

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

Next Talk

9th January 2017

Stan Cocking Memorial Lecture
Comets, Ferrets and Nebulae: Charles
Messier and 18th Century Astronomy
Dr Allan Chapman
University of Oxford

EDITORIAL

Hoping you all have a good Christmas and get all the astronomy toys you need. On the society front there is going to be an Oxford Star Gazing evening on the 28th Jan 2017. See dates for details. We will be looking for volunteers to help out at this meeting. If you are interested in helping at this event please see Clifford Marcus.

I know the weather has been poor but if you have any images that you would like to have included in SpaceWatch please send them to me. Note that a colour PDF version of Spacewatch can be downloaded from the website.



Image the planetary nebula NGC 7094 by Clifford Marcus

THE NIGHT SKY THIS MONTH

by Bob Dryden

Earth & Sun: We reach the winter solstice on 21st December at 10.44 UT which is the moment when the Sun is at its most southerly point on the ecliptic.

On January 4th at 14.18 UT the Earth reaches perihelion. This means the Earth is as close to the Sun as it gets in its annual orbit. As you freeze, remember that you are 4,991,506 km nearer the Sun than you will be in mid summer when the Earth is as far from the Sun as it gets.

Mercury: Although only just a day past Greatest Elongation, Mercury is quite hard to see, fading very rapidly as it moves back towards the Sun. Inferior Conjunction occurs on 28th December after which the planet reappears in the morning sky. By the end of the first week of January it is rising just over an hour before the Sun, and is 10° high in the south east by sunrise shining at +0.4 magnitude.

On the morning of 9th January Mercury is approximately 5° east of Saturn (which is the closest they will get this apparition).

Venus: Venus is now obvious in the evening sky shining at -4.3 magnitude, towards the south west. On 12th December it is 17° above the horizon at sunset, and sets itself 3 hours later at about 19.00 UT. By 9th January those numbers have increased to 26° above the horizon at sunset setting a good 4 hours later.

Telescopically, the planet is still in gibbous phase, heading towards greatest elongation on 12th January when it will reach 'half' phase (or more accurately, First Quarter). There are a few interesting planetary encounters this session involving Venus. By 9th January Venus is just 2° from Neptune, with Mars about 5° further away, with all three planets in a straight line. Venus and Neptune will be at their closest on 12th January when they will both be in the same telescopic field of view.

On the evening of 31st December, the crescent Moon, Venus, and Mars (and Neptune, but you will need binoculars or a telescopic to see it) will be in a long straight line. By the 1st January that straight line has shortened to about 20°. On the 2nd January The order has changed to Venus, crescent Moon, and Mars, and the line is down to around 10°.

The 3rd sees the line stretching out again to 20° and the order shuffling again to Venus, Mars, and the Moon.

Mars: Mars continues to be on show in the evening sky, gaining yet more altitude as the weeks pass. It starts this session 22° above the horizon at sunset, culminating shortly after at 16.30 UT, and setting around 21.00 UT. Shining at +0.8 magnitude in Capricorn, it is not hard to find. The Earth is moving away from Mars now which means the apparent size of the Martian disc is decreasing, reaching 5.6" by mid January. So telescopically, it might be a bit difficult to see the surface detail.

Mars moves into Aquarius on 16th December. By 9th January the planet is 32° high at sunset and sets around 21.30 UT

On 1st January Mars passes less than a degree from Neptune so both planets will be in the same field of view of a low power eyepiece, which is not an everyday occurrence.

Jupiter: If you want to see Jupiter you will have to up well after midnight. Presently rising around 02.00 UT, 6 hours before the Sun, Jupiter culminates at a height of 32° in the

morning twilight. By mid January appears just after midnight and culminates at 06.00 UT which is 2 hours before sunrise. It is not hard to see as it is shining at a brilliant -1.9 magnitude in the constellation of Virgo. On 22nd December the last quarter Moon, Jupiter, and the first magnitude star Spica are in a line approximately 10° long. The next morning they form a triangle about 5° across. Jupiter is 3° above Spica on 9th January, which is the closest they will be this apparition.

Saturn: Having just passed solar conjunction on 10th December, Saturn is too close to the Sun to be seen starting this session. However, by January it will be visible in the south east. In fact, by 9th January the planet rises two hours before the Sun and is 11° high by sunrise. Not a great height I know, but as it is +0.5 magnitude, you should be able to see it easily enough. Still in Ophiuchus, the low altitude means telescopic views will not be good, but the rings are at an angle of 26.8° so should be visible. On the 8th and 9th January Mercury will be approximately 5° east of Saturn.

