

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

Next Talk
13th February 2017
Explaining the Solar System
Dr Helen Walker
RAL
EDITORIAL

Welcome to the new year. Hopefully you got all the astronomical goodies that you hoped for. We were blessed with quite a few clear skies over the Christmas/New year period and hopefully you managed to get out and use some of them. I was sad enough to be down on Salisbury plain with the SPOG group on Boxing Day and we had a good five hours in freezing temperatures. As always a plea that if you have taken any decent images over the last few years I can do with them for SpaceWatch.

We are also short of speakers for the after-tea sessions at the main meetings so if you have a topic you would like to do a short talk on, whether it is an observing project you are doing or some novel piece of equipment you use please contact Chairman Clifford.



Image IC 443(Jellyfish nebula) by Clifford Marcus

THE NIGHT SKY THIS MONTH

by **Bob Dryden**

Mercury: Visible in the morning sky, Mercury reaches Greatest Western Elongation on 19th January when it will be 24° from the Sun. By the end of this session on 13th February the solar elongation will have decreased to 16° . Mercury's brightness increases throughout the session reaching -0.3 magnitude by 13th February after starting at $+0.7$ magnitude.

In mid-January, Mercury rises about 90 minutes before the Sun and is 10° high in the south east by sunrise. These numbers are the same by the time the planet reaches greatest elongation but it is brighter at -0.1 magnitude making it easier to see. By the end of January Mercury rises just 50 minutes before the Sun and is low down, at a height of just 5° by sunrise making it quite hard to see. After that, it moves rapidly back towards the Sun and will quickly become impossible to see.

Venus: Easily seen in the south west as it gets dark, Venus reaches Greatest Eastern Elongation on 12th January when it will be 47° from the Sun. Then it will be at a height of 27° above the horizon at sunset and it will be another 4 hours before it sets itself. By mid-February it still takes a good 4 hours to set after the Sun but has increased its altitude at sunset to 35° .

It starts in Aquarius, and enters Pisces on 23rd January, while its solar elongation decreases to 42° by mid-February. Obviously, it is at half phase around greatest elongation and thereafter becomes a large crescent, and at the same time, the apparent size increases throughout the session, reaching 33" by 13th February.

There is an interesting conjunction on 12th January when Venus meets Neptune. They will be about 1° apart, and both will be visible in a wide angled eyepiece, which doesn't happen very often. Following that encounter, Venus starts to move towards Mars, and they are within 3° of one another from the 20th January to the end of the session on 13th February. They will be at their closest in the last few days of January (although they do not get any closer than about 2.5°).

On 31st January the crescent Moon will form a close triangle with Venus and Mars.

Mars: Mars seems to have been visible for a long time now and this trend continues throughout this session as the planet gains height. It is fading, reaching $+1.2$ magnitude by mid-February after starting at $+0.9$ mag but the increase in altitude means Mars remains an easy naked eye object.

It is currently in Aquarius and is 32° above the horizon at sunset. On 19th January it moves into Pisces. By 13th February it is setting nearly 5 hours after the Sun.

Jupiter: You still have to stay up very late if you want to see Jupiter as it is in the constellation of Virgo. In mid-January Jupiter rises around 01.00 UT and culminates at a height of 31° at 06.00 UT which is 2 hours before sunrise. By mid-February the planet appears above the horizon at approximately 23.00 UT and culminates at 04.00 UT. Jupiter is within 3° of the first magnitude star Spica for the whole of this session. On 19th January, the Last Quarter Moon is about 2° above Jupiter.

Saturn: This is definitely a morning object as it is currently rising just 2 hours before the Sun and is a low

11° high in the south east by sunrise. By mid-February things improve slightly as it will be 15° high by sunrise, but this is still rather low for good telescopic views. To be found in Ophiuchus, Saturn shines at +0.5 magnitude, and the rings are wide open at 26.6°, so it is an easy naked eye object if the sky is dark enough.

On the morning of 24th January the crescent Moon will be approximately 3° above Saturn.

Uranus & Neptune: Uranus is well placed for observation in Pisces but Neptune, in Aquarius, is coming to the end of this apparition.

As it goes dark in mid-January, Uranus is around 40° high and culminates a couple of hours later. It finally sets at 00.30 UT so you have all evening to view it. Even by mid-February, you still have four or five hours viewing time once the Sun has set. Shining at +5.7 magnitude, Uranus is an easy binocular target. On the other hand, Neptune is just 29° high at sunset in mid-January and is already just past the south. It sets about 5 hours later, but is always low down. Probably the end of January will be the last chance you will have of seeing it as after that it is within an hour of setting once the Sun goes.

