

## Society News

Sorry but your NZ is a little smaller than usual this month - again, work (and some weird computer problems) got in the way. Thankfully at least the computer problems have now been fixed. Before I explain what happened, I must stress that all this is risky if you don't have a proper backup - I do, so felt safe apart from the possibility of having to restore everything.

It seems that a recent, Windows 10, operating system update didn't like some device drivers on my machine. The problem caused the machine to go into a trance after about 2 hrs of working perfectly well. The machine became completely unresponsive and had to be restarted with a system disc (well that's what the PC suggested). Needless to say the system disc bit never worked. Virus and Malware checks found absolutely nothing and the machine's log files contained nothing useful. Fancy rebuild commands (sfc /scannow) changed nothing and neither did disc check/repair utilities.

In the end I tried a utility called *Driver Booster* which took ages to look at the PC and then said it needed to update some drivers, I set things running and it installed 11 updates. When that had completed, low and behold things worked again. **Unfortunately though, my anti-malware software reported Driver Booster as a PUP (Potentially Unwanted Program) so I deleted it. Bottom line, the utility that solved the stupid Window 10 problem was itself a threat to my PC.**

My time using Windows is coming to an end - in fact I only use it to produce NZ as the FrameMaker software I prefer is no longer available on Apple products. Over the next months I hope to migrate away from Windows completely to produce NZ - at the moment the cross-platform *LibreOffice* (free and open source) is looking favourite but there is a lot of work needed to get everything transferred and me up to speed!.

**Wish me luck!**

*Brian Curd*  
*Observatory Director and NZ Editor*

## 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.

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## 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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## 2019 Monthly Meetings

Date	Subject	Speaker
Check <a href="http://www.wightastronomy.org/meetings/">http://www.wightastronomy.org/meetings/</a> for the latest information		
22 Feb	Imaging the Sun	John Slinn
22 Mar	Isle of Wight Dark Sky Park Update	AONB, CPRE & VAS
26 Apr	Can we Live on Mars?	Greg Smye-Rumsby
24 May	The Rise and fall of the Herstmonceux Observatory	Keith Brackenborough
28 June	TBA	TBA
26 July	"Isle of Wight Big Bang" Young Astronomers' Event	
23 Aug	AGM and Social Evening	
27 Sept	A transportable/deployable radio telescope for hydrogen line observation	Alan and Martin Thompson
25 Oct	Dark Skies Event	
22 Nov	TBA	TBA

## Observatory Visits Booked

No bookings so far

***Please phone me for the current situation (number on the front page)***

It would be appreciated if members could avoid using the observatory at these times.

***The Committee Needs A Programme Organiser***  
***If you could help organise the VAS programme of monthly meetings, we'd love to hear from you***

## VAS Contacts 2018/19

<b>President</b>	Barry Bates president@wightastronomy.org
<b>Chairman</b>	Bryn Davis chairman@wightastronomy.org
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<b>NZ Distribution</b>	Graham Osborne
<b>Others</b>	Mark Williams, Nigel Lee, Stewart Chambers, Elaine Spear

