

WEYMOUTH ASTRONOMY

Volume 15, Issue 5
9 October 2020

Trips / Events

Ideas for trips and events
always welcome!

events@weymouthastronomy.co.uk

Society Meetings cancelled until further notice—Please check their websites for the latest schedule

In the meantime, the British Astronomical Association has moved their meetings to an online format. Live streamed on release and 'catch-up' on Youtube available. These webinars are Open to All.

<https://britastro.org/>

BAA live webinars, 7pm every Wednesday

<https://www.youtube.com/user/britishastronomical>

If you are interested in giving a talk or workshop, let the organisers know. They like to offer new titles in their programme line-up.

WAC Upcoming Events:

	Watch website for online options.
11 Nov	Online 'Zoom' Meeting - Sheri Karl—Solar Observing on a Budget
7-11 Dec	A 'socially distanced' viewing night between these dates depending on weather
2021	More to come!

Sky Watcher



Happy Autumn to All! As the cooler weather is upon us we are also treated to some very bright planetary views. More on this in the Sky Notes for the month.

As a bit of a diversion, it is good to look at our own planet Earth and remember thus far, it is the only planet known so far with life and plate tectonics. There are theories that the existence of both is intertwined in the development of a planet. An interesting article on the topic can be found at <https://www.astrobio.net/origin-and-evolution-of-life/did-plate-tectonics-set-the-stage-for-life-on-earth/>

If you would like to have a closer look at the plate tectonics and related evolutionary state of our planet through time, have a look at this excellent interactive website featuring a plate tectonic globe. <https://dinosaurpictures.org/ancient-earth#200>

Until next time...SLK

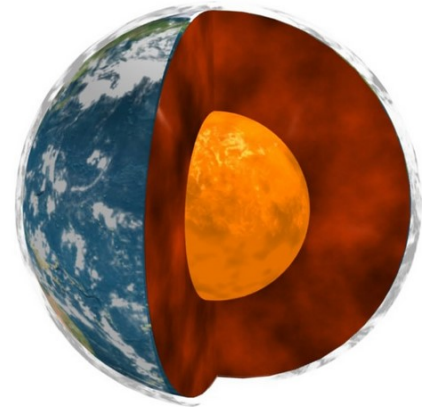


Observe the Skies near Mars

by David Prosper

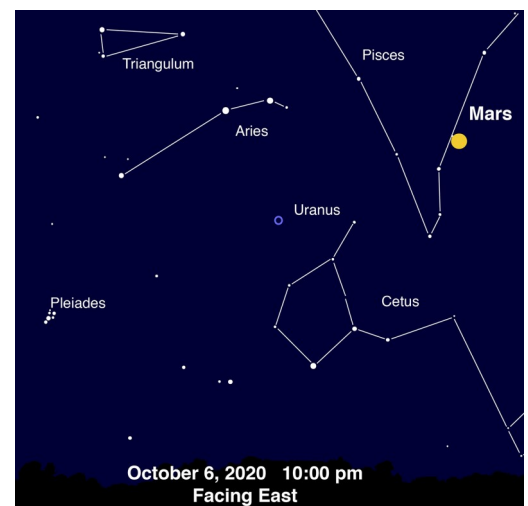
October is a banner month for Mars observers! October 6 marks the day Mars and Earth are at closest approach, a once-every-26-months event. A week later, on October 13, Mars is at opposition and up all night. Mars is very bright this month, and astronomers are eager to image and directly observe details on its disc; however, don't forget to look at the space around the planet, too! By doing so, you can observe the remarkable retrograde motion of Mars and find a few nearby objects that you may otherwise overlook.

Since ancient times, Mars stood out to observers for its dramatic behavior. Usually a noticeable but not overly bright object, its wandering path along the stars showed it to be a planet instead of a fixed star. Every couple of years, this red planet would considerably flare up in brightness, for brief times becoming the brightest planet in the sky before dimming back down. At these times, Mars would also appear to slow down its east-



A cross section of the Earth, showing the exterior crust, the molten mantle beneath it and the core at the center of the planet. Image credit: NASA/JPL-Université Paris Diderot - Institut de Physique du Globe de Paris.

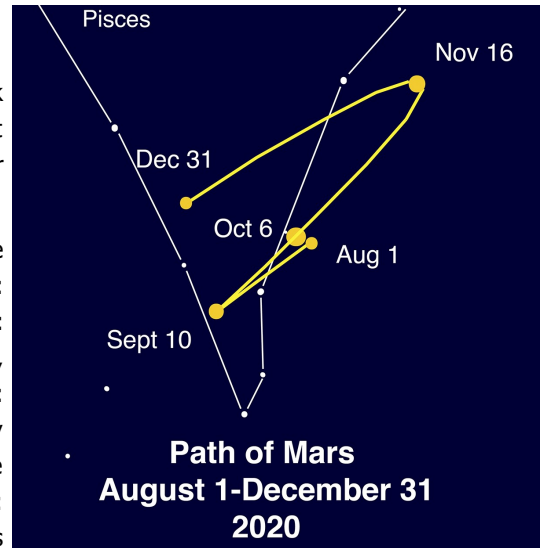
ward motion, stop, then reverse and head westward against the stars for a few weeks, before again stopping and resuming its normal eastward movement. This change in the planet's movement is called "apparent retrograde motion." While all of the planets will appear to undergo retrograde motion when observed from Earth, Mars's retrograde appearances may be most dramatic. Mars retrograde motion in 2020 begins on September 10, and ends on November 16. You can observe its motion with your eyes, and it makes for a fun observing project! You can sketch the background stars and plot



Mars (more!)

