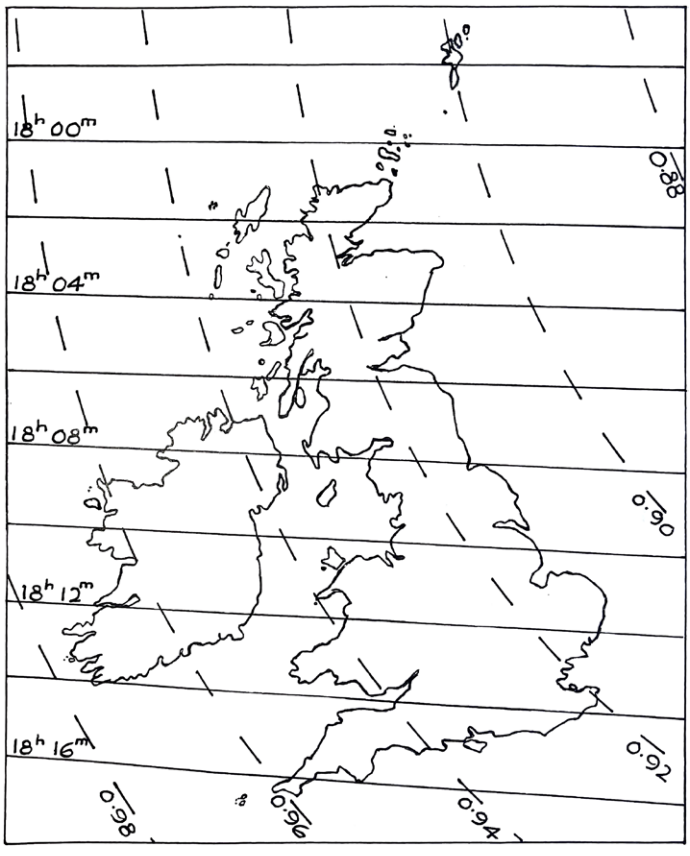

Figure 4. The partial eclipse in the British Isles.

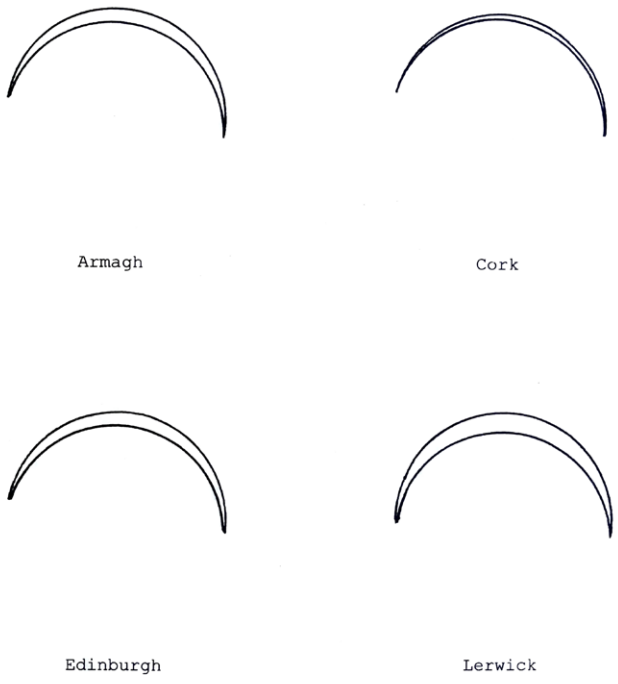

Figure 5. The appearance of greatest eclipse at some locations in the British Isles.