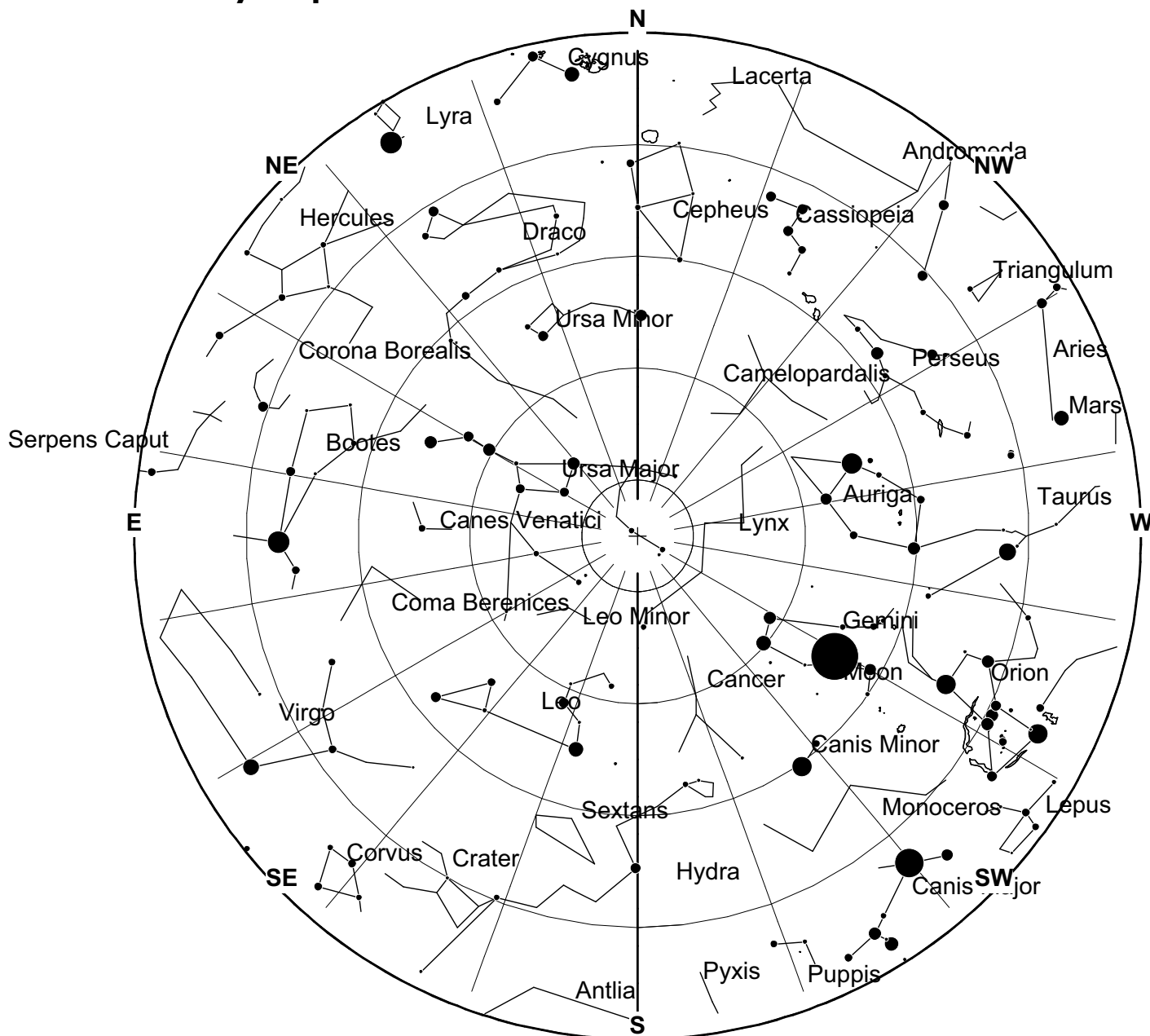
## Important

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

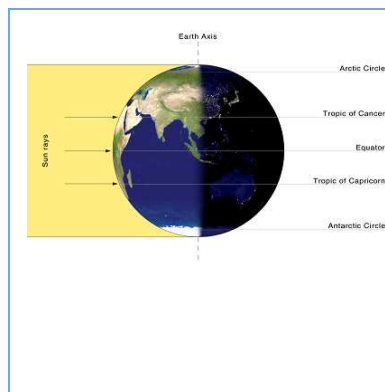
On several occasions, lights, heaters and the Meade LX200 have been left on!

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

# March 2019 Sky Map



View from Newchurch Isle of Wight UK - 2200hrs - 15 March 2019



**An equinox** is commonly regarded as the instant of time when the plane (extended indefinitely in all directions) of Earth's equator passes through the center of the Sun. This occurs twice each year: around 20 March and 23 September. In other words, it is the moment at which the center of the visible Sun is directly above the Equator. In the northern hemisphere, the equinox in March is called the Vernal or Spring Equinox; the September equinox is called the Autumnal or Fall Equinox. However, because the Moon (and to a lesser extent the other planets) cause the motion of the Earth to vary from a perfect ellipse, the equinox is now officially defined by the Sun's more regular ecliptic longitude rather than by its declination. The instants of the equinoxes are currently defined to be when the longitude of the Sun is 0° and 180°. There are tiny (up to 1¼ arcsecond) variations in the Sun's latitude, which means the Sun's center is rarely precisely over the equator under the official definition. The two understandings of the equinox can lead to discrepancies of up to 69 seconds.