Occultations: Once again, +3.8 magnitude Theta¹ Taurus and +3.4 magnitude Theta² Taurus are occulted by the Moon. This close pair of stars are occulted on 5th February at 17.50 UT and 17.47 UT respectively. The Moon is one day past First Quarter and will be 50° high in the south east at the time.

Lunar Eclipse: Although we do have a total lunar eclipse this time, do not get too excited as it is only a penumbral eclipse. This means the Moon passes through the fainter part of the Earth's shadow and all the spectacular effects of a total eclipse (the copper colour, the dark shadow, etc) do not happen. To many people, if you did not know an eclipse was happening, they wouldn't see any difference in the Moon at all. The Moon changes very subtly, to a slightly darker grey, which can be very hard to see sometimes.

From Abingdon the whole eclipse will be visible (in fact, from the whole of the UK of course). It starts at 22.34 UT on 11th February with the Moon in Leo, at an altitude of 35° in the south east. Greatest eclipse occurs at 00.45 UT with the Moon now 46° high in the south, and it ends at 02.53 UT with the Moon 41° high in the south west.

Asteroids: 1 Ceres continues to be visible, but fades to +9.0 magnitude by mid-February. It starts in Pisces, and enters Cetus on 12th February.

4 Vesta is in Cancer, and moves in to Gemini on 19th January. Vesta starts at +6.4 magnitude, reaches its maximum of +6.3 mag. on 21st January, and then fades to +6.7 mag. by 13th February.

9 Metis is currently at +9.9 magnitude and brightens to +9.2 mag. by mid-February as it crosses Leo.

14 Irene is in Leo (just above Metis), moves into Leo Minor on 2nd February, and then re-enters Leo on 12th February. Irene brightens from +9.8 to +9.0 magnitude through this session.

15 Eunomia goes from +9.8 magnitude to +9.3 mag. and can be found in the constellation of Sextans, just below Leo.

Comets. There are a couple of comets around at the moment. Comet C/2015 V2 Johnson is showing a nice tail in the

morning skies and may well brighten to be a nice binocular comet. Comet 49P Honda-Mrkos-Padjusova is also around in the early evening and shows a nice tail. For more information on comets in 2017 see <http://www.skyandtelescope.com/observing/binocular-comet-bonanza-in-2017/>

LAST MONTHS TALK

by Gwyneth Hueter

December's Talk,

-was 'Electronic Meteor Observing', by Richard Fleet, who runs what he calls the Wilcot Station, which is in his garden, near the Salisbury Plain.

And no, they are not electronic meteors; they are meteors that are detected electronically via the UK Meteor Observation Network (UKMON), and Richard is a welcome regular whose talks are always very interesting. His latest talk revealed how easy it is for anyone to set up a really sensitive visual meteor observing station. His Wilcot setup consists of five CCTV cameras which are set up at various locations outside his house and in the garden. If you thought a DSLR camera would be more appropriate, stop. Remember that CCTV cameras are designed with high sensitivity in mind as they need to function in the dark, and they can give high speed video results, albeit with fairly low resolution (they would have a lens around f2, and don't get the ones that are too wide angle). They can deliver mag 3-4 star brightness, which would take a DSLR camera about four seconds of exposure to record, but you must make sure you choose the ultra sensitive CCTV cameras.

CCTV cameras need a little heating element in the window, and the software he uses for monitoring is called 'UFO Capture'. (No, just in case you're asking, although he has caught owls, flies, spiders, moths, bats, etc.) When it's on, the software dozes and is activated if it detects movement. It records at 25 frames a second so captures far more detail than a DSLR camera ever could. You can set them to ignore slow moving objects, such as the ISS, but you will still catch aircraft, moths and other wildlife, but it's easy to delete the data. You can leave it running all night, so can record a meteor shower quite comprehensively, although the composite pictures look a bit scatty because of various sporadic you'll inevitably pick up and the meteor radiant will move considerably during the night. He recorded a whole night of Geminids, 180 meteors in total, and showed a composite shot of them on as seen from the ground. They seem all in a mess until you realise the radiant had moved right across the sky and background stars showed as very long faint trails.

Other interesting items viewed are cosmic rays, which are detected very briefly, unlike meteors, which will cover several frames. The rays will appear on one frame and sometimes have a little spray. Another rare phenomenon is a sprite, which are lightning flashes between clouds 80km up in space. They may last 1/20th of a second.

