

## Society News

**Firstly, Happy New Year to everyone - NZ is back and we're now up to Volume 20!**

If anyone has a scanner, plenty of free time and fancies scanning in the old paper copies I have - we may be able to get the majority of the volumes available for downloading. Just drop me an email.

## Busy, Busy, Busy

It's been a hectic start to the year what with StarGazing Live! and a sudden increase in public interest. It seems that Astronomy is the new black and everyone wants a slice.

This is going to be a very busy year for the Society as we have already got 4 groups of Cubs/Scouts and Brownies/Guides with dates for observatory visits, and that's just February! We also have a couple more diary dates for other groups later in the year.

The June monthly meeting is now reserved for a Member's Night and a "Special Project Presentation". I'm not going to reveal the nature of the project before that meeting but I hope all of you will get behind the plans that we, the committee, are busily working on. This will be an important announcement and I hope you will make every effort to attend on the night.

*Please note that due to the 22nd June falling on the weekend of the IOW Music Festival, we have decided to move the monthly meeting to the 29th (hall availability permitting).*

## Publicity

I have recently been asked for astronomy information for Red Funnel, CPRE, County Press and IOW Radio and, some time ago, by an hotel if there was any chance of providing weekly talks for Island visitors.

This all points to the general public being very interested in the night sky and to the tourism industry here finally realising that the dark skies we residents take for granted can become an attraction to others. It's good for their business and it's good for us. I think we can expect quite a few visitors to the observatory this year.

*Clear Skies!*

*Brian Curd*

*Observatory Director*

## VAS Website: [www.wightastronomy.org](http://www.wightastronomy.org)

Submissions or letters to New Zenith are always welcome and should be sent to:

**The Editor New Zenith**

**35 Forest Road**

**Winford**

**Sandown PO36 0JY**

Tel: **01983 864303** or email: [editor@wightastronomy.org](mailto:editor@wightastronomy.org)

Material for the next issue by the 6th of the month please.

## VAS Registered Office

Castle Haven Cottage, Castle Haven Lane, Niton Undercliff, Isle of Wight, PO38 2ND

The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors.

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## Observatory Diary

<b>Monday,</b> 19.30hrs	<b>Members Only.</b> Telescope and night sky training. <b>Contact Barry Bates 01983 872979</b>
<b>Thursday,</b> 19.30hrs	<b>Members and Public.</b> Informal meeting and observing.

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## Monthly Meeting Calendar 2012

Check the website for up to the minute information.

Travel for our monthly speakers is sponsored by:		
		
Date	Subject	Speaker
27 Jan	Europe's first mission to the moon	Barry Kellet
24 Feb	TBA	TBA
23 Mar	Black Holes	Prof. Ian Morrison
27 Apr	Answering the Biggest Questions with the Biggest Surveys	Dr Thomas Kitching
25 May	TBA	TBA
29 June	Member's Forum and Special Project Presentation	
27 July	TBA	TBA
24 Aug	Observing Galaxies - Faith Jordan <b>AGM</b> <b>Meeting Starts at 19.00hrs</b>	
28 Sep	TBA	TBA
26 Oct	TBA	TBA
23 Nov	TBA	TBA

*All details correct at time of publication.*

April's meeting is particularly interesting as Dr Kitching is an "Islander".

### Do You Know a Speaker?

As you can probably see, we are having some difficulty arranging speakers at the moment.

If you know anyone who can help, or perhaps you would be prepared to have a go, please contact Elaine Spear at [progorg@wightastronomy.org](mailto:progorg@wightastronomy.org)

### VAS Contacts 2012

<b>Chairman</b>	<b>Faith Jordan</b> chairman@wightastronomy.org
<b>Secretary</b>	<b>Rebecca Mitchelmore</b> secretary@wightastronomy.org
<b>Treasurer</b>	<b>Frank Alfrey</b> treasurer@wightastronomy.org
<b>Observatory Director</b>	<b>Brian Curd</b> director@wightastronomy.org
	<b>Barry Bates</b>
<b>Programme Organiser</b>	<b>Elaine Spear</b> progorg@wightastronomy.org
<b>Special Projects</b>	<b>David Kitching</b> projects@wightastronomy.org
<b>NZ Editor</b>	<b>Brian Curd</b> editor@wightastronomy.org
<b>Membership Secretary</b>	<b>Tony Williams</b> membership@wightastronomy.org
<b>NZ Distribution</b>	<b>Brian Bond</b> distribution@wightastronomy.org

### Committee Vacancy

Due to work commitments Catherine Bachelor has had to stand down from the Committee. If you could help by joining us, then please contact Faith Jordan at [chairman@wightastronomy.org](mailto:chairman@wightastronomy.org).