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

## March 2019 Night Sky

### Vernal Equinox

The vernal equinox, the point at which the Sun crosses the equator on its way north occurs on March 20th at 22:00UT. At this time day and night are of equal length.

### Moon Phases

New	First Qtr	Full	Last Qtr
			
6th	14th	21st	28th

### Planets

#### Mercury

For the first week of the month Mercury can be seen low down in the western sky after sunset before it fades into the twilight as it passes behind the Sun.

#### Venus

Venus rises just before the Sun and is now more difficult to observe, being so bright it can be seen before sunrise, but is low down on not well placed.

#### Mars

Mars is still conspicuous in the southwestern sky after sunset. As the sky brightens with the coming of spring and the shorter nights, Mars starts to slowly move towards the evening twilight and will become a more challenging object.

#### Jupiter

From around 03:00 Jupiter can be observed low in the early morning sky until it fades into the brightening southern sky at dawn. It is the brightest object in this part of the sky making it easily identifiable.

#### Saturn

It is rather too early in this year's apparition for serious observation of Saturn. It is still quite close to the Sun and the sky is quite bright by the time it is clear enough of the horizon for observation.

#### Uranus & Neptune

Both outer planets this month are too close to the Sun for observation

## Deep Sky



**M108 Galaxy**  
RA 11h 12m  
Dec 55° 38' mag 11.0

This edge on galaxy is quite easy to find being just below the bottom of the bowl of the Big Dipper at about 1.5° from Merak, the pointer farthest from the pole star. Like M82 it shows signs of disturbance with a similar mottling of new star formation along its length.



**M106 NGC4258 Galaxy**  
RA 12h 19m  
Dec 47° 15' mag 9.5

A spiral galaxy in Canes Venatici about 14 million light years away, and is an easy object for small instruments. A larger instrument used under dark skies will show its two spiral arms.



**NGC2392 The Eskimo Nebula**  
RA 7h 29m  
Dec 20° 54' mag 9.9

First discovered over 200 years ago by William Herschell and made into a spectacular image by the Hubble space telescope, a large telescope and dark skies are needed to see any detail in this planetary nebula.

*Peter Burgess*

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***Financial people should not use the word “astronomical” to describe huge amounts of money, but astrophysicists and astronomers should the term “financial” to describe great distances.***

***Richard Feynman***

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## My 100 Best Night Sky Sights

### Correction

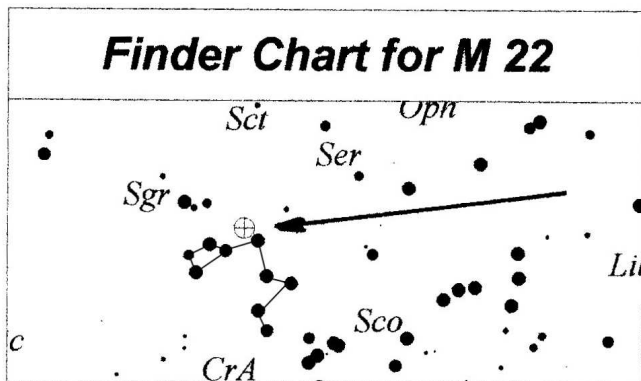
*Just noticed that in all the coordinates up to now the declinations have been misstated as minutes & seconds! Mea culpa.*

*A bit surprised it's not been picked up by anyone!*

*No corrections required this month but lots of coordinates, now correctly stated as degrees & minutes.*

### Globular Cluster

**Coordinates: RA 18h 36m 24s, Dec -23° 54'**



Some 15 editions and over 60 celestial objects into this series of my 100 best night sky sights we're approaching the point where I shall be hard pressed to find sufficient superlatives. The reason for this will be immediately obvious if from July to early September you train your telescope low in the south to the constellation of Sagittarius. Just 2¼° NE of Lambda (k) Sagittarii, the 'Teapot Lid', is the magnificent Globular Cluster M22. At mag 5.1 it can be glimpsed without optical aid on clean nights and is obvious in binoculars. Even very small telescopes will begin to resolve stars around the periphery and a 6" at 150x will display a large, bright globe comprising a myriad of tiny pinpoints of light. Higher powers with larger apertures provide breathtaking views. My terse notes following one observation read 'Resolved across the face at all powers with 'big', bright stars. Great at 60x, superb at 100x, fantastic at 250x when it completely fills the field'. I said I'd have problems with superlatives.

