



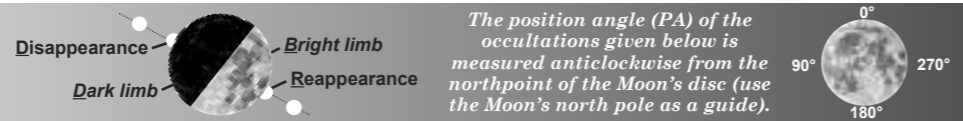
### Moon phases

	<b>Last quarter</b> 19 May, 01:33 17 Jun, 12:33		<b>New</b> 25 May, 20:45 24 Jun, 03:31		<b>First quarter</b> 03 May, 03:47 01 Jun, 13:42		<b>Full</b> 10 May, 22:43 09 Jun, 14:10
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### Apsides

Date	Apsis	Dist (km)	Size	Date	Apsis	Dist (km)	Size
12 May, 21h	Apogee	406,210 km	29' 25"	08 Jun, 23h	Apogee	406,401	29' 24"
26 May, 02h	Perigee	357,207 km	33' 27"	23 Jun, 12h	Perigee	357,937	33' 23"

### Occultations



Date	Name	ZC	Mag	Phase	Data for Greenwich			Data for Edinburgh				
					Time	PA°	Alt°	Az°	Time	PA°	Alt°	Az°
04-May	18 Leonis	1439	5.7	DD	00h 57m	149	9	277	00h 48m	145	13	272
04-May	49 Leonis, TX Leonis	1550	5.6	DD	23h 20m	124	29	246	23h 09m	120	30	238
22-Jun	Aldebaran, alpha Tauri	692	0.9	DB	15h 18m	67	24	266	15h 13m	56	26	260
22-Jun	Aldebaran, alpha Tauri	692	0.9	RD	16h 12m	282	16	277	16h 04m	292	19	271

These are the only occultations for this period, based on the following criteria: *Mag*: Visual magnitude. *Phase*: (R)each appearance, (D)isappearance or (G)raze at (D)ark or (B)right lunar limb. *Alt*: Altitude. *The Moon's height*. *Az*: The angular position along the horizon measured clockwise from true north (through E, S, W back to N). *PA*: Position Angle, measured anticlockwise from the direction of the celestial North Pole. This listing shows lunar occultations of stars brighter than mag +6, observable with small telescopes in a sky dark enough to be seen without difficulty. For data specific to your own locality or details of fainter occultations, contact Occultation Section Director Mell Jeffery (address on p46).

### Occultation notes

As to be expected for this time of the year there are few observable occultations. There are still plenty of stars being occulted by the Moon but daylight has become a hindrance.



On 4 May there are two events, each taking place at either end of the day and in both cases the waxing crescent Moon is setting out towards the west.



◀ On 22 June as the Moon is setting in the west, there is a chance to observe the occultation of Aldebaran but care must be taken if the observation is undertaken.

The event, both disappearance and reappearance, takes place during daylight hours. The Sun is at an altitude of 43 degrees when Aldebaran disappears behind the bright limb of the (almost) 28 day old Moon. It may be difficult to locate the Moon as only 4% of the limb is lit and angular separation between the Moon and the Sun is approximately 22 degrees. For these reasons care must be taken to avoid stray sunlight from entering your optics should you wish to have a go at observing this event.

Mell Jeffery

### Meteor notes

**May - June:** The Eta Aquarid meteor shower peaks during 5-6 May, but is poorly placed for UK based visual observers, with the radiant only rising an hour or so before dawn for observers in southern England and during morning twilight for observers in Scotland. Hence observers will be lucky to see any Eta Aquarid meteors.

No other significant annual night-time meteor showers occur during May and June, although the June Boötids have on a few occasions produced a short-lived burst of activity during the third week of June.

Tracie Heywood

### Planets

This is a period of long, bright evenings with little or no true astronomical darkness for much of the UK and many of the planets are poorly placed for observation; however Jupiter puts on a good show through the period and much else can be observed with care and settled seeing conditions.

**Mercury** reaches its greatest western elongation from the Sun on 17 May when it leads the Sun by 26 degrees in the early morning sky. While this is the best morning apparition of the year for the southern hemisphere, Mercury is very poorly placed from UK latitudes and barely rises above the horizon before sunrise. Observers on the south coast may glimpse it on the 17th just breaking the horizon a little north of due east at 03:40 UT. Mercury reaches superior conjunction behind the Sun on 21 June.