Catherine, we wish you every success with your new venture and thank you for all your help.

*VAS Committee*

### Donation to the Society

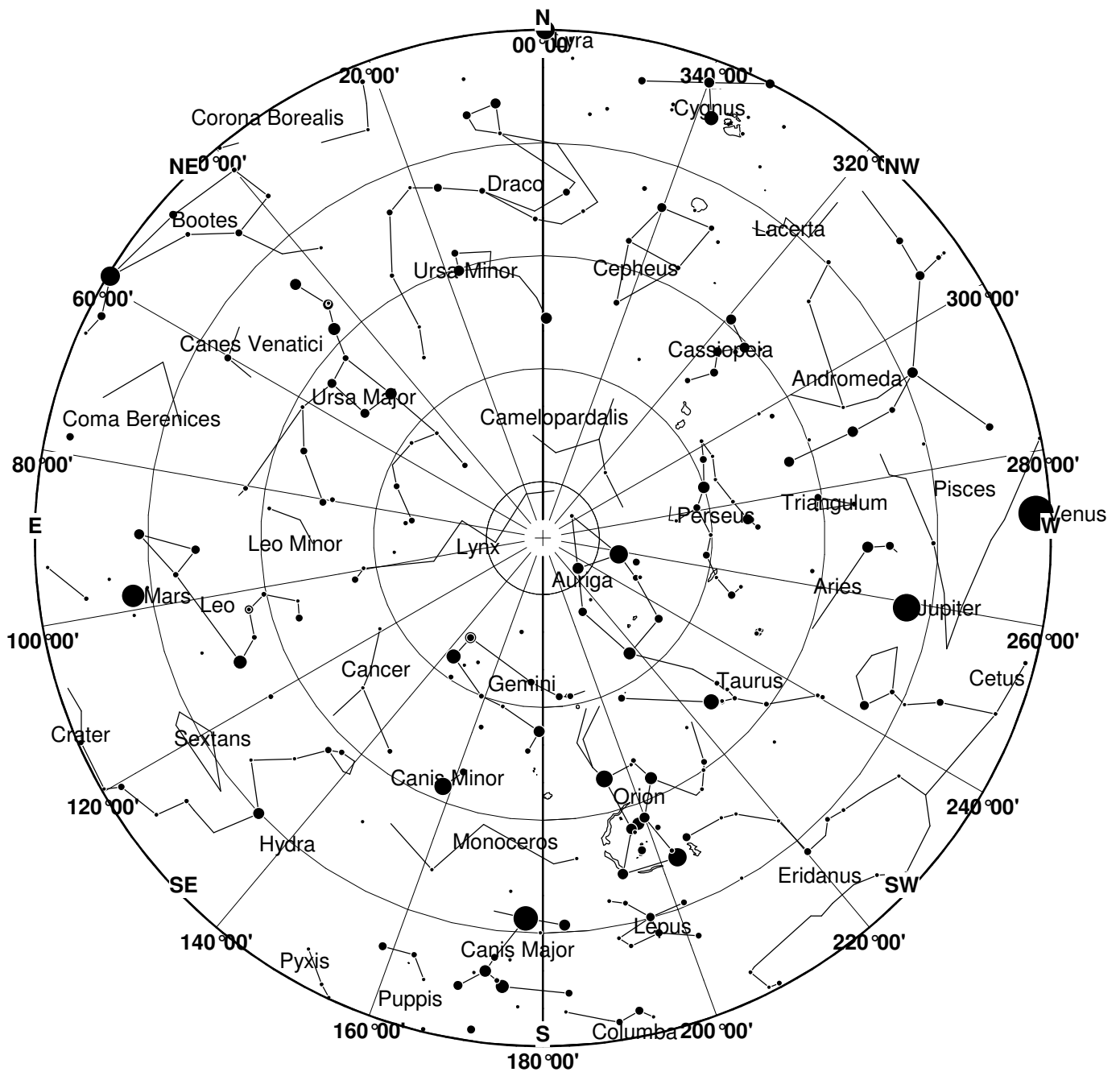
I was recently contacted by Mrs Jackson from Shanklin who reported the recent sad death of her father, Mr Vaughan Trembath. Vaughan was a very inquisitive man with many hobbies and interests including astronomy.