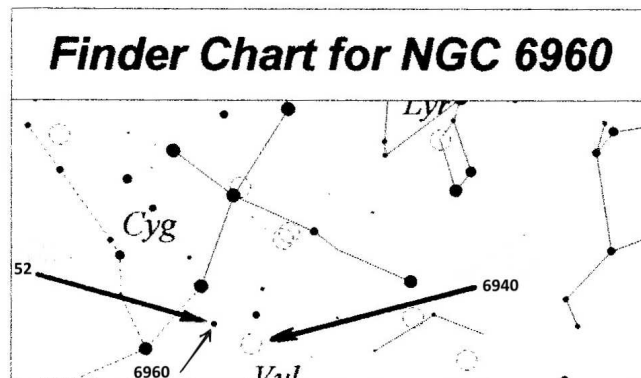
Definitely one not to be missed and well worth staying up late if you want to observe it in July. Were it not for some partially obscuring dust clouds reducing its brilliance by a full two magnitudes it would rival the great southern cluster, Omega Centauri.

## Supernova Remnant

**Coordinates From:**

**RA 20h 46m, Dec +30° 43' to**

**RA 20h 51m, Dec+32° 09'**



Almost directly overhead at midnight BST in mid August is the lovely constellation of Cygnus, also referred to as the Northern Cross. 3° S of Epsilon, the bright star marking the left arm of the cross, is NGC6960, part of the supernova remnant known as the Cygnus Loop or Cirrus Nebula, the remains of a star which blew itself asunder somewhere between 20000 and 60000 years ago (the 'experts' can't agree).

To see it you really need at least an 8" telescope although good views can be obtained through 15 x 80 binoculars or larger. I have heard it said and seen it written that this is a very difficult object to see - it isn't, at least not on nights of good seeing, you just need to go about it in the right way.

First locate the mag 4.2 star 52 Cygni (see Finder Chart), but don't do so until your eyes have become fully dark-adapted (about 20 minutes or so). At this stage use the widest-angle eyepiece you possess so that this bright star doesn't interfere with your night vision. Next nudge your telescope north until 52 Cyg just moves out of the field and fit a higher power eyepiece to darken the background sky. You should now reap the rewards of your patience with this faint, narrow, wispy filament stretching N/S right across your field of view and beyond. As the notes of my very first sight of NGC6960 state '... it goes on for ever!'. Try moving your telescope further north and south to see just how vast an area it covers. You'll pass 52 Cyg en route but don't worry, now you've found this nebulous filament you won't lose it.

I'll return to this SNR later in the series - for now, just go, look and be mesmerised.

## Galactic Cluster

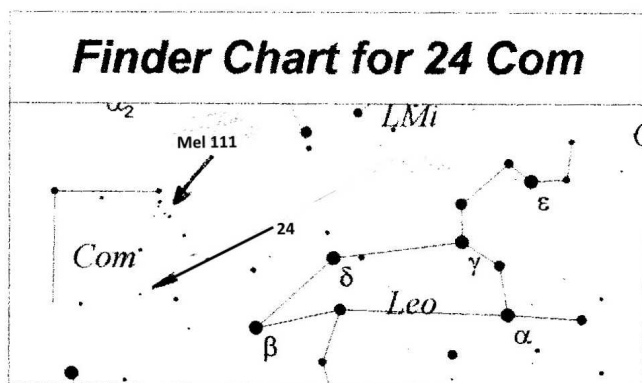
**Coordinates: RA 20h 34m 36s, Dec +28° 18'**

Just across the border into the constellation of Vulpecula lies an open cluster that in my opinion ranks among the top half dozen in our skies. This is NGC6940 and not for the first time I'm surprised that it's ignored by many star atlases, for in any telescope the view is of a sky seemingly saturated with stars well distributed throughout the field. A 6" will reveal dozens and with a 10" the number exceeds 100. A noticeably red star occupies centre stage and, adding to the already fine vista are many doubles. Whatever your telescope use low powers, say 50x to 100x to see this cluster at its very best. It occupies over 30 arc minutes of sky - more than the Moon - and, unlike many other clusters, zooming in on its evenly distributed members with higher powers only serves to push some out of the field and reduce the 'crowd' effect.

