

# Stars Over Surrey

## Astronomy &

## Spaceflight News

29<sup>th</sup> January 2021



# Virgin Orbit - Successful first launch

- Virgin Orbit successfully reached orbit using Launcher One
  - air-launched from under the wing of *Cosmic Girl* at 35,000'
  - formerly a Virgin Atlantic 747
- Payload was 10 small NASA shoe-box sized satellites
  - built by various US Universities.
- Virgin Orbit now joins Rocket Lab in a new wave of commercial small satellite launch companies
- Virgin Orbit's big plus point is that they can launch from anywhere in the world where there's a suitable runway
- In practice they will need a license for such operations from appropriate governments (underway for Spaceport Cornwall)
- Main base is Mojave, California, will also launch from Guam



Credit: LA Daily News

## Misc Spaceflight News

- NASA test fires the core stage of its huge Moon rocket - the Space Launch System
  - its four rocket motors shut down after just one minute instead of the eight minutes planned
  - A hydraulic sensor has been identified as the culprit
  - NASA engineers have collected significant data from the hot-burn and so a second static test might be unnecessary.

## Misc Spaceflight News

- Space X launches another batch of 60 Starlinks
  - 1,015 now in orbit
  - fastest turnaround yet of a Falcon 9, just 38 days
  - 8<sup>th</sup> flight of this particular Falcon 9
    - it first flew when it took the unmanned Crew Dragon to ISS
  - beta operation now both nationally and internationally including UK with speeds between 50-150 MB/sec
    - small satellite dish is nicknamed “DishyMcFlatFace”
    - cost is £439 for kit and £84 per month

## Misc Spaceflight News

- Space X launches record number of satellites in one go -143, beating old record of 104 by miles!
  - this was on Sunday 24<sup>th</sup> Jan, by Falcon 9
  - it included 10 Starlinks, the first to go into polar orbit
  - the remainder was a mixture of cubesats and microsattellites, at about \$1M for a cubesat launch
    - Customers included small space start-up companies and universities, benefitting from Space X's Rideshare program
- Space X buys two retired massive floating oil rigs
  - They are to be modified to serve as seaborne launch & landing platforms for Starship missions
  - They've been named Phobos and Deimos

## Misc Spaceflight News

- Blue Origin successfully tested an upgraded passenger six-seater capsule “RSS First Step”
  - manned by “Mannequin Skywalker”
  - 14<sup>th</sup> New Shepard launch, this one was brand new
  - announced just one final test launch then will start sub-orbital 10-min flights at \$200,000 per seat later this year
- Boeing say they expect to reflly their Starliner capsule on an unmanned test mission to the ISS in March
  - a software error caused it to fail to reach required orbit to dock with the ISS on its last attempt in 2019
  - complication is that it cannot take place during the handover between SpaceX’s Crew-1 & Crew-2 missions, also in March

## Misc Spaceflight News

- NASA abandons efforts to get the InSight Mars lander's probe working again
  - probe was intended to tunnel its way up to 5 metres down into Martian surface to measure heat flow but encountered harder crustal material than expected
  - Good news is that NASA has extended the life of the InSight Mission by two years for further seismological studies using its other main instrument.
- NASA has extended the mission life of its Juno spacecraft at Jupiter, to change its orbit and study the satellites Europa, Gannymede and Io
  - four year extension will allow multiple close flybys

# Breaking News

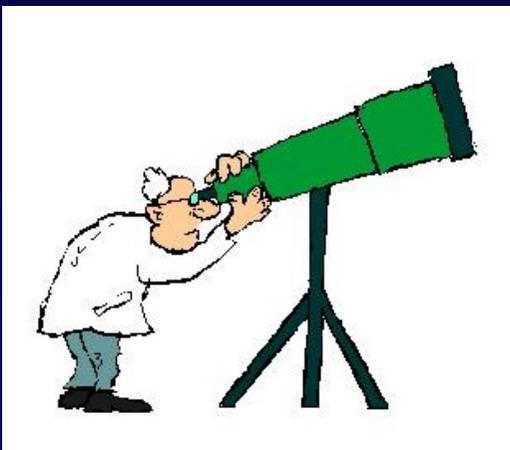
- NASA astronauts space walk to install a UK-built high speed data transmission system
  - Mike Hopkins & Victor Glover, both making their first EVAs, spent 7 hrs on Weds 27th Jan to activate the ESA Bartolomeo platform attached to the exterior of the European Columbus module
    - This has been ferried to the ISS by a SpaceX Dragon last year and installed using the station's robotic arm.
    - Some cables were troublesome and couldn't be connected
  - part of their work was to install a suitcase-sized data comms device called ColKa built at Harwell to provide high speed broadband for experimental data to be beamed back to Earth at household broadband speeds
    - previously some bulk data had to be returned on hard drive