Mrs Jackson kindly offered her father's astronomy equipment to the Society with the hope that it could be used and appreciated by our younger members.

I am sure everyone will join me in offering our condolences to Mrs Jackson and her family along with our thanks for her very generous and thoughtful gift.

*Brian Curd*

# February 2012 Sky Map



View from Newchurch Isle of Wight UK - 2100hrs - 15 February 2012



M78 or NGC 2068 is a reflection nebula in the constellation Orion. It was discovered by Pierre Méchain in 1780 and included by Charles Messier in his catalogue of comet-like objects that same year.

M78 is the brightest diffuse reflection nebula of a group of nebulae that include NGC 2064, 2067 and 2071. This group belongs to the Orion Molecular Cloud Complex and is about 1,600 light years distant from Earth. M78 is easily found in small telescopes as a hazy patch and involves two stars of 10th magnitude. These two stars, HD 38563A and HD 38563B, make the cloud of dust in M78 visible by reflecting their light.

*This article is licensed under the [GNU Free Documentation License](http://www.gnu.org/licenses/fdl.html).*

*It uses material from the Wikipedia article "Messier 78"*

## February 2012 Night Sky

### Moon Phases

New	1 <sup>st</sup> Qtr	Full	Last Qtr
21st	31st Jan/1 Mar	7th	14th

### Planets

#### Mercury

Towards the end of this month and for the first week or so of Mar, Mercury makes an appearance in the sky just after sunset. A very thin crescent moon is nearby on the 22nd and 23rd but gets no closer than about 6°. To find this elusive little world follow the arc from through Jupiter and Venus towards the point where the Sun has set. A pair of binoculars should help show a pinprick of light in the evening twilight sky; this is Mercury. After the first few days of March it will start to drop noticeably in brightness so the earlier the better. Those who can view Mercury through a telescope will be able to follow its changing phase as seen here from the Earth. It starts as distinctly gibbous and by the end of the month is showing a 'first quarter' phase. As its brightness fades during March it will be showing a thinner and thinner crescent as it starts to slide between us and the Sun.

Azimuth and Elevation for Mercury at 18:00					
Date	Az	EI	Date	Az	EI
21 Feb	253	4	2 Mar	255	13
23 Feb	253	6	4 Mar	256	14
25 Feb	253	8	6 Mar	257	15
27 Feb	254	10	8 Mar	258	15
29 Feb	254	11	10 Mar	260	15

#### Venus

As the evening star with a magnitude of about -4, Venus will be hard to miss in the western skies after, or even before sunset. It continues to climb away from the horizon slowing down by the end of the month as it approaches maximum eastern elongation which it reaches towards the end of March. As with Mercury, a telescope will show the phase changing from gibbous to first quarter. On the 25th there will be a photo opportunity with the nearby crescent moon together with Mercury and Jupiter. Look a day or so either side for other potential wide field shots.

#### Mars

Mars reaches opposition; that is the closest it will get to Earth on this apparition in the first week of Mar. We pass each other quite quickly so the size of the planet also changes rapidly. The one thing that strikes those who have never seen Mars through telescope before is how tiny it

appears to be. Feb and Mar is the best time for observation for the next 2 years so make the most of it. It will soon be shrinking very rapidly into the distance making any markings difficult to discern. It is visible for most of the night laying under the haunches of Leo the lion, low down in the east a few hours after sunset. Red and very bright, it is by far the most conspicuous object in that part of the sky.

