nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

Astronomy, as nothing else can do, teaches men humility
Arthur C Clarke

VIRTUAL CLUB EVENTS SEE WEBSITE FOR DETAILS

Volume 42 Number 3 ***nightwatch*** **March 2022**

President's Message

I always get excited about stargazing this time of year. It's not that I'm not excited about stargazing earlier in the year – I especially love the Winter Hexagon, Orion, and the Milky Way – but it's often pretty darned cold in my favorite desert observing spots. Now it's warming up, the sky is turning, and we're moving into Messier Marathon season.

Our club has a deep history with Messier Marathons. Harvard Pennington, who wrote the *Year-Round Messier Marathon Field Guide*, was a PVAA member, and the book grew out of charts and search strategies that he developed himself, and test-drove with fellow club members. The *Field Guide* is an excellent book, perfect for beginners but with some helpful tips and tricks that may be new to even seasoned deep-sky observers.

Above all, I like Pennington's optimistic and energetic approach to observing the Messier objects, at any time of year. As he writes in the opening pages of the book, "Some people go Marathoning only in March…. That is silly. The very next dark of the moon is the best time for you to run your first Messier Marathon." Even though all 110 Messier objects are only visible in one night in a window from early March to early April, on any given new moon it should be possible to get 80 or 90 in one night, and that can be a big shot in the arm in terms of confidence in navigating the sky. I'll be out of town on a dinosaur dig at the next new moon, but if you'd like to attempt a Messier Marathon, I have a lot of resources on my blog, at https://10minuteastronomy.wordpress.com/messier-marathon-tools/.

Our speaker this month is Briley Lewis, an NSF Fellow working on her PhD in astronomy at UCLA, who will speak to us about Pluto and the New Horizons mission. The meeting is this Friday at 7:30 on Zoom. I hope to see you there!

Matt Wedel

PVAA Officers and Board

Officers

President ….....	Mathew Wedel	909-767-9851
Vice President ..	Joe Hillberg	909-949-3650
Secretary	position is currently open	
Treasurer	Gary Thompson	909-935-5509

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Richard Wismer(2022)	
Ron Hoekwater (2023).....	909-706-7453
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Membership / Publicity....	Gary Thompson	.909-935-5509
Outreach	Jeff Schroeder	909-758-1840
Programs	Ron Hoekwater	909-391-1943

NGC 2903 and tbe Moon

Due to the moon's cycle, there was no new moon in February, so camping at the dark site was on the nights of March 4 and 5, which had terrible weather. In fact, between light rain showers, we got hailed on. The hail was sand-sized, but it was hail never the less. Sunday morning, March 6, dawned with temperatures in the upper 20's F and frost everywhere! The only redeeming aspect of the weekend, aside from being out with friends, was watching a bald eagle soaring overhead for about 10 minutes Saturday afternoon. Quite magnificent! So because of the disastrous weather, this month's image was actually taken in February, specifically February 6 to 11. After tuning up the Ritchey-Chretien scope for galaxy season, I thought I'd check the result on NGC 2903. I forgot that I had shot this 2 years ago, March of 2020, also from the backyard, but before I started to learn how to collimate the RC (by the way, collimating it is still a work in progress). In some respects, I think it's better and in others it's not as I'll explain later.

NGC 2903 is a nice barred spiral galaxy with the bar clearly visible running from about the 11:00 position to the 5:00 position in the galaxy. A member of the Virgo Supercluster of galaxies, it lies about 30 million light years away. That means the light that created this image left the galaxy 30 million years ago, just now reaching Earth. In spite of being a member of the Virgo Supercluster, NGC 2903 is actually in the constellation Leo and is just now becoming well situated for imaging. Lots of galaxies are in Leo and hopefully next month I'll be able to get at least one! At 100,000 light years in diameter, NGC 2903 is half the size or possibly about the same size as the Milky Way.

This version is an L(HaR)GB combination. It was made by combining H-alpha data with red data and putting the blended version in the red channel. 12 10-minute Ha frames and 10 5-minute red frames were used. Green and blue channels were both 12 5-minute frames and the luminance channel was from 19 3-minute frames. Total exposure time was only 5 hours and 47 minutes. I normally like to get a lot more hours in, but I shot only limited hours each night, not wanting to get up at 5:00 am every day to shut everything down! The frames were calibrated with 21 dark, flat, and flat dark frames. The previous version lacked the Ha data, and so this image has a much nicer view of the reddish knots of emission nebulae visible in the arms. The detail also seems crisper in this version; however, the previous version shows off the extended spiral arms better. They seem to be almost lacking in this version.