To locate it refer to the finder chart for NGC 6960.

## Double Star

**Coordinates: RA 12h 35m 06s, Dec +18° 23'**



The Spring constellation of Coma Berenices is renowned (rightly so) for its share of the Virgo cluster of galaxies which spill over its border, but it contains other delights often overlooked by spiral galaxy enthusiasts. One such gem is the beautiful double star 24 Comae Berenices that displays to viewers through telescopes of any size the most gorgeous contrasting yellow and blue colours. These are bright mag 5 and 6.5 stars separated by 20" of an arc and therefore well seen at any power. Changing the power varies the intensity of colours as well as the separation so try all the eyepieces in your armoury to achieve the view that gives you most pleasure.

## Melotte III

**Coordinates: RA 12h 24m 00s, Dec +25° 50'**

Before you leave the area take up your binoculars and feast your eyes on what some hold is the best feature of the constellation. No, not a galaxy but a star cluster so large it

cannot be contained in the field of any telescope. This is Melotte 111 otherwise known as the Coma Star Cluster and its apparent enormous size - some 20 square degrees of sky - is due to its proximity to us, the third nearest cluster. Of its 80 or so member stars no fewer than nine exceed mag 5.5 and form a distinctive arrowhead shape - a really delightful vision. Indeed, the whole group has an integrated magnitude of 2.9 and is easier to see with the naked eye than almost any other cluster.

*Bert Paice*

*This article was first published in August 1999*

## Opportunity Rover Mission on Mars Comes to End



One of the most successful and enduring feats of interplanetary exploration, NASA's Opportunity rover mission is at an end after almost 15 years exploring the surface of Mars and helping lay the groundwork for NASA's return to the Red Planet.

The Opportunity rover stopped communicating with Earth when a severe Mars-wide dust storm blanketed its location in June 2018. After more than a thousand commands to restore contact, engineers in the Space Flight Operations Facility at NASA's Jet Propulsion Laboratory (JPL) made their last attempt to revive Opportunity Tuesday, to no avail. The solar-powered rover's final communication was received June 10.

"It is because of trailblazing missions such as Opportunity that there will come a day when our brave astronauts walk on the surface of Mars," said NASA Administrator Jim Bridenstine. "And when that day arrives, some portion of that first footprint will be owned by the men and women of Opportunity, and a little rover that defied the odds and did so much in the name of exploration."

Designed to last just 90 Martian days and travel 1,100 yards (1,000 meters), Opportunity vastly surpassed all expectations in its endurance, scientific value and longevity. In addition to exceeding its life expectancy by 60 times, the rover travelled more than 28 miles (45 kilometers) by the time it reached its most appropriate final resting spot on Mars — Perseverance Valley.

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

## Isle of Wight Space Camps - Volunteers needed

A very innovative Island teacher who won, Science Teacher of the Year 2018, is working hard at promoting science and astronomy to all Isle of Wight school children.

She is in contact with many primary schools around the Island, and in the process of organising ‘Space Camps’ in conjunction with the Stephen Hawking Foundation.

She has been sent 5 celestron telescopes from the foundation and plans to run observing sessions in the evenings of all the Space Camps. She needs help to operate the telescopes - *that’s where you come in*. Please consider giving up some of your time to support this endeavour.

The list below shows the Camps organised so far.