#### Jupiter

At the start of the month Jupiter is high in the southwest at sunset, but as time passes it slips slowly down towards the much brighter Venus

#### Saturn

Saturn is not particularly well placed for observation from our latitudes; it rises to only 30° above the horizon and that at about 4am. It is not going to get any better in the coming few years as its orbit takes it more southerly declinations and closer to our horizon. Look for it about 7° east of Spica in Virgo. It is about the same brightness but distinctly yellow in comparison to Spica's bright blue.

#### Uranus & Neptune

For all but the most determined Uranus is lost in the fading glow of sunset, and Neptune is in conjunction, on the other side of the sun from us and so is not observable.

### Deep Sky objects

#### NGC2244 RA 6h 32m Dec 4° 57' mag 4

This is the star cluster surrounded by the Rosette nebula that on the clearest nights is visible to the naked eye as a bright spot in the winter Milky Way. Binoculars show the brightest members of the cluster forming a rectangular shape. The rosette nebula is a large object, about twice the diameter of the full moon, so is best observed visually using a rich field telescope; a nebula filter will help to increase the contrast with the background sky.

#### M42 Orion Nebula RA 5h 35m Dec -5° 25' mag 4

Visible to the naked eye as the sword of Orion the light we see is a glimpse into a large, relatively nearby star forming region. We are looking into a hollowed out shell of gas that is glowing from the intense radiation emitted by the newly formed stars. Four of these bright stars are closely grouped near the centre of the nebula forming an asterism known as the Trapezium. There is detail to be seen in all sizes of telescope and binoculars making this probably the most observed object in the night sky.

#### M78 RA 5h 47m Dec 0° 3'

A small bright reflection nebula that is a part of the great Orion nebula M42 located in the sword. This nebula can be seen in binoculars but is rather small so is best viewed through a telescope.

*Peter Burgess*

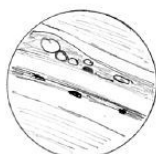
## Essays from a beginner: On drawing

At school my geometry drawings sprawled, fuzzy with rubbing-out. Art was worse: houses looked like squashed packaging, portraits could only be the Undead, and cows,

c. 21.25 UT



c. 22.30 UT



c. 23.15 - 30 UT



GRS pale pink. Pale features on SEB. V. dark red features on NEB.  
Minor bands not v. visible.

25/11

horses and dogs could well have been drawn for the Apple Corporation (joke for early MacOS users). But almost as soon as I began observing with a telescope I began to draw. This generates its own problems. I need light to draw, but then lose my night sight; the table is another trip hazard; I need specs for drawing, but not at the eyepiece; pencils roll away into the blackness; gusts snatch at the page; gloves are impossible... etcetera. *But it is useful.*

Sometimes I note an eyepiece view of stars, mainly to work out later what I was looking at, as I'm often lost. I draw the circular view and plot bright stars, then some fainter ones. It's difficult to get the spacing and angles correct, and to decide when to stop adding stars - charts don't ever seem to use the same criteria as I do, making it harder to match up, and rich star fields are a nightmare.

I sketch Jupiter's or Saturn's moons, trying to guess their identity by position and brightness, then check if I was right, using the interactive Sky and Telescope web page or a squiggle diagram in a magazine. At first these drawings were pretty crude - but so are the famous sketches by Galileo of the same subject. Of course he was a beginner then too.

Occasionally I draw the Moon. The eyepiece is so bright that I needn't stay dark-adapted, and can use a torch quite freely. It is much more like real drawing, and my efforts to record line, texture and contour are often comical, but they do let me return to Moon maps to identify the topography, and drawing reinforces my memory of what I have observed.

Since I got a bigger telescope, I can often see features on Jupiter and try to draw these. Faint spots and streaks appear and disappear depending on the seeing, their position on my retina and my level of eyestrain at that moment, so a single drawing is a composite of a series of

peering looks, like the stacked frames of the imagers. On a good night there is time to make a succession of sketches, revealing the planet's rotation. Back indoors, I produce a fair copy of my scrawls. Sometimes I look on the web for images, to check that I wasn't just imagining things - gratifyingly, if I can find a time-matched image, my own observations are usually corroborated.