His five cameras are set up to cover the southern half of the sky, and his software enables him to calculate tracks and heights of the meteors. You can also calculate their orbits. Most of them burn up about 100km above the Earth and even the brightest fireball would only be the size of a grain of sand.

His UKMON network (20-25 cameras at 8-9 stations) covers the south of the UK but the 100km height of these burnups means he can see objects out over France and Ireland, so his recordings overlap with other stations out there. There are other stations in the North, such as at the University of Lancaster, and one called NEMETODE (NEtwork for MEteor Triangulation and Orbit DEtermination), which publishes its findings in the BAA journal. He has liaised with a station in Graves, France, where they have a radio transmitter that bounces radio waves off the meteors. This means they can work in daytime and by the time you read this they will hopefully have been able to monitor the Quadrantids.

There are networks like UKMON all over the Earth. There is a large European network, EDMOND (European viDeo MeteOr Network Database. Cringeworthy). Between them, these groups have now identified over 250 meteor showers, 20 of them not known before.

Our own Ken Taylor followed on in the after tea talk by talking about radio meteor observing and said that 8 billion meteors hit the Earth every day, and that Graves

uses a VHF radio that is also looking for bits of space junk. As I write this the UKMON website is being revamped but it should be working by the time you read this. There is also a very good video recording covering most of this if you go onto the SPA website. The Society for Popular Astronomy has a website always worth dipping into.

FURTHER DISCUSSION

Why not take a look at our website? It's at: www.abingdonastro.org.uk .

If you are not already on our internet mailing list, then why not log on to YahooGroups. The list is called 'abingdonas'. Members use the list to alert each other about celestial events and to chat about amateur astronomy. The list is quite active, with several messages most weeks. To read through previous messages click on:

<http://groups.yahoo.com/group/abingdonas/> .

To join the abingdonas list, please go to <http://www.yahogroups.com> . You can also unsubscribe from the list here.

To post messages to the list, please send them to abingdonas@yahogroups.com . Please note that you will need to sign up with a YahooID if you do not already have one. You can do this on the above page.

Further information about the mailing list can be found on the abingdonas webpage at :

<http://groups.yahoo.com/group/abingdonas/> .

DATES FOR YOUR DIARY

23rd January 8pm Beginners' Meeting in the Main Hall., talks to include Star Birth, Focusers, Moon with naked eye and binoculars.

Observing evening: The next observing evening will be 30th Jan-1st Feb 2017 at Frilford Heath Golf driving range. Contact Trevor Pitt or Steve Creasey for details.

AstroFest 2017. An advance warning for this popular show which will be held at Kensington Town Hall, London on the 10th-11th Feb 2017

Oxford University Star Gazing: There will be an Oxford University star gazing evening on the 28th Jan 2017. For details see. : <http://www2.physics.ox.ac.uk/events/2017/01/28/stargazing-oxford-2017>

The editor of "SpaceWatch" is Owen Brazell, who would very much appreciate your stories & contributions. In particular whilst many fine images are being posted on the discussion group it would be nice to have some in the SpaceWatch. Please send any news, observations, photos, etc. to:

