

## Happy New Year!

Well, here we are again, flying at high speed into another year! I trust everyone had a good holiday and is ready for a busy 2018.

- Things have kicked off well with a good few observatory bookings from the Scout and Guide groups on the Island (*see page 2 for details*).
- There are plans to update the decor and the computer/display facilities at the observatory. This needs funding so a grant application is being prepared. The plan is to remove the existing large notice board and replace it with a more interactive display comprising 4 or 5 large monitors.
- Dark Skies work is ongoing and the recent announcements by the IW Council have inspired more meetings and discussions.

As usual, we still need more volunteers to get involved with these and other projects.

If you can spare a few hours each month then please make yourself known to any Committee Member.

## Dark Skies I

If you have examples of good or bad exterior lighting on the Island please let me know.

The best sites will be checked and details may be published, the worst will be contacted with a view to helping them improve.

## Dark Skies II

I would like to start collecting data on the LED streetlights across the Island. I am particularly interested in those with some elements not working. For example, near me in Bembridge, almost 50% of lights have more than one LED failed, some have as many as 6 or 7. This patchy failure seems to indicate a batch problem but I could do with some more data. Please do your best to identify the faulty lamps location accurately before reporting them.

*Brian Curd*  
*Editor New Zenith*

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

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

**The Editor, New Zenith**  
**Carpenter's Cottage**  
**Dennett Road**  
**Bembridge**  
**Isle of Wight PO35 5XF**

Tel: **01983 872875** or email: [editor@wightastronomy.org](mailto:editor@wightastronomy.org)

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

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

**Registered Charity No 1046091**

## Observatory Diary

Monday, 19.30hrs	Members Only and by arrangement Telescope and night sky training. Please contact Martyn Weaver 07855 116490
Thursday	Members (19.30hrs) and Public (20.00hrs). Informal meeting and observing

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

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**PLEASE NOTE:**

Monthly meetings are now held at the Newchurch Pavilion next to the Observatory

**2018 Monthly Meetings**

Date	Subject	Speaker
Please check <a href="http://wightastronomy.org/meetings/">wightastronomy.org/meetings/</a> for the latest information		
26 Jan		
23 Feb	Astronomical Observations on the Isle of Wight	Paul Bingham
23 Mar		
27 Apr	An Overview of the Development of the Universe to date	John Currigan
25 May	The Rise and Fall of the Herstmonceux Observatory	Keith Brakenborough
22 Jun	TBA	Alan Chapman
27 Jul		
24 Aug	<b>AGM</b> The European Extremely Large Telescope	Dr Aprajita Verma
28 Sep		
26 Oct		
23 Nov		

**Observatory Visits Booked**

29th Jan	Niton Brownies 18.00
5th Feb	Brighstone and Shorwell Brownies 18.00
26th Feb	Newchurch Scouts 17.30
28th Feb	Ryde Beaver Scouts 18.00
7th Mar	6th Newport Scouts 19.00
<b>Please phone me for the current situation (number on the front page)</b>	
It would be appreciated if members could avoid using the observatory at these times.	

**VAS Contacts 2017/18**

<b>President</b>	Barry Bates president@wightastronomy.org
<b>Chairman</b>	Bryn Davis chairman@wightastronomy.org
<b>Secretary</b>	Richard Flux secretary@wightastronomy.org
<b>Treasurer</b>	Simon Plumley treasurer@wightastronomy.org
<b>Observatory Director</b>	Brian Curd director@wightastronomy.org
<b>Programme Organisers</b>	Elaine Spear progorg@wightastronomy.org
<b>Astro Photography</b>	Simon Plumley ap@wightastronomy.org
<b>NZ Editor</b>	Brian Curd editor@wightastronomy.org
<b>Membership Secretary</b>	Norman Osborn members@wightastronomy.org
<b>NZ Distribution</b>	Graham Osborne
<b>Others</b>	Mark Williams, Nigel Lee & Stewart Chambers

