

# SPACEWATCH

the newsletter of the Abingdon Astronomical Society

**Next Talk**  
**14<sup>th</sup> November 2016**  
**Space Challenges, disasters and triumphs**  
**Dr Eric Dunford**  
**RAL**

## EDITORIAL

Unfortunately due to family matters there is no meeting report this month. It also appears the poor weather has reduced the number of images done by members so I am a bit short of these as well. Hopefully the weather will improve and allow the imagers to get out again.

## THE NIGHT SKY THIS MONTH

by **Bob Dryden**

**Mercury:** You do not have long left if you want to see Mercury during this morning apparition as the little planet is heading back in to the Sun's glare. Presently rising about an hour before the Sun, Mercury is  $10^\circ$  high by sunrise and shining at  $-1.0$  magnitude so you have a good chance of spotting it. In fact, on the morning of 11th October it passes less than  $1^\circ$  from Jupiter so that is well worth looking for. By the 17th October however, Mercury rises barely 30 minutes before the Sun so will be quite hard to see. It very quickly disappears in to the morning twilight after that. Superior Conjunction is on 27th October after which a very poor evening apparition begins. By this session's end on 14th November, Mercury is still setting at the same time as the Sun.

**Venus:** To see Venus in the evening sky you need to look very low towards the south west soon after sunset. Fortunately Venus is very bright at  $-4.0$  magnitude otherwise it would be setting before the sky was dark enough to find it. Solar elongation increases this session from  $32^\circ$  in October to  $40^\circ$  by mid November by which time the apparent diameter of the disc will have reached  $15''$ . The phase is a large gibbous one so telescopic views will not be spectacular to say the least. Presently, Venus is just  $5^\circ$  high at sunset and sets about an hour after the Sun. So a pair of binoculars will be useful to find the planet initially, so you know where to look to see it with the naked eye. By mid November Venus has risen to an altitude of  $10^\circ$  by sunset and stays visible for close to 2 hours before setting so should be much easier to see with the naked eye against a much darker sky. On 29th October Venus passes about  $2^\circ$  below Saturn. This may be hard to see however because both planets will be very low down.

**Mars:** While Mars is actually fading slightly (it goes from  $+0.2$  magnitude to  $+0.5$  mag. this session) it continues to be an easy naked eye object in the south west. In fact, it gains altitude by

mid November. Mars starts this session  $12^\circ$  high at sunset in Sagittarius and it takes another 4 hours before setting. By mid November it is  $17^\circ$  high at sunset (just approaching culmination) and sets 5 hours later. Although relatively low, the apparent disc is still  $8.4''$  in diameter in October so surface detail should still be visible. By November the size has reduced to  $7.0''$  but this is still large enough to make out the markings on the disc. On 6th November the large crescent Moon is approximately  $5^\circ$  above Mars presenting an imaging possibility.

**Jupiter:** As Jupiter is in the constellation of Virgo you will have to get up just before dawn to see it. Currently rising about an hour before the Sun, Jupiter reaches an altitude of  $10^\circ$  by sunrise. It is shining at a magnitude of  $-1.7$  so you will be able to see it in binoculars if you have a clear south eastern horizon. By mid November things will have improved a lot as the planet will be rising a good three hours before the Sun and will be  $28^\circ$  high by sunrise. On the morning of 28th October the crescent Moon will be approximately  $1^\circ$  above Jupiter.

**Saturn:** Shining at  $+0.5$  magnitude, Saturn is getting increasingly hard to see low in the south western evening sky. In the constellation of Ophiuchus, it is  $12^\circ$  above the horizon at sunset in mid October and sets two hours after the Sun. By mid November the planet will probably be too low and in to much bright twilight to be seen so you do not have much longer to see it this apparition. On 2nd November the crescent Moon, Saturn, and Venus are in a straight line about  $10^\circ$  long.

**Uranus & Neptune:** As Uranus reaches opposition on 15th October, it means that it is visible just about all night long for most of this session. You will find it in Pisces, shining at  $+5.7$  magnitude so you will need binoculars to see it. Its highest altitude is now  $45^\circ$  putting it well above the horizon murk.