Uranus & Neptune: These two planets continue to be well placed for observation, Uranus shining at +5.7 magnitude in Pisces and Neptune at +7.8 magnitude in Aquarius. As the sun sets on 12th December Neptune is approaching culmination in the south at an altitude of 25°. It sets around 22.30 UT so you have several hours to look for it. By mid January it is already past the south by sunset and sets at 20.30 UT.

Uranus is further east at sunset in December, so does not culminate until 20.00 UT, but it is much higher at 45°. By 9th January the planet is already 40° above the horizon at sunset, and sets in the south west at approximately 00.30 UT.

Meteors: There are two active major meteor showers this session, one favourable and one unfavourable. Sadly, the unfavourable one is the Geminids, which is active between 8th and 17th December. The maximum occurs at 20.00 UT on 13th December when normally you can expect an hourly rate of around 100. However, this year the Full Moon will totally spoil the view and you can expect to see only a tiny fraction of that 100 an hour. The other major shower is the Quadrantids which have an hourly rate of about 80. The shower can be seen between 1st and 6th January with maximum at 15.00 UT on the 3rd. The Moon will be just 5 days old and so not a problem. The Quadrantid meteors are often swift and faint, and are best seen after midnight, which in January means it will probably be cold if it is clear, so wrap up warm if you are going for this one.

Asteroids: There are just two bright asteroids on show this time, Ceres and Vesta. 1 Ceres (a dwarf planet really) fades by 0.2 magnitude during this session, reaching +8.6 by mid January. It starts in the constellation of Cetus and enters Pisces on 7th January. 4 Vesta is brightening nicely now, going from +7.0 in December to +6.5 magnitude in mid January making it an easy binocular object. Vesta is in Cancer, just west of the Beehive (M44) star cluster.

Note there is quite a nice comet C/2015 V2 (Johnson) in the morning sky which is showing quite a nice tail. Currently it is around 11th mag in CVn. There is some expectation this could

become a binocular or even a naked eye comet in the Spring of next year.

LAST MONTS TALK

by Gwyneth Hueter

November's talk

Eric Dunford's 'Space challenges, disasters and triumphs', was basically his reasoning for space based research, and all the hazards that faces any craft that is sent into space. And hazards there are a-plenty, so much so that even he says 'why bother!'

Dr Dunford is a retired mathematician who was director of space science at RAL, but is still very much involved. He spoke to us about infra red astronomy in February.

The list of challenges facing any space mission is extensive. Just to put any satellite into space is upwards of £100 million, so international collaboration is standard.

Then once you have your satellite to build:

- You have size and weight restrictions
- It has to cope with temperature variables, especially if it's rotating
- Vacuum of space. Gases within the satellite can escape and short-circuit the electrics and we can't just nip out for a quick repair
- Cosmic rays – they can harm delicate circuitry. X-rays are vicious. Stuff just disintegrates in sunlight in space
- Debris, even a fleck of paint, can cause damage in space, and solar panels will wear out and lose power.

Then even before all this it has to survive the trauma of launch.

So why is this all worthwhile?

Our atmosphere blocks out most of the radiation, so that only a small part of radiation reaches the surface, so the International Ultraviolet Explorer (IUE) was the first observatory put out into space and lasted for about 19 years. It was launched in 1978 and Dr Dunford was involved in image processing.

The Cluster mission consisted of four satellites showing in 3-d how the Sun affected the Earth's atmosphere and magnetosphere. These were launched in 2002 and are still going, but two of the original craft perished in 1996 when their Ariane V

rocket blew up. Dr Dunford is still involved in their operations.



Image of the Triangulum Galaxy, M33 by Clifford Marcus.



Dusty Filaments in NGC 4696 from the Hubble Space telescope.. NGC 4696 is the brightest member of the Centarus galaxy cluster. The dusty streams appear to be linked to the supermassive black hole at the centre of the galaxy. For more information see:
<http://www.spacetelescope.org/images/heic1621/>

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

19th December 8pm Beginners' Meeting in the Main Hall., talks to include Mercury, Star Hopping, Whats Up

Observing evening: There will be no observing evening in December because of Santa. The next observing evening will be 30th Jan-1st Feb 2017

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:

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