# Breaking News

- Axiom Space announces 1<sup>st</sup> commercial fare-paying crew visit to ISS to take place in Jan 2022
  - Axiom Space was set up by former NASA astronauts
- Flight will be on SpaceX Crew Dragon, with an ex-NASA commander and three passengers
  - mission will last 10 days and cost \$55 M each
  - Michael López-Alegría, 62, Axiom's VP
    - Ax-1 Mission Commander, former astronaut
  - Eytan Stibbe, 63, an Israeli investor, former fighter pilot
  - Larry Connor, 70, US technology entrepreneur
  - Mark Pathy, 50, Canadian investor and philanthropist
- Axiom plan to construct a private hotel in orbit

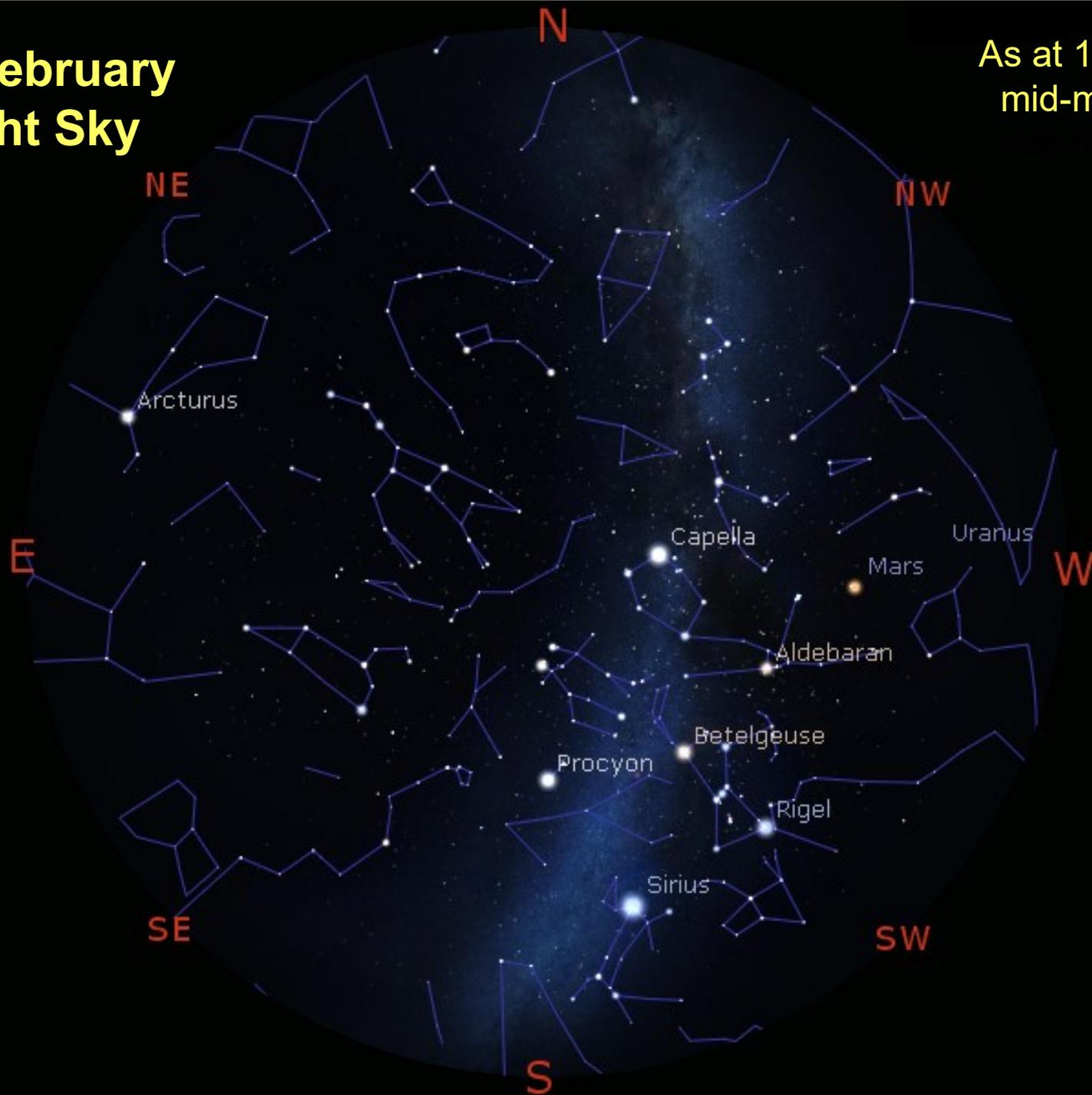
# What's Up!