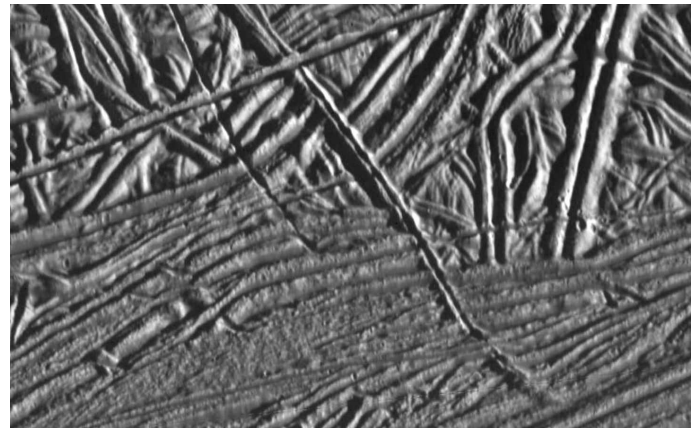
Date	School	Address
Thurs 21st Mar	Nineacres Primary	South View, Newport, Isle of Wight, PO30 1QP
Wed 27th Mar	St Helens Primary	Broomlands Close, St Helens, Ryde, PO33 1XH
Thurs 4th Apr	Gurnard Primary	Baring Road, Cowes, PO31 8DS
Thurs 25th Apr	Greenmount Primary	St Vincent’s Road, Ryde PO33 3PT
Thurs 23rd May	Broadlea Primary	Newport Road, Lake, PO36 9PE
Fri 7th Jun	RydeSchool. (Jnr and Fiveways)	7 Queen’s Road, Ryde, PO33 3BE
Fri 27th Jun	Broadlea Primary	Newport Road, Lake, PO36 9PE
Wed 3rd Jul	All Saints Primary	79 School Green Road, Freshwater, PO40 9AX

Times are to be confirmed, but I’m guessing around 7-9pm, maybe later in the summer months of darker skies. Please let me know which Camps you can attend. I hope to get three members for each camp. Attending as many schools as possible will have a dual affect, as it gets the VAS name spread around, and we can promote our Young Astronomers events we are organising in July.

**Contact me at [elainespearl@gmail.com](mailto:elainespearl@gmail.com)**

*Elaine Spear*

## Watch a Low Flyover of Jupiter’s Moon Europa



*Kevin Gill, a NASA software engineer who deals in data visualization and analysis, created this new, director’s cut of his low flyover movie of Jupiter’s moon Europa.*

Cut from recently processed images transmitted back from the Galileo orbiter launched in 1989, Gill explains, the video “uses high resolution greyscale and low resolution color images taken between 1996 and 1998.”

Both NASA and the European Space Agency have missions in development to collect much higher data about Europa from probes expected to launch in about four or five years. NASA’s Europa Clipper will “investigate whether the icy moon could harbour conditions suitable for life.”

*Video at: <https://www.youtube.com/>*

## Free NASA “Earth” Download

From its origins, NASA has studied our planet in novel ways, using ingenious tools to study physical processes at work—from beneath the crust to the edge of the atmosphere. We look at it in macrocosm and microcosm, from the flow of one mountain stream to the flow of jet streams. Most of all, we look at Earth as a system, examining the cycles and processes—the water cycle, the carbon cycle, ocean circulation, the movement of heat—that interact and influence each other in a complex, dynamic dance across seasons and decades.

For all of the dynamism and detail we can observe from orbit, sometimes it is worth stepping back and simply admiring Earth. It is a beautiful, awe-inspiring place, and it is the only world most of us will ever know.

*Download the book here: <https://www.nasa.gov/>*

## Developing a Flight Strategy to Land Heavier Vehicles on Mars

*The heaviest vehicle to successfully land on Mars is the Curiosity Rover at 1 metric ton, about 2,200 pounds. Sending more ambitious robotic missions to the surface of Mars, and eventually humans, will require landed payload masses in the 5- to 20-ton range. To do that, we need to figure out how to land more mass. That was the goal of a recent study.*

Normally, when a vehicle enters the Mars atmosphere at hypersonic speeds of about Mach 30, it slows down quickly, deploys a parachute to slow down more then uses rocket engines or air bags to finish the landing.

*Artist's illustration of a spacecraft using retropropulsion to steer.*  
Credit: NASA



“Unfortunately, parachute systems do not scale well with increasing vehicle mass. The new idea is to eliminate the parachute and use larger rocket engines for descent,” said Zach Putnam, assistant professor in the Department of Aerospace Engineering at the University of Illinois at Urbana-Champaign.

According to Putnam, when the lander has slowed to about Mach 3, the retropropulsion engines are ignited, fired in the opposite direction to slow the vehicle down for a safe landing. The trouble is, that burns a lot of propellant. Propellant adds to vehicle mass, which can quickly drive up vehicle cost and exceed the current launch capability here on Earth. And every kilogram of propellant is a kilogram that can't be payload: humans, science instruments, cargo, etc.