In all these cases, because I am drawing, I spend more time actively looking, extracting far more detail than by just wafting an eye over the eyepiece. I draw to record; but also, and more importantly, I draw in order to see.

*Rebecca Mitchelmore*

### ISLE OF WIGHT STAR PARTY

22nd - 26th March 2012

Come and Enjoy Some of the  
Darkest Skies in the South

<http://www.iowstarparty.org/> for more details

## Island Planetarium @ Fort Victoria

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## Astronomy - The Oldest Science

The WEA (Workers' Educational Association) here on the Island are running a day school on Saturday March 24th 2012 entitled Astronomy - The Oldest Science. It will be taught by Guy Hurst who is a former president of the British Astronomical Association, Fellow of the Royal Astronomical Society and an active observer with considerable experience of teaching practical astronomy.

The day school will be an introduction to the history of extraordinary studies by ancient civilisations of the night sky and today, how both amateur and professionals are still striving to understand the universe using visual and imaging techniques.

It will be held at St. Mary's Church Hall, Church Road, Cowes from 10.30am to 4.15pm and will cost £14.75.

*Margaret Rylands,  
2 Plaish Lane,  
Bowcombe  
Newport PO30 3HU  
Tel: 529589*

## Dr Tom Kitching

Dr Tom Kitching of the University of Edinburgh is given the 2012 Winton Capital Award for Astronomy, for a postdoctoral researcher, who completed their PhD no more than 5 years previously and whose career has shown the most promising development.

Dr Kitching, who now holds a Royal Society University Research Fellowship, contributes at all levels to research into weak gravitational lensing, from the details of shape measurement of galaxies, through development of sophisticated analysis tools, to leadership roles in ESA's forthcoming Euclid space mission that will map dark matter and investigate dark energy.

As a student, he helped to develop the new field of 3D weak lensing and with its inventor Professor Lance Miller is the co-creator of an algorithm that measures the distortion of galaxy images. As a result of his particular expertise he was invited to join the leading ground-based lensing survey (CFHTLenS) and the leading space-based survey (COSMOS, using the Hubble Space Telescope).

Read more at: <http://goo.gl/3RG24>

Tom will be coming home to the Island and will be our guest speaker at the April monthly meeting in Newport.

*David Kitching*

# HIO VAS

If you would like this number plate please contact Paul Emery at [Paulemery27@hotmail.co.uk](mailto:Paulemery27@hotmail.co.uk)

*Please note: This was offered to me by unsolicited email and neither VAS or I can offer any guarantee of its validity. Proceed at your own risk.*

## Northern Lights in the UK



*Green glory: Photographer Reed Ingram Weir took this beautiful picture from the A1 near Alnwick, Northumberland*

## 23 January 2012

The Aurora Borealis or The Northern Lights, have been visible over Scotland and large parts of northern England.

The lights are one of nature's most spectacular displays, usually seen in the Arctic Circle.

Despite the reference to "astrologers" at the BBC link, there is more coverage and photos at:

<http://www.bbc.co.uk/news/science-environment-16694472>

<http://www.dailymail.co.uk/news/article-2090611/Northern-Lights-Extraordinary-display-skies-YORKSHIRE.html?ito=feeds-newsxml>

<http://www.guardian.co.uk/science/2012/jan/23/northern-lights-photographs?newsfeed=true>

*Brian Curd*

## Lecture report 25 November 2011

### An Introduction to Visual Observing and Equipment

John Slinn (Guildford AS)

*This half-hour's talk by a keen amateur, who shifted from construction into astronomy, provided key information with respect to equipment and its care, comfortable operating, safe viewing and combating light pollution. It was followed by several discussions with members covering various aspects in greater depth - regrettably not reported here, so some additional references on filters, eyepieces and observing are included herewith. The basics go like this.*

Take a friend on observing trips when you head away from local brightness into the darker countryside. Your friend helps security, prevents accidents and allows you to remain dark adapted. If it's misty or foggy, conditions can improve, so it can be worth waiting. **Do not use tissues to wipe lenses**, tissues are sharp. When observing, keep your instrument cases closed and covered, so they remain dry, ready for later, even then, when you get back, don't put your equipment away with moisture on it, let it dry in the open in a warm room before replacing lens caps.