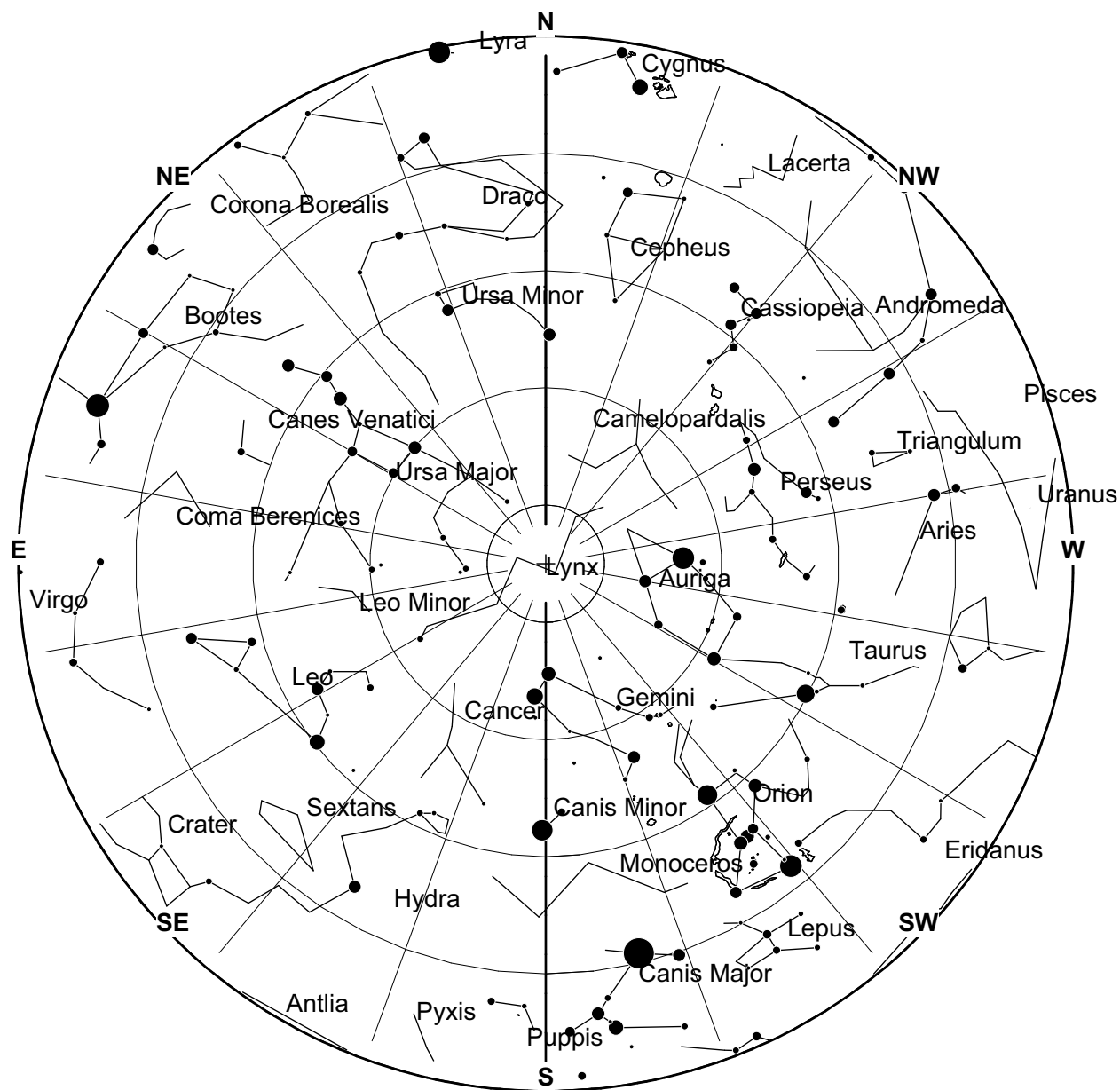
**Important**

Members using the observatory **MUST** enter a line or two in the Observatory Log Book.

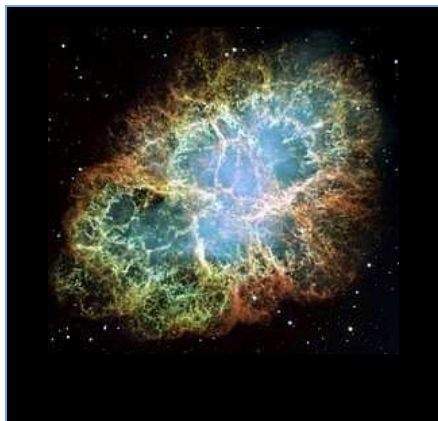
On several occasions, lights, heaters and the Meade LX200 have been left on!

When leaving, please ensure all is secure and all lights, heaters and telescopes are **TURNT OFF**.

## February 2018 Sky Map



*View from Newchurch Isle of Wight UK - 2200hrs - 15 February 2018*







The **Crab Nebula** (M1, NGC 1952, Taurus A) is a supernova remnant in the constellation of Taurus. The name is due to William Parsons, 3rd Earl of Rosse, who observed the object in 1840 using a 36" telescope and produced a drawing that looked somewhat like a crab. Corresponding to a bright supernova recorded by Chinese astronomers in 1054, the nebula was observed later by English astronomer John Bevis in 1731. The nebula was the first astronomical object identified with a historical supernova explosion.

At an apparent magnitude of 8.4, it can be seen using binoculars under favourable conditions. The nebula lies in the Perseus Arm of the Milky Way galaxy, at a distance of about 6,500 ly from Earth. It has a diameter of 11 ly) corresponding to an apparent diameter of some 7 arcminutes, and is expanding at a rate of about 1,500 kilometres per second (930 mi/s), or 0.5% of the speed of light.

*This article is licensed under the [GNU Free Documentation License](https://www.gnu.org/licenses/fdl.html).  
It uses material from the Wikipedia article "".*

## February 2018 Night Sky

### Moon Phases

New	First Qtr	Full	Last Qtr
			
Feb 15th	Feb 23rd	Jan 31	Feb 7th

### Planets

#### Mercury

The last few days of February mark the start of an evening apparition of Mercury that peaks in the first week of March with a close conjunction with Venus. By the 28th Mercury will be about the width of two fingers on an outstretched arm below Venus.

#### Venus

Venus is just beginning to re-appear in the evening sky. Look for it during the last week or so of the month low down in the south west. It sets about an hour after the Sun, so the sky will still be relatively bright, but Venus should still shine through.

#### Mars

Look for Mars low in the south east before sunrise, it is close to the bright red giant star Antares, the opposite of Mars. They are both at about the same brightness at the moment so, if you are able to distinguish colours in the stars see how similar they are to each other. Mars will slowly move to the east until this summer's opposition when it will race across the sky to languish in the southwest.

#### Jupiter

For the next few years Jupiter is not well placed for observation in our skies, it can be found in the early morning low in the south amongst the stars of Libra. Jupiter is very bright and is the brightest object in this part of the sky so is unmistakable. As the sky brightens it can be found almost due south.

