



21:00 Hrs GMT 15th Jan

SOUTH

By B. Stokes

To use the star chart; print it out and then use it to locate the planets and constellations at night by holding it above your head and pointing the 'South' pointer of the chart southwards.

The Sun

The Sun is in the constellation of Sagittarius at the start of January, moving into Capricornus on January 19th; it has passed its most southerly point, and is slowly moving north again.

The Earth is at **perihelion** (its *closest* point to the Sun) on January 4th.

The Moon

The Moon was **New** on Saturday December 27th. During the first few days of January, we should see the crescent Moon every evening; it stays up later each night.

First Quarter is on Sunday January 4th, when the Moon is in the constellation of Pisces; it rises in the middle of the day, and sets in the middle of the night. As it waxes gibbous during the following week, it sets much later each night, and further round towards the north-west.

Full Moon is on Sunday January 11th, in Gemini. At Full, the Moon is on the opposite side of the sky to the Sun, so it rises in the north-east as the Sun is setting in the south-west; then the Moon rides high in the sky throughout the long winter night, and sets in the north-west at sunrise the following morning.

The Full Moon always appears extra large when we see it rising – this is an optical illusion. But this month, Full Moon occurs when the Moon is near *perigee* (its closest point to the Earth) so it really will appear a little larger than usual.

During the following week, the Moon rises much later every evening, and further round towards the south-east, but it continues to set in the middle of the morning.

The Moon is at **Last Quarter** on Sunday January 18th, in Virgo. It rises after midnight, and sets before midday the next day. And it wanes during the following week, it rises later each morning, until by Friday 23rd we are only catching a glimpse of it in the south-eastern sky before the Sun comes up.

New Moon is on Monday 26th. We may start to see the new crescent after sunset any afternoon from Tuesday 27th onwards. It becomes easier to see each evening towards the end of the month.

First Quarter occurs again on Monday February 2nd.

Lunar occultations

As the Moon moves around the Earth each month, it occasionally passes directly in front of one of the stars, and *occults* it. This happens much less often than one might imagine. But several such events do occur on the evening of Wednesday 7th January.

If you look at the Moon with binoculars in the early evening, as soon as it starts to get dark, you should see the stars of the Pleiades, or “Seven Sisters” star-cluster, immediately to the left of it. Over the next few hours, stars in the cluster will be disappearing behind the dark left-hand edge of the Moon – and reappearing later at its bright right-hand edge (though this will be harder to see). The whole event will be over by about 7 pm.

Mercury

Mercury is at its greatest elongation eastwards from the Sun on January 4th, so we have a chance to see this elusive little planet immediately after sunset.

Any day during the first week of January, try looking to the south-west around 5 pm. Mercury should appear like a tiny, star-like point of light low down in the twilight sky – far to the lower left of brilliant Venus. It may be easiest to locate using a pair of binoculars; but once you know where it is, Mercury should be visible to the naked eye.

But note that the giant planet Jupiter is in the same part of the sky, and Jupiter is definitely brighter than Mercury. On January 1st, the two planets are side by side, less than 2 degrees apart, with Mercury to the left. During the next week, Mercury will be above and to the left of Jupiter.

By January 20th Mercury is at *inferior conjunction* – almost directly in front of the Sun.

Venus

Venus is now a brilliant “Evening Star” in the south-western sky at dusk. Relative to the stars, it is moving rapidly north-eastwards, out of Aquarius and into Pisces. At the start of January Venus is setting about 9 pm; but every evening it stays up a little later, and appears a little higher after sunset; by the end of the month, it is not setting until nearly 9:30 pm.

In the telescope, Venus usually appears as a featureless white disc; but it shows phases, like the Moon. This month Venus appears like the Moon around First Quarter. Unlike the waxing Moon, the phase of Venus *decreases* during the month, from 60% to 45% illuminated, while the disc grows a little from 21 to 29 arc-seconds across.

On Friday January 30th, the new crescent Moon will appear directly above Venus; the two objects will be about 4 degrees apart, and should fit nicely into the same field of view in a pair of binoculars.