Neptune is in Aquarius and somewhat fainter at  $+7.8$  magnitude but still visible in binoculars. In mid October the planet is already  $10^\circ$  high in the east at sunset and it culminates at 21.00 UT at a height of  $30^\circ$ . By mid November Neptune reaches culmination by 19.00 UT meaning it is well placed for viewing at a very sociable hour.

**Meteors:** There are two meteor showers active this session worth keeping an eye out for.

The first is the Orionid shower which is active from 16th to 30th October. The maximum stretches over a few days, from 21st to 24th, when the rates are around 25 meteors an hour under perfect conditions. The Moon interferes slightly as it is at Last Quarter around the maximum period, rising in Cancer at 22.37 UT on the 22nd October. The second shower is the Taurids which can be seen between 20th October and 30th November. There are two

maxima, one on 5th November and the other on 12th November. While the hourly rates at maximum are low at around 10, many Taurid meteors are bright and noticeable. The first maximum on the 5th will have a First Quarter Moon in the sky (setting at 23.00 UT) while the one on the 12th has a moon nearing Full (on the 14th).

Occultations: There are two dates on which relatively bright stars are occulted by the Moon.

On the morning of 19th October the waning gibbous Moon (3 days past Full) passes through the Hyades cluster in Taurus. Several occultations take place but most of the stars are below 6th magnitude and many will be difficult to see because of the brightness of the Moon.

However, Gamma Taurus is a +3.7 magnitude star and will reappear from behind the Moon at 00.12 UT. The Moon will be 45° high in the south east at that moment. Later, at 04.41 UT, Theta<sup>1</sup> Taurus (+3.4 magnitude) reappears, followed by Theta<sup>2</sup> Taurus (+3.8 mag.) at 04.45 UT. By then the Moon will be 46° above the south western horizon.

On 25th October at 03.35 UT, 31 Leo will reappear from behind the waning crescent Moon, which will have an altitude of 13° in the east. 31 Leo is a +4.4 magnitude star.

Asteroids: Of the three brighter asteroids visible this session, two are in Cetus and one in Cancer.

1 Ceres is in Cetus, fading from +7.5 magnitude to +7.8 mag. by mid November.

4 Vesta is in Cancer and continues to brighten. It starts at +8.2 mag. and reaches +7.7 mag. by sessions end.

The third asteroid is 18 Melpomene which is just a few degrees below Ceres in Cetus. This one starts at +8.2 magnitude, reaches +8.0 mag, by the end of October, and then fades to +8.3 mag. by mid November.

Unfortunately there are no comets of note during this session.

The best of a bad bunch is probably 41/p Wolf-Harrington which will be about 10<sup>th</sup> mag in Sextans in Sextans in the early morning skies at the end of the month.

October 2016						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
25 Sun: 06:56 18:56	26 Sun: 06:58 18:53	27 Sun: 07:00 18:51	28 Sun: 07:01 18:49	29 Sun: 07:03 18:46 Moon: 05:11 18:22	30 Sun: 07:05 18:44	1 Sun: 07:06 18:42
2 Sun: 07:08 18:39	3 Sun: 07:10 18:37	4 Sun: 07:11 18:35	5 Sun: 07:13 18:32 Moon: 11:29 20:57	6 Sun: 07:15 18:30	7 Sun: 07:17 18:28	8 Sun: 07:18 18:26 Moon: 14:11 23:07
9 Sun: 07:20 18:23 Moon: 14:57 -----	10 Sun: 07:22 18:21	11 Sun: 07:23 18:19	12 Sun: 07:25 18:17	13 Sun: 07:27 18:15	14 Sun: 07:29 18:13	15 Sun: 07:30 18:10
16 Sun: 07:32 18:08	17 Sun: 07:34 18:06	18 Sun: 07:35 18:04	19 Sun: 07:37 18:02 Moon: 20:45 11:30	20 Sun: 07:39 18:00	21 Sun: 07:41 17:58	22 Sun: 07:42 17:56
23 Sun: 07:44 17:54 Moon: ----- 15:02	24 Sun: 07:46 17:52	25 Sun: 07:48 17:50	26 Sun: 07:49 17:48	27 Sun: 07:51 17:46	28 Sun: 07:53 17:44	29 Sun: 07:55 17:42
30 Sun: 07:56 17:41	31 Sun: 08:56 18:38	1 Sun: 07:00 18:38	2 Sun: 07:02 18:35	3 Sun: 07:03 18:33	4 Sun: 07:05 18:31 Moon: 11:09 20:00	5 Sun: 07:07 18:29 Moon: 11:55 20:54