Before setting out, give attention to:

1. Clothing.
2. Food and drink.
3. A chair.
4. A laptop with red cover-sheet for the screen, a spare battery and leads.
5. Let someone know where you are going.
6. Check your phone is charged and topped up.
7. Take a torch and be prepared.

Beware! It can be quite a shock when first using a filter

- **a filter can make it look as if the whole sky has turned black**, but that's because your eyes have not become **dark adapted**. Unless you are dark adapted, then light filters don't get a chance to work - and they really do work. They come in various types:-
- UHC (ultra high contrast) for nebulae.
- OIII (Oxygen 3, green), for looking at M27 the Veil and M42. Hydrogen beta (green) and hydrogen alpha (very deep red) light are also visible. This filter makes the difference between seeing and not seeing nebulae and supernovae remnants.

- Coloured filters, the Wratten range, give planets more contrast, reveal polar details, dust storms, clouds on Mars, enhancing many phenomena.
- Neodymium, enhances contrast, with not much dimming, and reduces moonlight.
- Polarizing filters help with contrast when studying the Moon, giving adjustable brightness (an 'optical volume control').
- Light pollution filters, come in various types, narrow and broadband. (see references for details).

**Sketching** helps to train your brain to see details like the valleys and spots on the Moon, features moving by the hour on Jupiter, dark highways in planetary nebulae, and so on. A shroud over your head helps to shield you from light and keep you dark adapted. Sunglasses can also help. Some astronomers wear an eyepatch over the 'unused' eye. (So does this eye become dark adapted and might it be held in reserve for viewing specially dim objects?)

**Caution - give attention to safety when using restricted vision.** Note: the pupil sizes of both eyes are not independent and dark adapted pupil sizes change with age - please share your experiences and views on the best ways to observe, via the editor.) Using averted vision takes advantage of your better black & white vision slightly off-centre from the fovea, where the eye is more sensitive to colour at its central point in the retina.

**Binoviewers** split the image giving an alive false-3D effect, similar to binoculars focussed on infinity. A comment later was "mine are heavy so I don't use them". However, although they reduce the light for each eye, equivalent to an objective reduction from 4-inch to 3-inch, two eyes see more detail and the dimming is less noticeable with larger objectives. They reduce eyestrain and the effects of floaters.

Attention was particularly given to **eyepieces and comfort**, the distance of the eye from the eyepiece is called "the eye relief". Ones costing eighty pounds and upwards may contain eight pieces of glass to make all the optical corrections, internal coatings reduce the light loss to a few percent. They are colour neutral. Parfocal means different eyepieces can be used without changing telescope settings and, with care, they last a lifetime. 2-inch or 1.25 inch give a good field of view, low magnification is good for looking at the deep sky, higher magnifications are needed for planetary and lunar observing.

A 12-volt hair dryer is useful for blowing **condensation** off your optics. A **dew band** is an electric element in a flexible insulating flat envelope, wrapped around the eyepiece, or the finder, or other positions. It receives pulses from a controller, giving adjustable heating.

## Question Time

- Q* If I hold the tripod, it shakes, but if I don't hold it, I shake.
- A* Add some mass to the tripod to increase its weight. Use an adjustable bar stool.
- Q* You mentioned your shop - where is it and what does it sell?
- A* Astronomia. (246 High Street) in Dorking. Website: [www.astronomia.co.uk](http://www.astronomia.co.uk)... (selling telescopes, binoculars, accessories and so on)...and we do upgrades. We also sell sports optical equipment, like infrared viewers. Other useful sites are [www.telescopeoutlet](http://www.telescopeoutlet.com), [www.surreyastro.org](http://www.surreyastro.org), and [www.viewpointoptics.co.uk](http://www.viewpointoptics.co.uk).

## Some additional references:

For a succinct beginner's guide to eyepieces, including filters, see: "Eyepieces", Richard Flux, NZ, Feb 2008, p6.