For February 2021



# The February Night Sky

As at 10 p.m.  
mid-month



# Sun & Moon in February

- Last Quarter **4<sup>th</sup>**
- New Moon **11<sup>th</sup>**
- First Quarter **19<sup>th</sup>**
- Full Moon **27<sup>th</sup>**

		Sun	Moon
1 <sup>st</sup>	Rise	07.39	21.33
	Set	16.52	10.01*
14 <sup>th</sup>	Rise	07.17	08.49
	Set	17.16	20.19
28 <sup>th</sup>	Rise	06.48	19.13
	Set	17.41	08.05*

\* following day

# What's Up - Planets

- Mercury

- Visible for only the first few days of the month, low in WSW, 40 mins after sunset.

- Venus

- Effectively lost in the dawn light now, though theoretically you might glimpse it under perfect conditions 20 mins before sunrise less than a degree above the SE horizon.

- Mars

- Past its best but still good all this month high in the SSW but dimming from magnitude +0.4 at start to +0.9 at end.

# What's Up - Planets

- Jupiter

- By the end of the month it will be visible again as a morning object, very low in the SE, about 20 mins before Sunrise

- Saturn

- Like Jupiter Saturn will also be a morning object, similarly very low in the SE but rising earlier, 1 hour before the Sun

- Uranus

- Well positioned high in the evening's SW for the entire month; but best at the start, a binocular object at mag +5.8

- Neptune

- We lose this ice giant by the end of the month. Best seen at the start of the month low in the WSW, but will be difficult to spot in the twilight. A telescope object at magnitude +8.0

# Astronomical Phenomena in February

- **6<sup>th</sup>** Venus and Saturn are a little less than  $\frac{1}{2}^{\circ}$  apart in the SE, but this will be a very difficult spot as they'll rise only about 20 mins before the Sun 
- **11<sup>th</sup>** Venus and Jupiter are just  $\frac{1}{2}^{\circ}$  apart in the SE, but this will also be a very difficult target in the twilight. 
- **13<sup>th</sup>** The 4%-lit waxing crescent Moon will make a nice sight in the WSW about an hour after sunset 
- **17<sup>th</sup>** The crescent Moon sits  $3^{\circ}$  south of Uranus, mag +5.8 
- **18<sup>th</sup>** The Moon now sits  $4^{\circ}$  from Mars, mag +0.7 
- **19<sup>th</sup>** The Moon, now at 1st quarter, sits close to the Pleiades and Hyades open star clusters in Taurus 
- **20<sup>th</sup>** Mars now takes its turn passing close to The Pleiades over the next few nights 
- **28<sup>th</sup>** Mercury & Jupiter  $3^{\circ}$  apart, low in SE 40mins before Sun

# CPRE Star Count

- CPRE is The Countryside Charity
  - Campaign for the Protection of Rural England
- The quality of the country's night sky is one of their concerns and so this involves estimating light pollution
- One way to assess this is to see how many stars are visible and produce a light pollution map as a result
- Star Count runs from 6-14 Feb, try to choose a clear night
- Just count the stars in Orion excluding the four stars that make up the shoulders and knees, using your eyes only.
- Details and result submission at:
  - <https://www.cpre.org.uk/what-we-care-about/nature-and-landscapes/dark-skies/star-count-2021/>