#### Saturn

Saturn is not well placed for observation this month; it is still quite close to the south-eastern horizon as dawn starts to break.

#### Uranus

Uranus can be found amongst the stars of Pisces. It is dropping down in the southwest and is not particularly well placed for observation, but is still bright enough to be easily seen in binoculars. Use a planetarium program to pinpoint it at the time you want to observe.

### Neptune

This month sees Neptune too close to the Sun for observation. It will be in conjunction in early March, and will not be easily observed until early autumn

### Deep Sky

#### **M1 Crab Nebula, Supernova Remnant** **RA 5h 35m Dec 22° 1' mag 8.4**

It must be remembered that Charles Messier's catalogue is a list of objects that could be mistaken for comets, not a list of must see objects in the night sky. Many of them can be a disappointment to the casual observer. The first entry in the catalogue the Crab Nebula is one of these, it could easily be taken for a tailless comet. In a small telescope it appears as an oval smudge with no detail, larger instruments do however show some mottling. The remains of the star which exploded in 1054 and was recorded by the Chinese is a 16<sup>th</sup> magnitude neutron star in the heart of the nebula spinning at 30 times per second. Despite its visual appearance this object is one of the most studied in the night sky, it is a nearby natural particle accelerator that dwarfs anything we can create here on Earth.

#### **M41 Open Cluster** **RA 6h 46m Dec -20° 46' mag 4.5**

Under a clear dark sky this cluster can be seen with the naked eye as a bright spot towards the edge of the winter milky way about 4 degrees beneath Sirius. A small telescope will show it as a large if somewhat sparsely populated cluster.

#### **M48 Open Cluster** **RA 8h 14m Dec -5° 49' mag 5.5**

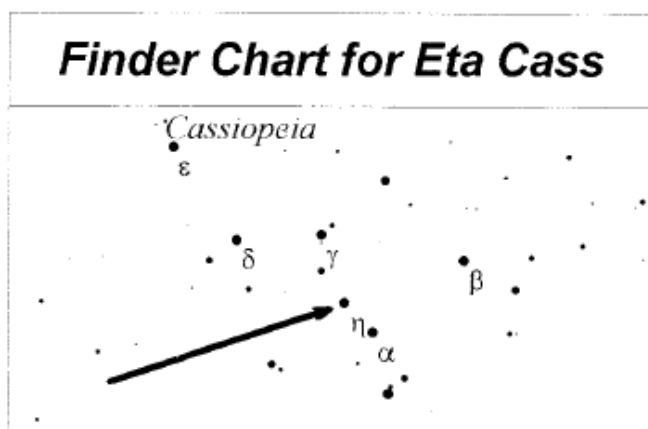
M48 is one of the 'lost' Messier objects, at the original coordinates there is no object to be found. It is believed that the great comet hunter made an error in either his records or calculations and that this is the object he actually observed. Under dark skies it can be seen with the naked eye and several stars can be resolved even on binoculars. A telescope shows what has been variously described as an arrowhead or boomerang shaped collection of stars.

*Peter Burgess*

## My 100 Best Night Sky Sights

### Double Star

RA 00h 49m 06s Dec +57° 49"



Eta Cassiopeiae or Acamar is in reality a multiple star system with at least eight components but six of these are so dim or distant from the brightest two (three to six arc minutes away) that visually they're either unseen or don't appear related. However the main pair, nicely separated by 12 seconds ("), also display good contrasts of both magnitude and colour. The primary is bright (mag 3.4) whitish-yellow. Its companion, a much dimmer mag 7.5, appears to me to be dull purple although it's a G type star and so should be yellow.

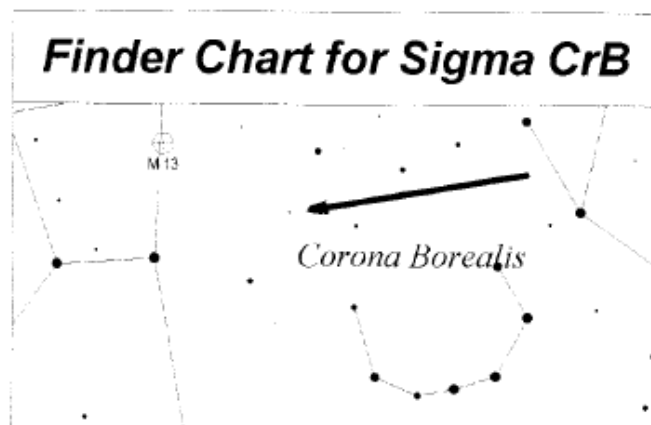
The pair look nice through any telescope at any power though I find the colours most pronounced at 100x. At 180x the separation is greater and other members of the group put in an appearance making the overall field most pleasing. Circumpolar from here, Eta Cas can be observed almost any time the year but most readily from August until February. Tracing the outline of the familiar 'W' of Cassiopeia, Eta is the third bright star from the right (or from the left if you prefer to view the asterism as an 'M').