Mars as you observe it night after night, or set up a photographic series to track this motion. Does the planet move at the same rate night after night, or is it variable? As you observe its motion, note how Mars's brightness changes over time. When does Mars appear at its most brilliant?

NASA has tons of great Mars-related resources! Want to know more about apparent retrograde motion? NASA has an explainer at: bit.ly/marsretromotion. Find great observing tips in JPL's "What's Up?" videos: bit.ly/jplwhatsup. Check out detailed views with NASA's HiRISE satellite, returning stunning closeups of the Martian surface since 2006: hirise.lpl.arizona.edu. NASA's Curiosity Rover will be joined in a few months by the Perseverance Rover, launched in late July to take advantage of the close approach of Mars and Earth, a launch window that opens two years: nasa.gov/perseverance. Calculate the ideal launch window yourself with this handy guide: bit.ly/marslaunchwindow. The Night Sky Network's Exploring Our Solar System handout invites you to chart the positions of the planets in the Solar System, and NSN coordinator Jerelyn Ramirez recently contributed an update featuring Mars opposition! You can download both versions at bit.ly/exploresolarsystem. Young astronomers can find many Mars resources and activities on NASA's Space Place: bit.ly/spaceplacemars. Here's to clear skies and good seeing for Mars's best appearance until 2033!



Phosphine detection highlights unknowns of Venus's atmosphere

By: Rachel Berkowitz

Modeling, lab work, and perhaps a mission to the planet will be required to understand the chemical reactions that take place within Venus's hot, dense, oxidizing cloud layers.

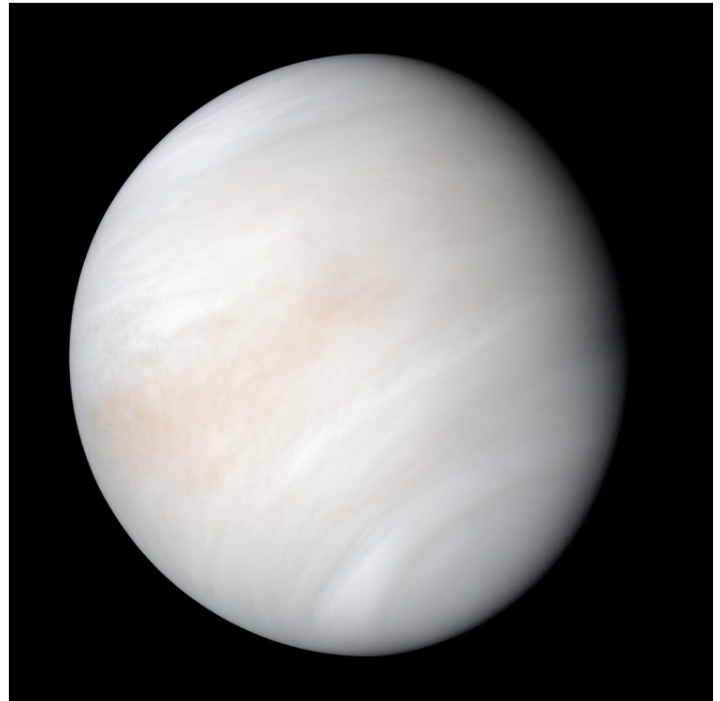
The observations of a spectral signature associated with phosphine (PH₃) in the clouds of Venus, reported 14 September in *Nature Astronomy* by Cardiff University's Jane Greaves and her colleagues, have prompted a flurry of interest. Here on Earth, phosphine is associated with microbial life: The presence of the odorless, colorless gas in the atmosphere likely results from the reduction of phosphate in decaying organic matter. Simulations of atmospheres on habitable rocky planets with CO₂- and H₂-rich atmospheres suggest that PH₃ can accumulate to detectable concentrations, and astrobiologists consider it to be a potential indicator of life on other rocky planets.

Microbial life in the clouds of Venus, although not impossible, would require extraordinary proof. Yet models of Venus's atmosphere do not support the presence of phosphine at the 20 ppb levels that Greaves and her team reported. One step in resolving the mystery is to confirm the detection of PH₃, which has a spectral signature that is notoriously difficult to detect using Earth-based telescopes. Additionally, researchers want to better understand the atmospheric chemistry on our neighboring cloud-blanketed planet.