- "Deep sky observing & Sketching" Faith Jordan, NZ April 2010, p13. Her book includes sketches and more data.
- "Observing Planetary Nebulae" Owen Brazell, NZ July 2011 pp.8-9.
- "Astronomy for Beginners" Peter Burgess, NZ May 2011, pp.6-8 - gives data on finding your way around the sky and measuring angles, plus equipment information.
- **Binoviewers**, see: [www.weatherman.com/nagler3.htm](http://www.weatherman.com/nagler3.htm).
- "The Real Story on Light Pollution Filters", Shawn Grant, [www.knoxvilleobservers.org/dsonline/tips/lprfilters.html](http://www.knoxvilleobservers.org/dsonline/tips/lprfilters.html).
- **Polarising filters** for the Moon, planets, and for resolving bright and dim closely spaced object pairs, see: [www.scopeskies.com/prod/Scopeteknix/dual%20polarising/filters.html](http://www.scopeskies.com/prod/Scopeteknix/dual%20polarising/filters.html).
- **Filters for visual observing and CCD imaging**; colour balancing, reducing effects of atmospheric disturbance, filters for small aperture telescopes, solar filters, light pollution reduction, narrow band and deep sky filters, Moon and sky-glow filters, see: Tammy Plotner, [www.universetoday.com/19464/telescope-filters/](http://www.universetoday.com/19464/telescope-filters/)
- **Spectral details of filters**, tables of filters for features comprehensively listed, such as planetary clouds, dust storms, polar caps, the terminator on Venus etc.; determining the **best eyepiece focal**

**length**; a **cleaning kit**, see: [www.lumicon.com/astronomy-accessories.php?cid=1&cn=Filters](http://www.lumicon.com/astronomy-accessories.php?cid=1&cn=Filters)

- For a practical in depth look at **eyepieces**, names, magnification, field of view, aperture, **blackness of background**, polish, coatings, comparisons between old and new, **military optics**, glare, scattering, ghost images, lateral and longitudinal **colour fringing**, **Barlow lenses**, **zoom eyepieces** to find stars, and the choice of the best **eye relief for star parties**, see: "Astronomical Telescope Eyepieces: A Discussion for the Beginner." Jay Reynolds Freeman, <http://observers.org/beginner/eyepieces.freeman.html>.
- Make your own **Dew Band**, using sewing skills, nichrome wire (available from Maplins) and a toy train controller, see [www.deep-sky.co.uk/telescopemaking/tm16.htm](http://www.deep-sky.co.uk/telescopemaking/tm16.htm).

**Note:** this final talk of the year reminds me of all the talks when **infrared** has been mentioned - I wonder how much infrared methods might be of application to amateurs. Some questions:-

**Infrared enthusiasts** frequently produce landscape pictures containing a black sky. What happens if the exposure is increased? Does the blackness give way to a greyness containing structure, and what else appears, like the Moon, shooting stars, noctilucent clouds, and Zodiacal dust?

An effect called '**bloating**' seen during astroimaging refers to an unwanted appearance of stars, the effect being reduced using infrared filters (in a reference above). Is this effect caused by a response of the CCD chip to exposure to local infrared, or is the infrared, perchance, coming from these stars? Many stars have recently been found to have **debris discs**, where exoplanets form, emitting scattered light (up to 0.5 per cent of the central star) but plus a lot more infrared. **Beta Pictoris** has a very substantial disc out to several hundred AU, the infrared becomes longer wavelength at bigger radii where the dust in the disc is cooler, (observable from high altitudes or satellites), see "Building Planets in Disks of Chaos", Alycia Weinberger, *Sky & Telescope*, November 2008, pp.32-37. Is the near-infrared, coming from dust close to the star, detectable with amateur equipment?

*Dr. Guy Moore*





## VAS Christmas Tree

Some members may have heard of the Brighstone Christmas Tree Festival. Held annually in venues around the village, local groups prepare and display decorated trees.

This year, Elaine, Sue, Catherine, Rebecca, Madeline and Laura decided to join in with a VAS tree and here it is.



## Herschel revisits Pillars of Creation

The European Space Agency's Herschel Space Observatory has made stunning observations of the iconic Pillars of Creation, first brought to life by the Hubble Space Telescope in 1995.