### Multiple Star

RA 16h 14m 42s Dec +33' 52"

Sigma Coronae Borealis is a quadruple system one of whose members, like Eta Cas, is too faint to be appreciated. In any telescope however the remaining trio form a very acute angled isosceles triangle with the brightest pair, very blue mag 5.6 and 6.6 stars, at the base only 6" apart and the third mag 10.6 companion a long 71" away. With this group a low power, not more than 100x, keeps the main pair close together and, whilst diminishing the size of the triangle, accentuates its slenderness and contrasts the geometrical shape with the random scattering of other faint stars in the larger field of view - a nice diversion during May to July from some of the more frequently observed objects in the vicinity. Sigma CrB lies

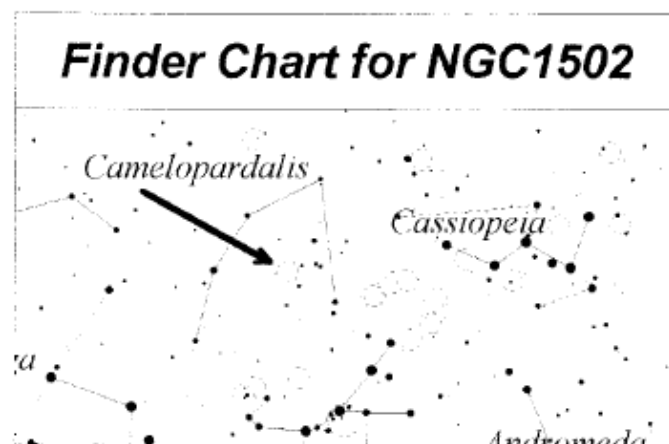
NE of the 'crown', too close for its own good to the main attraction - the great globular cluster M13 in neighbouring Hercules.



Perhaps anyone having a peep at these two systems would let me know if they also see the same colours - the Sigma CrB pair are F and G type stars and again should appear yellow. Identifying colour in faint objects can sometimes be difficult but there should be no problem with stars of these magnitudes.

### Galactic Cluster

RA 04h 07m 02s Dec +62' 20"



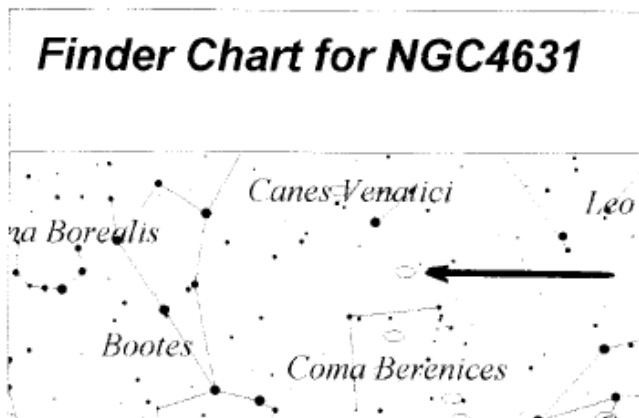
NGC1502 in Camelopardalis is a striking, compact cluster of 20 or so stars in a 'flat arrow' formation and includes three doubles, one of which at dead centre blazes forth much brighter than the others. This is Struve 485 which consists of twin mag 7 components. Several other stars are bright enough for the cluster as a whole to be easily visible in binoculars and any telescope will provide a fine view.

Despite its small size, only 6' across, it's nevertheless best viewed at modest powers of around 80x to 120x as it lies in an area of sky relatively devoid of other bright stars and low powers give the cluster a condensed, crowded appearance accentuating the contrast with the dark sky. Study this group for a few minutes and you will note not

only a wide range of magnitudes but also several coloured stars - well worth a look any time from autumn to spring - yet another circumpolar object. There are so many open clusters in the general area that the finder chart looks rather crowded but I've included our old friend Cassiopeia so that you'll have no trouble finding NGC 1502.

## Spiral Galaxy

RA 12h 42m 12s Dec +32' 05"



I always find that spiral galaxies seen edge-on present a fascinating sight, they really look suspended in three dimensional space whereas face-on spirals appear relatively two dimensional, as if pasted upon a flat background. NGC4631 in Canes Venatici is one such object, long and lean in a ratio of 10:1. It doesn't appear too bright as edge-on spirals go even though it's a respectable mag 9.7 but it's very extensive - at a magnification of 100x it spreads half way across the field of view - half the width of the Moon.

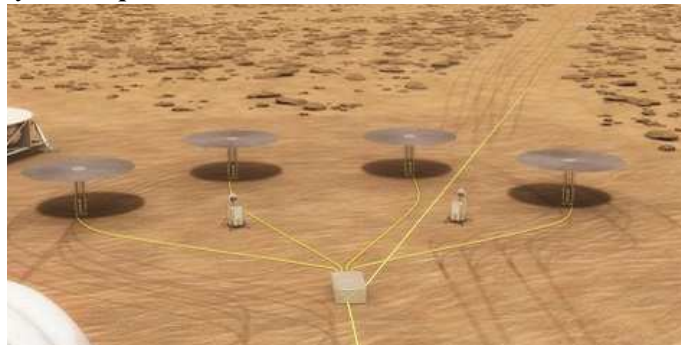
If you place NGC4631 at the NW edge of a low power field and look carefully you should find another edge-on galaxy at SE although, at mag 11 this is much harder to spot and will need at least an 8" telescope. This is not another spiral however but the irregular galaxy NGC4656 also 10 times longer than it is wide but 50% larger than NGC4631. You'll need a clean dark sky in springtime to fully appreciate these two and, as the Hunting Dogs are (is?) such an innocuous constellation I've again widened the field of the finder chart to encompass other, more readily recognisable constellations to simplify location of the galaxy.

*Bert Paice*

*Originally published in NZ - August 1998*

## NASA Unveils New Power Source for Space Exploration

*The Kilopower fission reactor will offer a more efficient and more powerful portable power source for solar-system exploration.*



*An artist's conception shows Kilopower fission-reactor units on the surface of Mars - NASA*

NASA announced a new style of nuclear generator last week, one that may become a permanent fixture on lunar outposts or deep-space missions in the coming decades.