“When a vehicle is flying hypersonically, before the rocket engines are fired, some lift is generated and we can use that lift for steering,” Putnam said. “If we move the center of gravity so that it's not uniformly packaged, but heavier on one side, it will fly at a different angle.”

Putnam explained that the flow around the vehicle is different on the top and the bottom which creates an imbalance, a pressure differential. Because the lift is in one direction, it can be used to steer the vehicle as it decelerates through the atmosphere.

*More at: <https://www.sciencedaily.com/>*

## US-UK-Australia Funding to Improve Global Gravitational Wave Network

*aLIGO+ project will further improve sensitivity of gravitational wave detectors*

A global network of gravitational wave observatories will be upgraded to almost double its sensitivity, the lead science funding agencies of the United Kingdom and United States announced today.

The \$US30 million Advanced LIGO Plus (ALIGO+) project will improve the two existing Laser Interferometer Gravitational wave Observatories (LIGO) in the United States, and will be included as standard in the new LIGO India facility from the mid-2020s.

The US National Science Foundation is providing \$20.4 million funding for ALIGO+, and UK Research and Innovation (UKRI) £10.7 million (\$US14.1 million), with additional support from the Australian Research Council.

NSF Director France Córdova said: “This award ensures that LIGO, which made the first historic detection of gravitational waves in 2015, will continue to lead in gravitational wave science for the next decade.”

“With improvements to the detectors - which include techniques from quantum mechanics that refine laser light and new mirror coating technology - the twin LIGO observatories will significantly increase the number and strength of their detections. Advanced LIGO Plus will reveal gravity at its strongest and matter at its densest in some of the most extreme environments in the cosmos.”

“These detections may reveal secrets from inside supernovae and teach us about extreme physics from the first seconds after the universe's birth.”

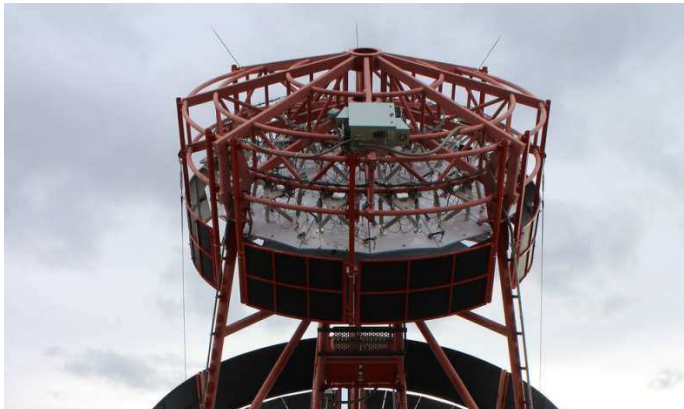
UK Research and Innovation Chief Executive, Professor Sir Mark Walport, said: “In confirming the existence of gravitational waves, the LIGO project generated unique insights into the nature of our universe and fuelled world-wide interest in science. This Nobel-winning project also illustrated the importance of international collaboration in research.”

*More at: <https://www.eurekalert.org/>*

***LIGO - Laser Interferometer Gravitational-Wave Observatory is a large-scale physics experiment and observatory to detect cosmic gravitational waves and to develop gravitational-wave observations as an astronomical tool.***



## CTA Prototype Telescope, the Schwarzschild-Couder Telescope, Achieves First Light



*Credit: Amy Oliver, Fred Lawrence Whipple Observatory, Center for Astrophysics | Harvard & Smithsonian*

Less than a week after its inauguration on 17 January 2019, the prototype Schwarzschild-Couder Telescope (pSCT), a prototype telescope proposed for the Cherenkov Telescope Array (CTA), successfully detected its first Cherenkov light on January 23 at the Fred Lawrence Whipple Observatory in Arizona. A dual-mirrored Medium-Sized Telescope, the SCT is proposed to cover the middle of CTA's energy range (80 GeV – 50 TeV).

The week following the inauguration, the camera was operated for the first time with the mirrors uncovered in a commissioning test run. During the first few minutes of this “first light” run on the evening of January 23, cosmic-ray-induced Cherenkov air shower events were identified in the raw, uncalibrated camera data. The attached video shows 50 nanoseconds of a single event in which the Cherenkov air shower development is recorded by the camera with one nanosecond resolution (time between video frames).