**Venus** is also a low morning object, reaching its own greatest western elongation from the Sun on 3 June. Compared to Mercury, its greater separation, some 46 degrees on that date, makes it more observable from the UK. Look for Venus very low on the eastern horizon from an hour before sunrise and then watch it rise into the dawn sky. At a magnitude of -4.3 or brighter it will be very obvious.

**Mars** may be observed in early May shortly after sunset in the west-north-western sky but from below 15 degrees of elevation at mid-UK latitudes. Its prograde (eastern) motion against the background stars help maintain its visibility for a while but by 20 May it is effectively lost from view for this period. It is relatively bright, at magnitude +1.6, but its apparent size is below 4 arcseconds so little detail will be visible.

In contrast **Jupiter** will show excellent detail throughout the period. Just past opposition, Jupiter is now becoming increasingly accessible for mid-evening observation, fading only slightly from magnitude -2.3 to -2.1, and showing a disc greater than 40 arcseconds across at its the equator until early June, and only slightly less by the end of the period. At the start of May, Jupiter will transit (due south) around 22:30 UT at nearly 35 degrees

of elevation for mid-UK latitudes and observation around the same time each night will see it sinking slowly to the west and declining only slightly in elevation. Watch for it on 7 May when Jupiter keeps close company with the Moon, sitting just 1.5 degrees below it for much of the evening. By June, Jupiter is observable in the south-western sky as semi-darkness falls in the bright summer skies of the UK. Visible from around 21:30 UT at around 28 degrees of elevation, it can be followed until it sets around 00:30 UT, or a little before this by the end of the month.

**Saturn** reaches opposition, due south at midnight UT on 15 June, when it will shine at magnitude 0.0 and show a disc 18.4 degrees across at the equator with the rings tilted 26.6 degrees towards us and the north pole of the planet on view. That is the good news! Sadly the planet will be very low as seen from the UK, with observers from the equator and the southern hemisphere getting a much improved view. From early May look for it to rise from shortly after 23:00 UT in the south-east, transiting at around 03:00 UT as the sky starts to brighten, reaching an elevation of 15 degrees for mid-UK latitudes. On the day of opposition Saturn can be followed from around 21:00 UT all the way through until 03:00 UT the next day but at no higher elevation as it transits. Observers equipped with an atmospheric dispersion corrector will get the best views during this apparition.

The outer ice giant planets, **Uranus** and **Neptune**, are only visible very low in the early morning skies during this period. Towards the end of June look for Uranus against the background stars of Pisces from 01:00 UT, due east at 10 degrees of elevation. Slightly below naked eye visibility at magnitude +5.9 it can be followed until 02:30 UT at 20 degrees up but will be better placed later in the year. Neptune rises in Aquarius around 23:30 UT at the end of June and reaches more than 20 degrees of elevation by 02:00 UT the next morning. At magnitude +7.9 a telescope is needed to view its tiny blue disc.

Alan Clitherow

### Variable star notes

**Eclipsing variables:** RZ Cassiopeiae can be seen in eclipse at the start of the nights of 6, 12, and 18 May. Another series of eclipses can be seen during the evenings of 6, 12, 18, 24, and 30 June, with the first eclipse in this sequence being centred near midnight UT and each successive eclipse in the sequence occurring around 35 minutes earlier. Eclipses last for just over 4 hours.

U Cephei can be seen in eclipse during the evenings of 20-21, 25-26, 30-31 May, and 4-5, 9-10, 14-15, 19-20, 24-25, 29-30 June. The first eclipse will be centred near 02:00 UT, with successive eclipses occurring around 20 minutes earlier in the night. However, with eclipses lasting for around 9 hours, U Cephei will actually be in eclipse throughout these nights.

With Perseus being low in the northern sky, there will be no eclipses of Algol (beta Persei) that can be described as "favourable".

**Mira-type variables:** U Orionis will be just past maximum at the start of May but will very soon be lost in the evening twilight.

T Cephei will already be an easy binocular object by early May and will be brightening towards a mid-June maximum. The average peak brightness over the years has been magnitude +6.0.

R Leonis will also be readily visible in binoculars by May and is due at maximum in early June, just before it sinks into the evening twilight. Average peak brightness is magnitude +5.8.

T Ursae Majoris will become visible in binoculars during May as it approaches its mid-June maximum. Average peak brightness is magnitude +7.7.

R Ursae Majoris will become visible in binoculars during June as it approaches its early July peak.

Finder charts for these and other variable stars on the SPA VSS programme can be found by clicking on the name of the star in the Observing Programme listing in the Variable Star section's web pages.

Tracie Heywood