Betelgeuse

Orion's belt

Rigel

Count the stars you  
can see in the  
rectangle formed by  
the four corner stars  
in the Orion  
constellation

# Virtual Dark Skies Festivals

- **South Downs Dark Skies Festival, 12-28 Feb**

- <https://www.southdowns.gov.uk/dark-night-skies/festival/>

- **Cumbria Dark Skies Festival, 5-21 Feb**

- <https://www.friendsofthelakedistrict.org.uk/dark-skies-subsite>

- **Northumberland Dark Skies Festival, 12-21Feb**

- <https://www.northumberlandnationalpark.org.uk/northumberland-dark-skies-festival/>

- **North York Moors & Yorkshire Dales Dark Skies Festival, 12-28 Feb**

- <https://www.northyorkmoors.org.uk/visiting/whats-on/dark-skies-festival>

# Meetings at Local Societies

- Given the current Covid-19 situation, all physical meetings at our local astronomical societies have been cancelled until further notice, some continue via Zoom for paid-up members.
- You might like however to see their websites for items of interest:
  - **Guildford AS** <http://www.guildfordas.org/>
  - **Farnham AS** <https://www.farnham-as.co.uk/>
  - **Croydon AS** <http://www.croydonastro.org.uk/>
  - **Ewell AS** <https://ewellastronomy.org/>
  - **Walton AG** <http://www.waltonastrogroupp.co.uk/>

# Free Meetings & Talks On-line

- **British Astronomical Association: Zoom webinars**
  - *“The Astronomer Vera Ruben”*
    - Wednesday 10<sup>th</sup> February at 7.00 - 8.00 p.m.
    - Dr Jacqueline Mitton
      - <https://www.britastro.org/node/25419>
  - (will also be viewable via BAA's YouTube Channel)

# Free Meetings & Talks On-line

- **Society for Popular Astronomy: Zoom webinars**
  - *“The Hubble Constant: a Crisis in Cosmology”*
    - Saturday 30<sup>th</sup> January at 2.00 - 4.00 p.m.
    - Dr Stephen Feeney, UCL
      - (followed by Sky Notes for Feb/March/April - Robin Scagell)  
[https://www.popastro.com/main\\_spa1/meetings-and-events/forthcoming-meetings/](https://www.popastro.com/main_spa1/meetings-and-events/forthcoming-meetings/)
      - (Will become available afterwards via SPA's website)
  - *“Friday Night Live with Vicky Video”*
    - Weekly on SPA's Facebook page at 8.00 - 9.00 p.m.
    - Chat show rather than meeting

# Free Meetings & Talks On-line

- **British Interplanetary Society: Zoom webinars**
  - *“Apollo 14 - A Walk In The Highlands”*
    - Wednesday 3<sup>rd</sup> February at 7.00 - 8.15 p.m.
      - Jerry Stone
  - *“ESA Flight Operations”*
    - Thursday 18<sup>th</sup> February at 6.00 - 7.15 p.m.
      - Dr Paulo Ferri
  - *“Green Propulsion”*
    - Saturday 20<sup>th</sup> February at 2.00 - 3.15 p.m.
      - Mathias Perrson

<https://www.bis-space.com/events//>

# Meetings & talks on-line

- You can also pay £3.00 to watch these on-line talk run by **GoSpaceWatch**: (book via Eventbrite)
  - *“Solar System Science and the James Webb Space Telescope”*
    - Naomi Rowe-Gurney,
    - Wednesday 3<sup>rd</sup> February, 7.30 - 9.30 pm
  - *“Dark Skies Tourism”*
    - *how the Isle of Man has embraced Dark Skies Tourism”*
    - Howard L.G Parkin BSc. BEd. FRAS,
    - Wednesday 17<sup>th</sup> February, 7.30 - 9.30 pm
  - [www.gospacewatch.co.uk/](http://www.gospacewatch.co.uk/)

# Astronomy on TV

## The Sky at Night

*Taking a break this month*

But there's plenty to see on the programme's official website, including recent episodes as well as archive material. It'll be back next month.

<https://www.bbc.co.uk/programmes/b006mk7h>



*"That's all Folks!"*