A dependable power source is the name of the game in solar-system exploration. Here among the inner planets, there's ample power to be had in the form of solar radiation. But this power drops off by the inverse square of the distance to the Sun. NASA's Juno mission to Jupiter, for example, was the first spacecraft to venture beyond the asteroid belt using solar energy, and it needed three huge, school-bus-size solar panels to do it.

More typically, venturing into the outer solar system has required nuclear power. Missions have long used Radioisotope Thermoelectric Generators (RTGs) — and the current-model Multi-Mission Radioisotope Thermoelectric Generators (MMRTGs). But these use heat from the decay of plutonium-238, which is in limited supply, and they provide less than 200 watts of electricity. That's enough to power a roving robot but hardly enough for a colony.

With an eye to the future, NASA is developing Kilopower, a small fission reactor that's capable of generating a continuous output of 10 kilowatts of electricity for a minimum of 10 years — more than enough to run several average American households.

“We want a power source that can handle extreme environments,” says Lee Mason (NASA). “Kilopower opens up the full surface of Mars, including the northern latitudes where water may reside.” Portable nuclear power would also be ideal for exploring the permanently shadowed polar craters on the Moon.

More at: <http://www.skyandtelescope.com/>

## Pisces Constellation: Facts About the Fishes

Pisces, named for the Latin plural of fish, occupies 889 square degrees, making it the 14th largest constellation overall. While it is a fairly large constellation, its stars are faint — none are brighter than fourth magnitude — making it challenging to see in the sky with the naked eye.

Pisces is notable for containing the point at which the sun crosses the celestial equator into the Northern Hemisphere around March 20 each year. This point, called the vernal equinox, used to lie in Aries, but has moved into Pisces because of the Earth's wobble on its axis, called precession, according to astronomer and author Ian Ridpath.

### Locating Pisces

Pisces is in the first quadrant of the Northern Hemisphere and covers a large V-shaped region. Its large area, coupled with its dim stars, makes it hard to pick out in the night sky. Northern Hemisphere observers are able to see Pisces most clearly in early autumn.

- Right Ascension: 0.85 hours
- Declination: 11.08 degrees
- Visible: Between latitudes 90 degrees and minus 65 degrees.
- Best viewed: at 9 p.m. between Nov. 6 and Nov. 9.



Pisces is located northeast of Aquarius and to the northwest of the constellation Cetus the Sea-monster. Other constellations bordering Pisces are Triangulum, Andromeda, Pegasus and Aries.

One of the key ways to identify Pisces is to find the Circlet of Pisces — also known as the head of the Western Fish — to the south of the Square of Pegasus. The Eastern Fish can be seen leaping upward to the east of the Square of Pegasus.

## Notable stars and objects

Eta Piscium, also known as Alpherq or Kullat Nunu, is Pisces' brightest star. It is a bright giant star (G class) that is 294 light-years from Earth and has a luminosity that is 316 times that of the sun. The constellation's second brightest star is a yellow giant about 130 light-years from Earth known as Gamma Piscium.

Alpha Piscium is the third brightest star in Pisces and is made up of a pair of white dwarf stars in close proximity. It is also called Alrescha ("the cord") as it illuminates the spot where it appears that the tails of the two fish are tied together.

Also known as Fum al Samakah, Arabic for "mouth of the fish," Beta Piscium has a magnitude of 4.53 and is about 492 light-years from Earth.

Pisces also boasts Van Maanen's Star, named for Adrian van Maanen, the Dutch astronomer who discovered it in 1917. It is the 31st closest star system and the nearest single white dwarf to the sun, at just 14.1 light-years away.

Pisces also contains a Messier object. Messier 74 is a spiral galaxy located between the stars alpha Arietis and eta Piscium.

More at: <https://www.space.com/>

### EasyFundRaising for VAS?

Did you know that whenever you buy anything online - from your weekly shop to your annual holiday - you could be collecting free donations for vectis astronomical society?

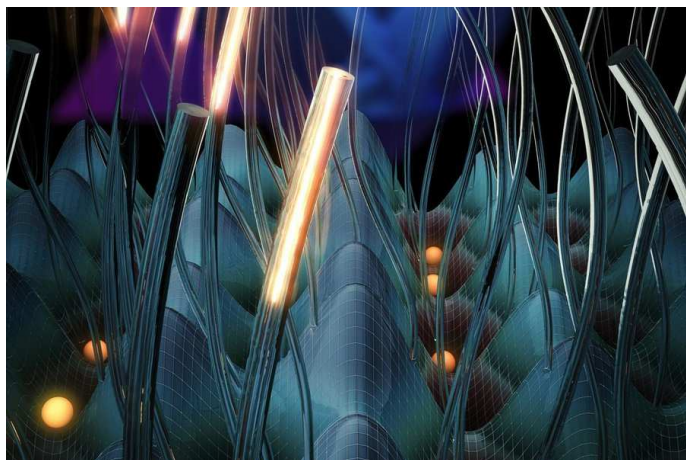
There are over 3,000 shops and sites on board ready to make a donation, including Amazon, John Lewis, Aviva, thetrainline and Sainsbury's - and it doesn't cost you a penny extra!