Unknown chemistry

The most provocative question is whether the phosphine has a biotic origin. On Earth, humans create PH₃ as a pesticide in industrial settings, and the molecule has been found both in anoxic habitats and in laboratory mixtures of bacteria. But no known enzymes create phosphine. The molecule may be a decay product produced in anaerobic environments where living things have died. [Read the rest of the article at <https://physicstoday.scitation.org/doi/10.1063/PT.6.1.20201002a/full/>]

PHYSICS TODAY



Venus's blanket of thick clouds is apparent in this image from NASA's *Mariner 10* spacecraft in 1974.
Credit: NASA/JPL-Caltech

View through my scope...

Mars is making a very grand appearance with opposition on 13 October 2020.

A great overview can be found at <https://www.skyatnightmagazine.com/advice/skills/how-to-observe-mars/>

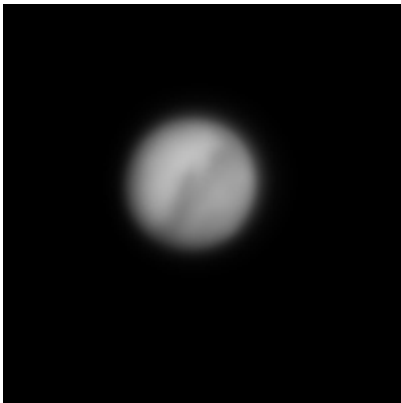
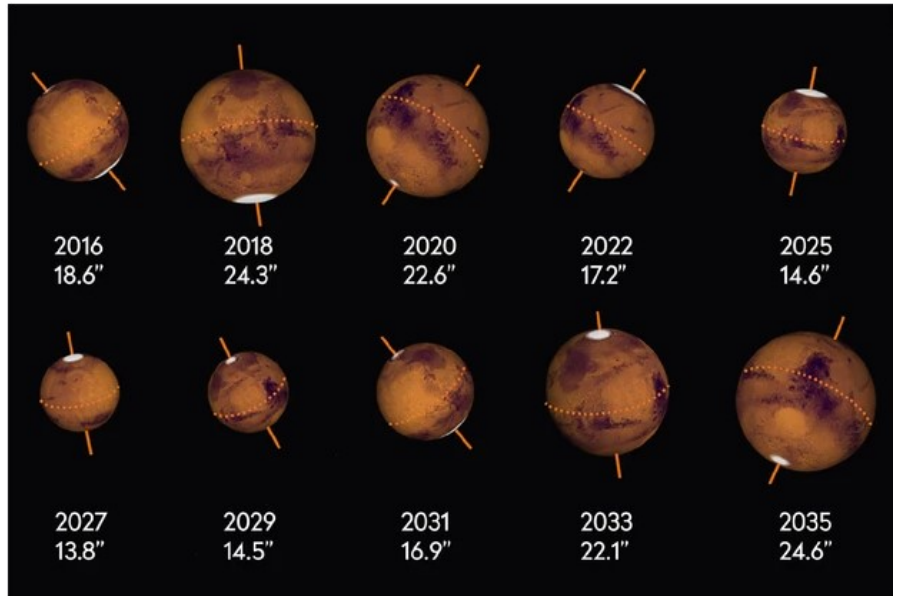


Image taken through an ETX125 and QHY5 camera by Chris Bowden on 4/5 Oct 2020.



Size matters: a comparison of Mars's apparent diameter when at opposition from 2016–35. Credit: Pete Lawrence

On the lighter side...



Image taken through a LG V50 phone camera in night mode by Sheri Lynn Karl on 6 Oct 2020. Mars is just above and off to the right of the tree in the foreground.

TAKE US TO YOUR LEADER.

OOF, THAT'S A LITTLE COMPLICATED. THIS IS AN **ELECTION YEAR**, WHICH MEANS THE COUNTRY IS ABOUT TO CHOOSE A **NEW LEADER**.

THEN TAKE US TO THE ONE THAT GETS THE MOST VOTES OUT OF ALL POSSIBLE CANDIDATES.

HAI! IF ONLY IT WERE THAT SIMPLE! YOUR VOTING POWER ACTUALLY DEPENDS ON WHAT STATE YOU LIVE IN, BECAUSE OF THIS THING CALLED THE ELECTORAL COLLEGE.

FURTHERMORE, THERE ARE REALLY ONLY **TWO** CANDIDATES BECAUSE WE OPERATE ON A WINNER TAKE ALL SYSTEM THAT EXCLUDES THIRD PARTY CHOICES, WHICH MEANS-

SEE ANY SIGNS OF MARTIAN LIFE? NOT YET...

HEY, LOOK! IT'S THE OLD 'VIKING' SPACECRAFT THAT LANDED HERE IN THE '70s!

GOSH, I WONDER IF IT'S STILL WORKING.

BLAHHH HOOP HOOP BOOLA AKRACKACK BOOLA!

THAT OUGHT TO BLOW SOME CIRCUITS AT NASA!

HEE HEE HEE! I'VE ALWAYS WANTED TO DO SOMETHING LIKE THAT.

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