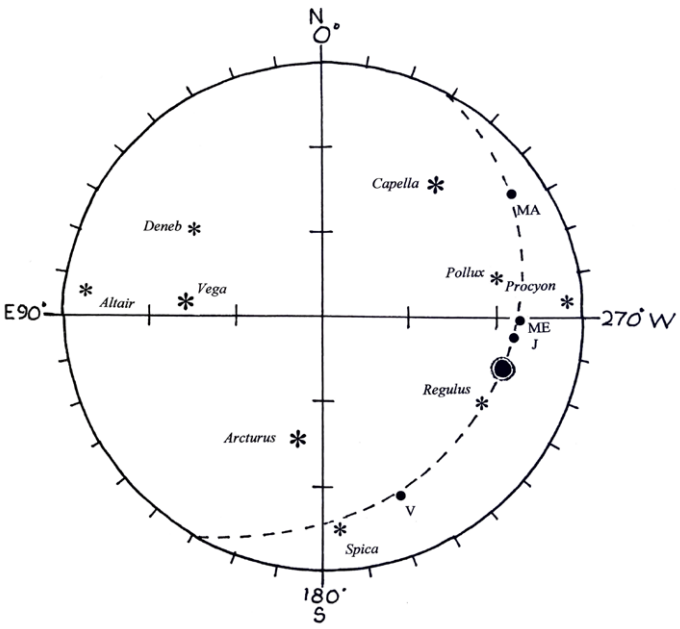

Figure 6. The sky at totality at Reykjavík.

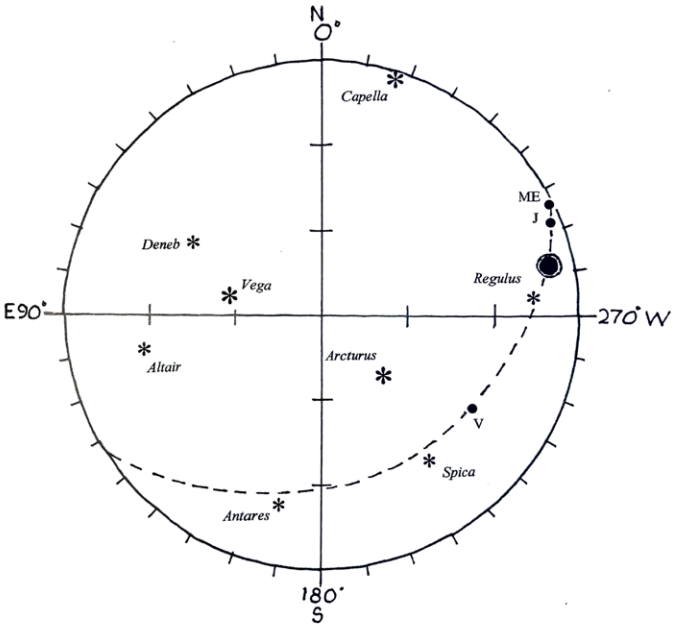

Figure 7. The sky at totality in central Spain.

The eclipse belongs to the same saros series as that of 1954 Jun 30 which was just total in Unst, the most northerly of the Shetland Isles. In anticipation of that eclipse, the Nautical Almanac Office issued a leaflet giving some general information, including a map of the British Isles allowing the prediction of local circumstances for any point.[5] On page 3, we read 'the next solar eclipse which might be total in the British Isles is on 1999 Aug 11; and it will be visible as a total eclipse (if at all) only from the southern tip of Cornwall'. Almost certainly this would have been estimated from the monumental work by Theodor von Oppolzer (1887),[6] and while it had long been supposed that the total track would cross southern England, it would seem that even by 1954 no serious calculation had been made concerning the Cornish eclipse.

With the magnitude of 0.98 in southwestern Ireland, the eclipse of 2026 is the largest to be visible in the British Isles since that of 2015 Mar 20, which attained a similar magnitude in the Outer Hebrides. For observers in the British Isles, this magnitude will not be exceeded until the morning of 2081 Sep 3, when totality is visible from the Channel Islands (except Alderney).

After this, the splendour of totality may be seen during the early evening of 2090 Sep 23 from extreme southern Ireland and southwestern England.

Acknowledgement

I am grateful to Dr Mark Stollberg of the US Naval Observatory for permission to reproduce his map in Figure 1.

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