#### It's as easy as 1, 2, 3...

1. Head to <https://www.easyfundraising.org.uk/causes/vectisastromicalsociety/> and join for free.
2. Every time you shop online, go to easyfundraising first to find the site you want and start shopping.
3. After you've checked out, that retailer will make a donation to VAS at no cost to you!

**There are no catches or hidden charges and VAS will be really grateful for your donations.**

## Hints of the 4th Dimension Detected by Physicists



*Two different experiments show hints of a 4th spatial dimension. Credit: Zilberberg Group / ETH Zürich*

Physicists have understood at least theoretically, that there may be higher dimensions, besides our normal three. The first clue came in 1905 when Einstein developed his theory of special relativity. Of course, by dimensions we're talking about length, width, and height. Generally speaking, when we talk about a fourth dimension, it's considered space-time. But here, physicists mean a spatial dimension beyond the normal three, not a parallel universe, as such dimensions are mistaken for in popular sci-fi shows.

Even if there are other dimensions somewhere out there in our universe or in others, should we travel to a place which includes them, scientists aren't so sure we could even experience them. Our brains may be incapable. Mathematically, we can describe the 4th dimension but we may never experience it in the physical realm. Even so, that hasn't stopped us from looking for evidence of higher dimensions. One model which helps us conceive of it easier and understand it better is a tesseract or hypercube. This is a cube within a cube. Though a helpful metaphor, it doesn't actually exist in the real world. So how might scientists actually detect the 4th dimension? Two separate research teams, one in the US and one in Europe have completed dual experiments, to do just that.

Both of these were 2D experiments which hinted at a 4D world, utilizing a phenomenon known as the quantum Hall effect. The Hall Effect is when you have an electrically conductive material, say a sheet of metal or a wire, which you pass current through. The electrons move in one direction. Place a magnetic field perpendicular to the material and instead of electrons get diverted to the left or right, by what's called the Lorentz force.

The result of the Hall effect is that electrons get stuck within a 2D system. They can then only move in two

directions. The quantum Hall effect occurs at the quantum level, either when the material is at very low temperatures, or is subject to a very strong magnetic field. Here, an additional thing happens. The voltage doesn't increase normally but instead, jumps up in steps. By restricting electrons with the quantum Hall effect, you can also measure them.

Follow the maths and you'll realize that the quantum Hall effect is also detectable within a 4D system. Professor Mikael Rechtsman of Penn State University was part of the American team. He told Gizmodo, "Physically, we don't have a 4D spatial system, but we can access 4D quantum Hall physics using this lower-dimensional system because the higher-dimensional system is coded in the complexity of the structure."

We ourselves as 3D objects cast a 2D shadow. A 4D object should then cast a 3D shadow. We can learn something about a 3D object by studying its shadow. So it stands to reason that we could also gain knowledge about a 4D object from its 3D shadow. Both teams in these experiments did something of that kind. They used lasers to catch a glimpse of the 4th dimension. The results of each experiment were published in two reports, both in the journal *Nature*.

In the European experiment, scientists took the element rubidium and cooled it down to absolute zero. Then, they trapped atoms there within a lattice of lasers, creating what researchers describe as, "an egg-carton-like crystal of light." Next, they introduced more lasers to excite the atoms, creating what's known as a quantum "charge pump." Though atoms themselves don't have a charge, here they simulated the transport of electrical charges. Subtle variations in the atoms' movements coincided with how the quantum Hall effect would play out in the 4th dimension.

In the US experiment, glass was used to control the flow of laser light into the system. This was basically a rectangular glass prism with a series of channels within it, which looked like a number of fiber optic cables stuck inside, running the length of the box and terminating at both ends. Researchers were able to manipulate the light using these channels as wave guides, in order to make it act like an electric field. When light jumped from opposite edges into the corners, researchers knew they had observed the quantum Hall effect, as it would occur in a 4D system.

Scientists at ETH Zürich, a university in Switzerland, conducted the European experiment. Researcher Oded Zilberberg was among them. He said that before these experiments, observing actions occurring in the 4th dimension seemed more like science fiction.