Mars

Mars was behind the Sun at the start of December, and throughout January it’s rising less than an hour before sunrise. So we will not be able to see the “Red Planet” this month. We won’t be getting good views of Mars until after the summer.

Jupiter

The giant planet Jupiter is behind the Sun on January 24th. We may just get a last glimpse of it at the start of January, very low in the south-west immediately after sunset.

Saturn

Saturn is rising in the middle of the evening, and it is well up in the southern sky by dawn. It’s moving very slowly north-eastwards at the southern end of Leo. It lies between the star Regulus in Leo, to its upper right, and the star Spica in Virgo, to its lower left; all three objects will appear similar in brightness, but Saturn shines with a steadier light than the stars.

In a telescope, the disc of Saturn appears 19 arc-seconds across. The famous rings currently appear almost edge-on to Earth; they form a very narrow oval, 43 arc-seconds wide and less than 1 arc-second high. If conditions aren’t good, it may be hard to see the rings at all.

Many of Saturn’s moons can also be seen in the telescope. The largest and brightest is Titan, which will be 180 arc-seconds east of the planet around January 3rd and 20th, and a similar distance west of the planet around January 12th and 28th.

When the waning gibbous Moon rises about 9:30 pm on Wednesday 14th, Saturn will be close to the left of it. The two objects stay close together all that night: by dawn, Saturn will be directly above the Moon.

Meteors

On any clear night, we may see the occasional meteor or “shooting-star”, as tiny specks of interplanetary debris burn up in the Earth’s atmosphere. At certain times of the year, the Earth travels through a cloud of this dust, and we get a meteor-*shower*.

The **Quadrantid** meteor-shower produces a good display of meteors every year during the first week of January. This year the peak is expected around midday on Saturday January 3rd, so the best numbers will probably be seen in the early hours of that morning. These meteors all appear to radiate outwards from a point in the now-disused constellation of *Quadrans Muralis*, which lies between the bright star Vega and the “handle” of the Plough. We might hope to see one Quadrantid every minute or two, and this year there will be no interference from moonlight.

Aurora Borealis

A display of the Aurora Borealis, or Northern Lights, is impossible to predict in advance; it is triggered by activity on the Sun, which may or may not interact with the Earth’s magnetic field.

It often begins as a faint greenish glow low on the northern horizon. This may brighten and rise higher in the sky, as an arc of green light; in a good display, the arc will develop vertical rays, which often show different colours, and which may eventually converge into a “corona” almost overhead.

Activity on the Sun follows a cycle of roughly 11 years, which is currently going through a prolonged minimum. However, even at minimum there are occasionally good auroral displays. It’s always worth checking the northern sky, on any clear, dark night.

Algol

Perhaps the most famous variable star is Algol (beta Persei), which is an eclipsing binary system: every few days, the fainter secondary component passes in front of the brighter primary, which means the star appears to dim from magnitude 2.1 to 3.4 – easily detectable by the naked eye.

Many of the minima occur in daylight, or when the star is below the horizon. But Algol is predicted to be at minimum at 06:50 on Sunday January 11th, 03:35 on Wednesday 14th, 00:25 on Saturday 17th, and 21:10 on Monday 19th. On each occasion, the star takes a few hours to dim, and a few more to return to normal.

This information has been compiled by Fiona Vincent of the University of St. Andrews It is drawn from the Handbook of the British Astronomical Association, and some has been taken from the magazine Sky & Telescope.

The Swansea Astronomical Society will be holding another public evening at the Marina Towers Observatory this month when the site will be open to the public from **7.00 p.m. to 8.30 pm on Friday 2nd January.**

During your visit, weather permitting, you can view the Moon’s features through the Society’s Shafer-Maksutov telescope, the largest telescope in Wales and walk through the largest model of the Solar System in Britain. There will be other telescopes set up on the site for you to view through while you wait for your opportunity to use the main telescope. If you have any telescope queries why not consult with the Society members who will be present?

There is no admission charge but all donations are appreciated. Details of this event and future events are viewable on their website www.classroominspace.org.uk