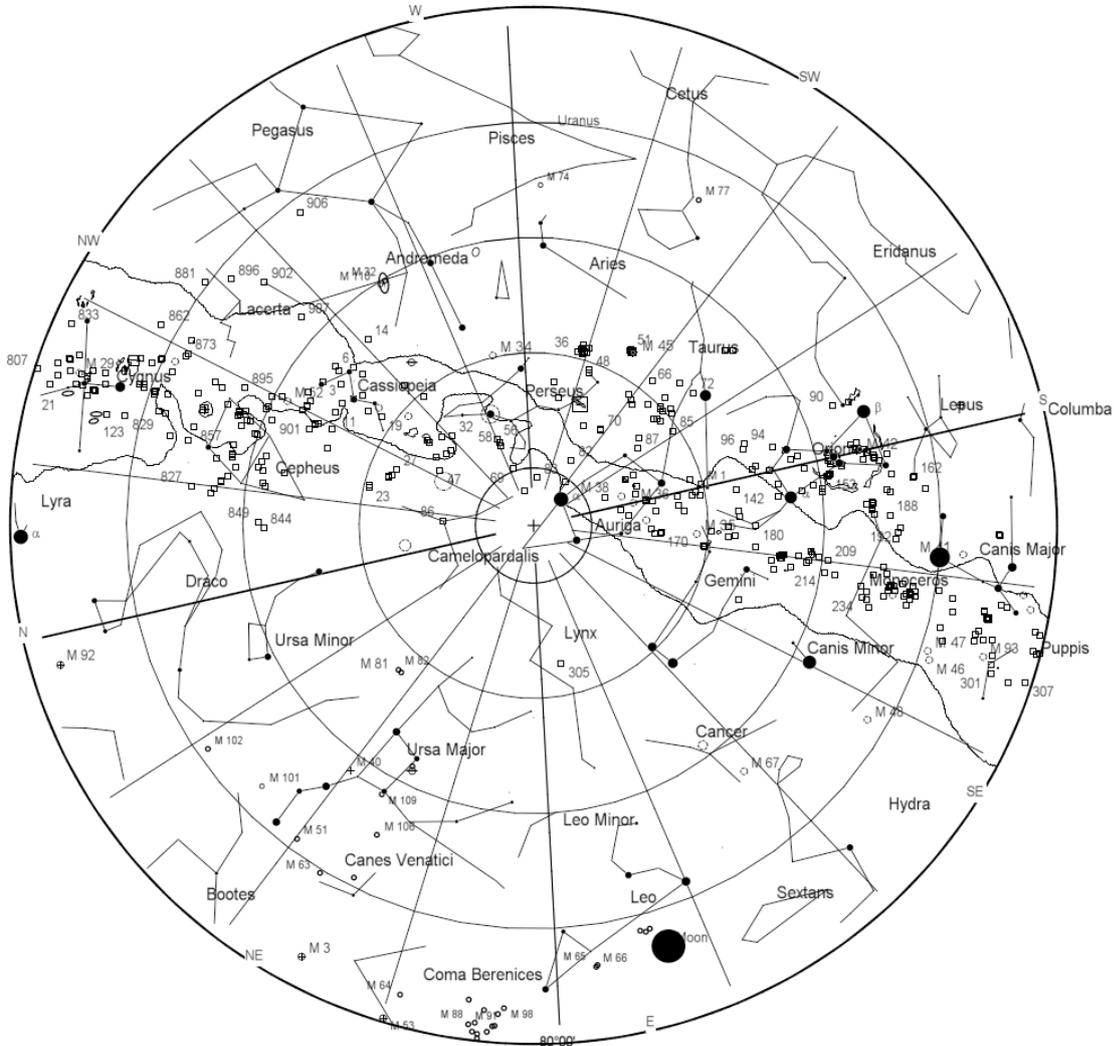
Mail: Owen Brazell, 15 Spinage Close, Faringdon, Oxfordshire Sn7 7BW

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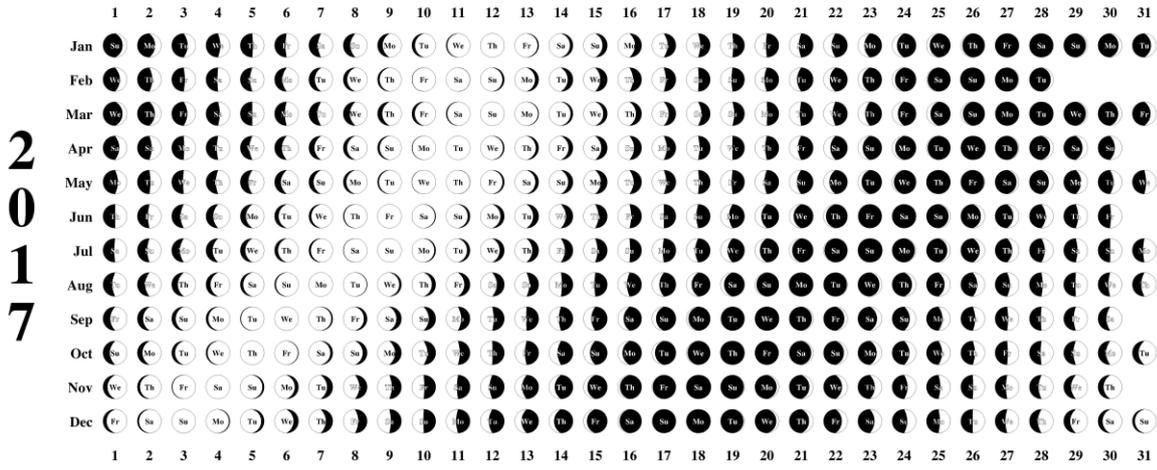
Phone:

STAR CHART

The night sky at 10 pm (GMT) on Sunday 15th January 2017



MOON PHASES:



2017