*Much more at: <http://bigthink.com/>*



## Junocam: Juno's Outreach Camera

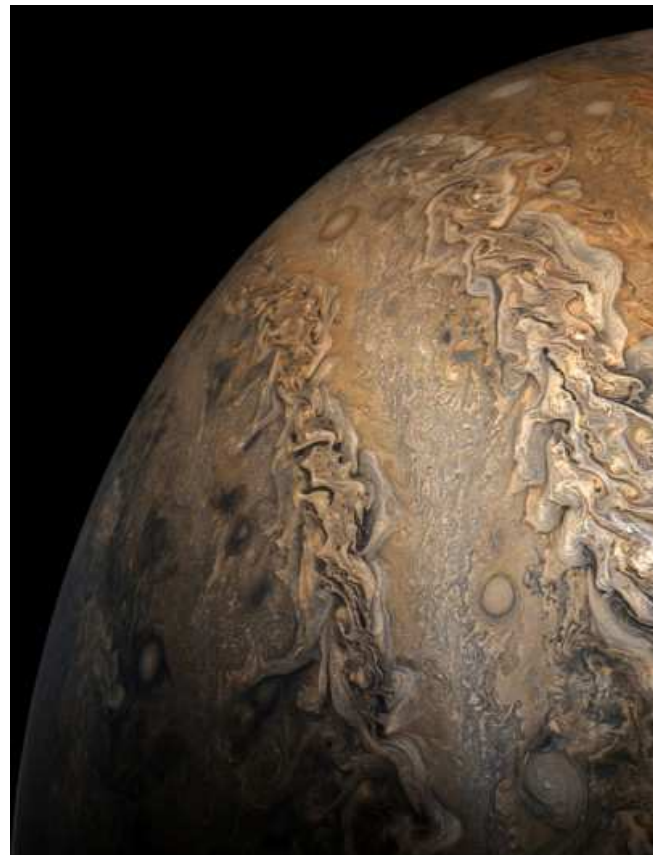
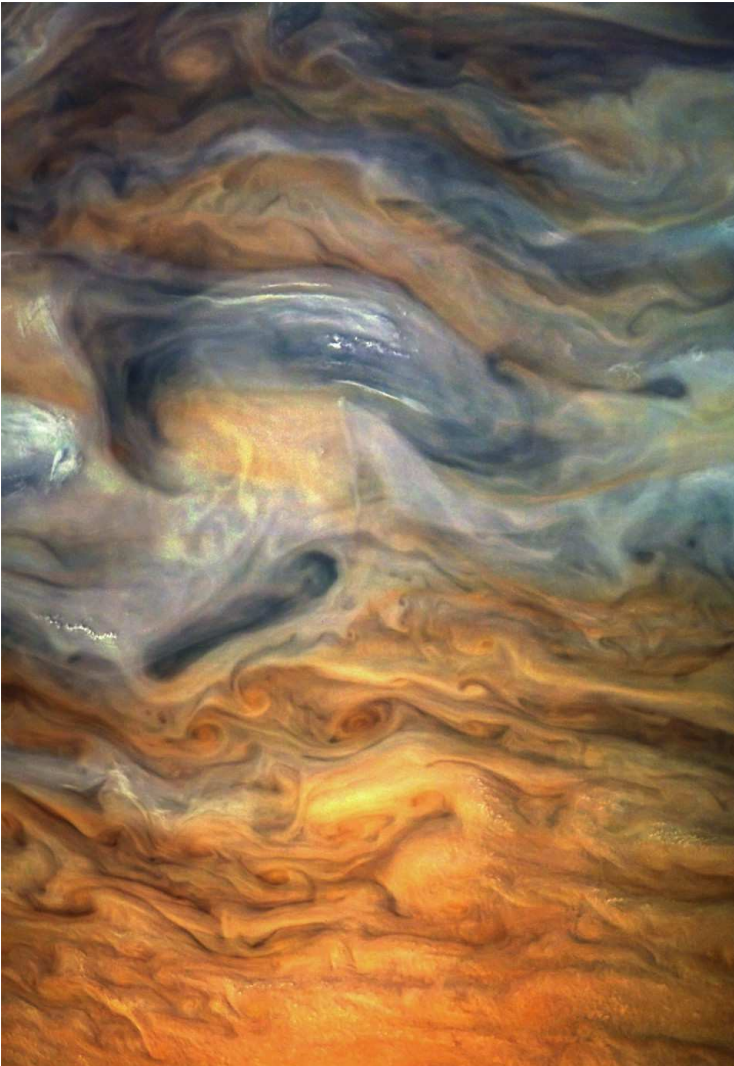
The following introduction is taken from NASA's website: <https://www.missionjuno.swri.edu/junocam>

*“Junocam is a wide-angle camera designed to capture the unique polar perspective of Jupiter offered by Juno’s polar orbit. Junocam’s four-color images include the best spatial resolution ever acquired of Jupiter’s cloudtops. Junocam will look for convective clouds and lightning in thunderstorms and derive the heights of the clouds. Junocam will support Juno’s radiometer experiment by identifying any unusual atmospheric conditions such as hotspots. Junocam is on the spacecraft explicitly to reach out to the public and share the excitement of space exploration. The public is an essential part of our virtual team: amateur astronomers will supply ground-based images for use in planning, the public will weigh in on which images to acquire, and the amateur image processing community will help process the data.”*

I was interested to see what progress was being made by the amateurs and I found some amazing examples. Two citizen scientists, Gerald Eichstädt and Seán Doran, appear to lead the pack at the moment.

There are many of their stunning pictures [online here](#), and here are a few examples of their work:





## NASA GOLD Mission to Image Earth's Interface to Space



*On Jan. 25, 2018, NASA launches Global-scale Observations of the Limb and Disk, or GOLD, a hosted payload aboard SES-14, a commercial communications satellite. GOLD will investigate the dynamic intermingling of space and Earth's uppermost atmosphere — and is the first NASA science mission to fly an instrument as a commercially hosted payload.*

Space is not completely empty: It's teeming with fast-moving charged particles and electric and magnetic fields that guide their motion. At the boundary between Earth's atmosphere and space, the charged particles — called the ionosphere — co-exist with the upper reaches of the neutral atmosphere, called the thermosphere. The two commingle and influence one another constantly. This interplay — and the role terrestrial weather, space weather and Earth's own magnetic field each have in it — is the focus of GOLD's mission.

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***“Space isn't just the home of astronauts and satellites; it affects our day-to-day lives,”***

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“The upper atmosphere is far more variable than previously imagined, but we don't understand the interactions between all the factors involved,” said Richard Eastes, GOLD principal investigator at the Laboratory for Atmospheric and Space Physics at the University of Colorado Boulder. “That's where GOLD comes in: For the first time, the mission gives us the big picture of how different drivers meet and influence each other.”

Historically difficult to observe, this little understood region responds both to terrestrial weather in the lower atmosphere below and the tumult of space weather from above. And it responds rapidly too, undergoing dramatic change in as little as an hour, Eastes said.