*Original Photos*

The region is part of the Eagle Nebula, or M16, a place of star birth 6,500 light years away. The iconic dust and gas pillars rise several light years above their surrounds and have been carved by the intense radiation of hot young stars near their tips.

While Hubble is sensitive to visible light, Herschel can see in infrared, giving astronomers the ability to see through the thick dust that would otherwise obscure the view. With this capability Herschel can see inside the columns of cold gas and dust to see where dense gas is collapsing into new stars.



*Latest Photos*

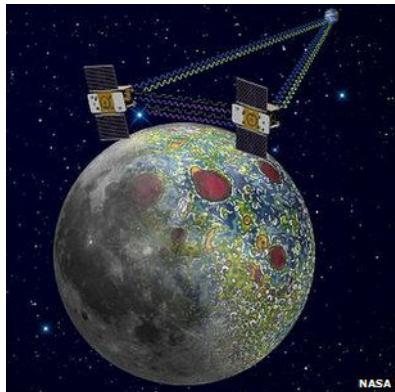
In Herschel's false-colour view the blue material is warm compared to its surroundings – although still below -200 degrees Celsius – with the brightest blue and white material the dense sites of new star formation.

More at: <http://www.astronomynow.com/news/n1201/18Herschel/>

## THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

### Nasa's gravity twins now circling Moon



The US space agency (Nasa) has succeeded in placing two new satellites in orbit around the Moon.

Both spacecraft were put in elliptical paths around the lunar body over the weekend after performing braking manoeuvres following their more than 100-day journey from Earth.

The identical Grail twins are to map gravity variations across the lunar body in unprecedented detail.

This will help scientists refine our theories for how the Moon formed.

It will also enable them to test new ideas, such as the provocative suggestion made earlier this year that there were probably two moons in the sky above Earth billions of years ago.

Lead scientist Dr Maria Zuber is certainly hoping for some dramatic discoveries.

“Grail is a journey to the centre of the Moon and it will use exceedingly precise measurements of gravity to reveal what the inside of the Moon is like,” the Massachusetts Institute of Technology (MIT) researcher said.

“This information will be combined with the plethora of remarkable observations of the Moon that have been taken by other satellites before, and together they will enable us to reconstruct the Moon's early evolution.”

The 300kg Grail spacecraft were launched from Cape Canaveral, Florida, last September, and took a long spiral out to their destination.

More at: <http://www.bbc.co.uk/news/science-environment-16353839>

### Rare galaxy at dawn of time

Astronomers using NASA's Spitzer and Hubble space telescopes have discovered that one of the most distant galaxies known is churning out stars at a shockingly high rate. The blob-shaped galaxy, called GN-108036, is the brightest galaxy found to date at such great distances.

The galaxy, which was discovered and confirmed using ground-based telescopes, is 12.9 billion light-years away. Data from Spitzer and Hubble were used to measure the galaxy's high star production rate, equivalent to about 100 Suns per year. For reference, our Milky Way Galaxy is about five times larger and 100 times more massive than GN-108036, but makes roughly 30 times fewer stars per year.

“The discovery is surprising because previous surveys had not found galaxies this bright so early in the history of the universe,” said Mark Dickinson from the National Optical Astronomy Observatory in Tucson, Arizona. “Perhaps those surveys were just too small to find galaxies like GN-108036. It may be a special, rare object that we just happened to catch during an extreme burst of star formation.”

More at: <http://goo.gl/WgPqC>

### Observatory

For your own safety, when visiting the VAS observatory, please bring a torch. Also, please make sure you close and lock the car park gate if you are the last to leave - if you need the combination to the lock, please contact a member of the committee.

### Articles Needed

New Zenith welcomes letters, articles or pictures related to all aspects of astronomy. Contributions to the Editor at the email or postal address on the front page.

*“In these days, a man who says a thing cannot be done is quite apt to be interrupted by some idiot doing it.”*

**Elbert Green  
Hubbard**

### Quotations

*“The production of useful work is strictly limited by the laws of thermodynamics. The production of useless work seems to be unlimited.”*

**Donald E. Simane**

*“Most institutions demand unqualified faith; but the institution of science makes skepticism a virtue.”*

**Robert K. Merton**