## NEW VIEW OF M78



In this new image of the nebula Messier 78, young stars cast a bluish pall over their surroundings, while red fledgling stars peer out from their cocoons of cosmic dust. To our eyes, most of these stars would be hidden behind the dust, but ESO's Visible and Infrared Survey Telescope for Astronomy (VISTA) sees near-infrared light, which passes right through dust. The telescope is like a giant dustbuster that lets astronomers probe deep into the heart of the stellar environment.

[Messier 78](#), or M78, is a well-studied example of a [reflection nebula](#). It is located approximately 1600 light-years away in the constellation of [Orion](#) (The Hunter), just to the upper left of the three stars that make up the belt of this familiar landmark in the sky. In this image, Messier 78 is the central, bluish haze in the centre; the other reflection nebula towards the right goes by the name of NGC 2071. The French astronomer [Pierre Méchain](#) is credited with discovering Messier 78 in 1780. However, it is today more commonly known as the 78th entry in French astronomer [Charles Messier](#)'s catalogue, added to it in December of 1780.

When [observed](#) with visible light instruments, like [ESO's Wide Field Imager](#) at the [La Silla Observatory](#), Messier 78 appears as a glowing, azure expanse surrounded by dark ribbons (see [eso1105](#)). [Cosmic dust](#) reflects and scatters the light streaming from the young, bluish stars in Messier 78's heart, the reason it is known as a reflection nebula.

The dark ribbons are thick clouds of dust that block the visible light originating behind them. These dense, cold regions are prime locations for [the formation of new stars](#). When Messier 78 and its neighbours are observed in the [submillimetre](#) light between [radio waves](#) and [infrared](#) light, for example with the [Atacama Pathfinder Experiment](#) (APEX) telescope, they reveal the glow of dust grains in pockets just barely warmer than their extremely cold surroundings (see [eso1219](#)). Eventually new stars will form out of these pockets as gravity causes them to shrink and heat up.



In between visible and submillimetre light lies the near-infrared part of the spectrum, where the [Visible and Infrared Survey Telescope for Astronomy](#) (VISTA) provides astronomers with crucial information. Beyond dusty reflections and through thinner portions of obscuring material, the luminous stellar sources within Messier 78 are visible to VISTA's eyes. In the centre of this image, two blue [supergiant](#) stars, called HD 38563A and HD 38563B, shine brightly. Towards the right of the image, the supergiant star illuminating NGC 2071, called HD 290861, is also seen.

Besides big, blue, hot stars, VISTA can also see many stars that are just forming within the cosmic dust strewn about this region, their reddish and yellow colours shown clearly in this image. These colourful fledgling stars can be found in the dust bands around NGC 2071 and along the trail of dust running towards the left of the image. Some of these are [T Tauri stars](#). Although relatively bright, they are not yet hot enough for [nuclear fusion](#) reactions to have commenced in their cores. In several tens of millions of years, they will attain full "starhood", and will take their place alongside their stellar brethren lighting up the Messier 78 region.



Image of M16 – aka the Eagle Nebula in Scutum taken by Steve Creasey with an 8" Altair RC and DSLR



Image of NGC 6946 – aka the Firework Galaxy in Cynus taken by Steve Creasey with an 8" Altair RC and DSLR

### FURTHER DISCUSSION

Why not take a look at our website? It's at: [www.abingdonastro.org.uk](http://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](mailto: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

24<sup>th</sup> **October** 8pm Beginners' Meeting in the Main Hall., talks to include Meteorites, Uranus and Observing tips



**Observing evening: FCN Oct 31<sup>st</sup>-2<sup>nd</sup> Nov at Frilford heath Golf Driving Range. Contact Trevor Pitt or Steve Creasey. Also Keep a look out on the Abingdon AS mailing list for any specials.**

**October 14/15<sup>th</sup> International Astronomy show in Coventry. For details see <http://www.ukastroshow.com/>**

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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**STAR CHART**

**The night sky at 10 pm (BST) on Saturday 15<sup>th</sup> October 2016**