Big events in the lower atmosphere, like hurricanes or tsunamis, create waves that can travel all the way up to this interface to space, changing wind patterns and causing disruptions. On the opposite side, from above this region, flurries of energized particles and solar storms carry electric and magnetic fields and have the potential to disrupt Earth's space environment. This combination of factors makes it difficult to predict changes in the ionosphere — and these changes can have a big impact.

“Space isn't just the home of astronauts and satellites; it affects our day-to-day lives,” said Sarah Jones, GOLD mission scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Low-Earth orbiting satellites — including the International Space Station — fly through the ionosphere. But communication signals, like radio waves and signals that make our GPS systems work, also travel through this region, and sudden changes can distort them or even cut them off completely.

GOLD seeks to understand what drives change in this critical region. Resulting data will improve forecasting models of the space weather events that can impact life on Earth, as well as satellites and astronauts in space. GOLD is the first mission that can provide us with observations fast enough to monitor the details of regular, hour-by-hour changes in space weather — not just its overarching climate.

“The first meteorological satellites revolutionized our understanding of — and ability to predict — terrestrial weather,” said Elsayed Talaat, heliophysics chief scientist at NASA Headquarters in Washington. “We anticipate GOLD will give us new, similar insight into the dynamics of the upper atmosphere and our planet's space environment.”

Roughly the size of a mini fridge, the 80-pound GOLD instrument is an imaging spectrograph, an instrument that breaks light down into its component wavelengths and measures their intensities. Specifically, it measures far ultraviolet light, creating full-disk ultraviolet images of Earth from its geostationary vantage point above the Western Hemisphere.

“Just like an infrared camera allows you to see how temperatures change with different colors, GOLD images ultraviolet light to provide a map of the Earth that reveals how temperature and atmospheric composition change by location,” Eastes said.

*More at: <https://www.nasa.gov/>*

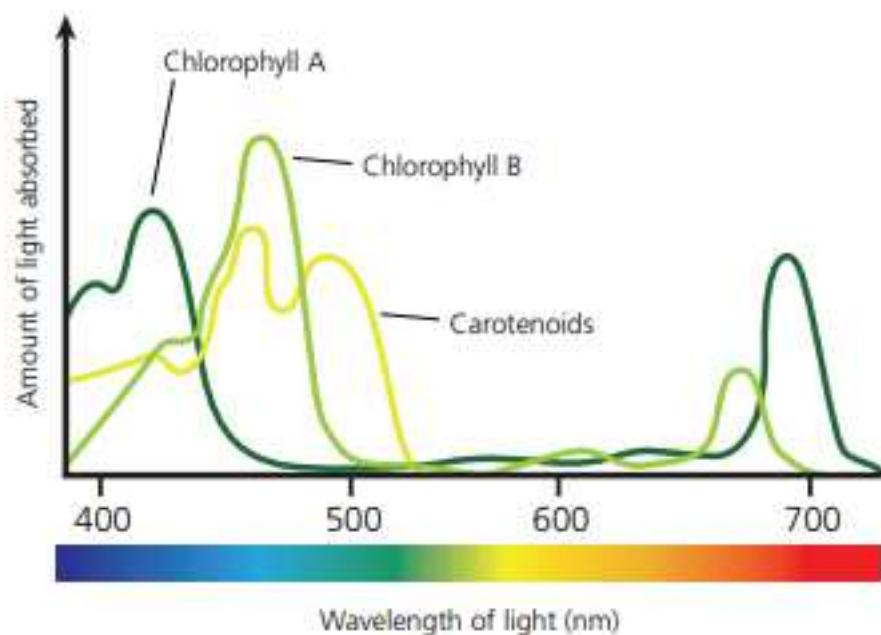
## THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

### Is Vegetation Causing Skyglow?

VAS sometimes struggles to get the problem of light pollution taken seriously. We are not helped by statements on the internet, and sometimes in print, which assert that GREEN vegetation reflects the BLUE part of the light from downward facing LED streetlights. I have no idea how this myth started but I hope we can stop it!

The diagram below clearly shows the actual absorption curves across the spectrum and illustrates that chlorophyll (both types) absorbs light in the blue and red regions.



Here is an extract from the relevant part of Wikipedia:

**Chlorophylls absorb light most strongly in the blue portion of the electromagnetic spectrum as well as the red portion.** Conversely, it is a poor absorber of green and near-green portions of the spectrum, which it reflects, producing the green color of chlorophyll-containing tissues.

**Carotenoids absorb wavelengths ranging from 400-550 nanometers (violet to green light).**

*Not much more we can say really.....*

### Interesting Links

#### NASA

James Webb Telescope: <http://webbtelescope.org/>

Hubble Space Telescope: <http://hubblesite.org/>

NASA Kid's Club: <https://www.nasa.gov/kidsclub/index.html>

#### News

Technology.org: <https://www.technology.org/category/space/astronomy/>

### Observatory

When visiting the VAS observatory, for your own safety, 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

NZ needs letters, articles, reviews or pictures related to astronomy. Send to the Editor, contact details on the front page.

*"There is still no cure for the common birthday"*  
**John Glenn**

*"All what we think and know is an illusion. Nothing exists. Everything is an opinion"*  
**Ash Vaz**

*"Everything is drawn inexorably toward the future"*  
**Kip S. Thorne**

*"We have at any rate one advantage over Time and Space. We think them whereas it is extremely doubtful whether they think us!"*  
**John Cowper Powys**