Cherenkov light is the result of a gamma ray or cosmic ray from an astrophysical source interacting with the Earth's atmosphere. The flash of bluish light only lasts a few billionths of a second and is extremely faint. Gamma-ray telescope cameras are sensitive to these faint flashes. The pSCT camera triggers when several neighbouring pixels detect light within a few nanoseconds of one another. The camera has a modular design, with 25 modules each containing 64 pixels. The central module is not yet installed in order to shine a laser beam along the central axis for telescope alignment, and a neighbouring module was disabled during the test run. The pixel amplitudes are raw and uncalibrated, but the early results are a major milestone for the SCT team.

*Read more at: <https://phys.org/>*

## Do you like Earth's Solid Surface and Life-inclined Climate?



Earth's solid surface and moderate climate may be due, in part, to a massive star in the birth environment of the Sun, according to new computer simulations of planet formation.

Without the star's radioactive elements injected into the early solar system, our home planet could be a hostile ocean world covered in global ice sheets.

“The results of our simulations suggest that there are two qualitatively different types of planetary systems,” said Tim Lichtenberg of the National Centre of Competence in Research Planets in Switzerland. “There are those similar to our solar system, whose planets have little water, and those in which primarily ocean worlds are created because no massive star was around when their host system formed.”

Lichtenberg and colleagues, including University of Michigan astronomer Michael Meyer, were initially intrigued by the role the potential presence of a massive star played on the formation of a planet.

Meyer said the simulations help solve some questions, while raising others.

“It is great to know that radioactive elements can help make a wet system drier and to have an explanation as to why planets within the same system would share similar properties,” Meyer said.

“But radioactive heating may not be enough. How can we explain our Earth, which is very dry, indeed, compared to planets formed in our models? Perhaps having Jupiter where it is was also important in keeping most icy bodies out of the inner solar system.”

Researchers say while water covers more than two-thirds of the surface of Earth, in astronomical terms, the inner terrestrial planets of our solar system are very dry - fortunately, because too much of a good thing can do more harm than good.

*More at: <https://phys.org/>*

## THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

### More Interesting Stuff!

#### The Moon Illusion: Why is the Moon so Big Tonight



When the size of the Moon becomes enormous, it can make anyone wonder why the Moon looks so big. This is the “Moon Illusion.”

Who hasn’t turned down a road to be faced with a low, horizon-hugging Moon that seems enormous?

Many people assume that this common effect is caused by our atmosphere magnifying the image or that the tabloid papers were right when they said there would be a SUPER Moon or something similar, but the explanation is far simpler.

When the Moon is high overhead, it is dwarfed by the vast hemisphere of the heavens.

In contrast, when the Moon is low, we see it compared to earthly objects, chimneys, houses or trees, whose size and shape provide scale.

*It really is that simple!*

#### How to see Through it

Here’s how to reduce the Moon from enormous to ordinary!

- Use a paper tube like the ones that hold paper towels.
- Close one eye and look through the tube at the enlarged Moon. It will look normal.
- Now close the eye in the tube and open your other eye. The Moon appears huge again.
- Observe the Moon with the tube when it’s high and again when it’s low in the sky. The Moon will appear to be the same size both times.
- Or, you could turn away from the Moon, bend forward as far as you can and look back at it through your own legs! (take care!)

Now, please tell everyone you know about this as it gets boring explaining it all the time.

#### At The Observatory

For your own safety, please bring a torch.

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.

*“I feel fine. How about you?”*

**Yuri Gagarin**

*“Mars has been flown by, orbited, smacked into, radar examined, and rocketed onto, as well as bounced upon, rolled over, shovelled, drilled into, baked and even blasted.*

*Still to come:*

*Mars being stepped on”*

**Buzz Aldrin**

*“The world is a dangerous place to live; not because of the people who are evil, but because of the people who don’t do anything about it”*

**Albert Einstein**

*“Everybody gets so much information all day long that they lose their common sense”*

**Gertrude Stein**

*“Life begins at the end of your comfort zone”*

**Neale Donald Walsh**