As a bonus, I took a quick stab at the moon as well. When I've taken pictures of the moon through a telescope before, I always used a color camera. This one is from 21 frames shot through each of the red, green, and blue filters at 0.01 seconds per frame. I didn't use any calibration frames for this image. It's not the best moon shot, but it's nice.

Hopefully April will have better weather and I can get some nice shots of galaxies from the dark site.

Ron Ugolick

Club Events Calendar

Mar 18	**Virtual General Meeting - Briley Lewis "Pluto and the New Horizons mission"**
Apr 2	**Star Party – TBD**
Apr 6	**Board Meeting**
Apr 22	**General Meeting (presentation: TBD)**
May 4	**Board Meeting**
May 7	**Star Party in the Park**
May 13	**General Meeting (presentation: TBD)**
May 28	**Star Party – TBD**
Jun 8	**Board Meeting**
Jun 17	**General Meeting (presentation: TBD)**
Jun 25	**Star Party – TBD**
July 2	**Star Party in the Park**
July 6	**Board Meeting**
July 15	**General Meeting (presentation: TBD)**
July 25-29	**Nature at Night – Girl Scout Event**
July 30	**Star Party – TBD**
Aug 3	**Board Meeting**
Aug 12	**General Meeting (presentation: TBD)**
Aug 27	**Star Party – TBD**
Aug 31	**Board Meeting**
Sep 3	**Star Party in the Park**
Sep 9	**General Meeting (presentation: TBD)**
Sep 24	**Star Party – GMARS**
Sept 28	**Board Meeting**

NGC 2024, IC 434, NGC 1977, and M42

Flame Nebula, Horsehead Nebula, Running Man, and the Great Orion Nebula in the constellation of Orion.
Taken the first weekend in December 2021 at GMARS

Equipment used: William Optics RedCat 51, ZWO ASI2600MC-Pro, Rainbow Astro RST-135, ZWO EAF, QHY miniGuideScope, ZWO 120mm Mini, ZWO Filter Drawer, no filter. Captured by ZWO ASIAir Plus and processed in PixInsight.

The RedCat 51 is an APO f/4.9 refracting telescope. It has a 51mm aperture with a focal length of 250mm. There is a built-in bahtinov mask in the lens hood. My RedCat is version 2 and has a tilt-adjuster built into the telescope. It also has a built-in 2" filter slot for astronomy filters and a field rotator, so the camera can be rotated to a horizontal position. The RedCat is a Petzval design, that has four elements in three groups that produce a full frame flat field. When I first got the RedCat I was using a Nikon D750 camera. The full frame camera produced a full frame image with considerable vignetting which is eliminated with the calibration frames. I am now using a ZWO ASI2600MC-Pro camera with an APS-C sensor (crop sensor) that does not produce any vignetting. The RedCat is a great grab and go set-up, especially when it is combined with the Rainbow Astro RST-135 mount, a half pier, and a carbon fiber tripod.

By ***Sharol Carter***

Tripod and telescope ready to travel.

RedCat 51 in parked position.

RedCat 51 and Rainbow Astro RST-135 packed in the camera roller bag.

PVAA General Meeting 2/18/22

Alper Ates, currently living in Turkey, was the speaker of the night via Zoom. Alper was a past president of PVAA. His talk started out describing Turkey with its shores, valleys, hills, and mountains. The country has a lot of historical sites, where many cultures met. The ancient city of Troy is in Turkey. Alexander the Great came through and conquered what is now modern Turkey and after that the Roman Empire conquered the area. Turkey is a great melting pot of Asians, Greeks, Italians, Africans, Germans, and many others. They all brought their temples and cultures with them. The Temple of Apollo is thought to be aligned with the star Apollo (now known as the star Castor) in the Gemini constellation. Alper hopes to publish a paper on his findings soon.

Gary Thompson

Shrine in Turkey

Temple of Apollo - under construction from 330BC to ~600AD and never completed.

NASA Night Sky Notes March 2022

This article is distributed by NASA Night Sky Network
The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Embracing the Equinox

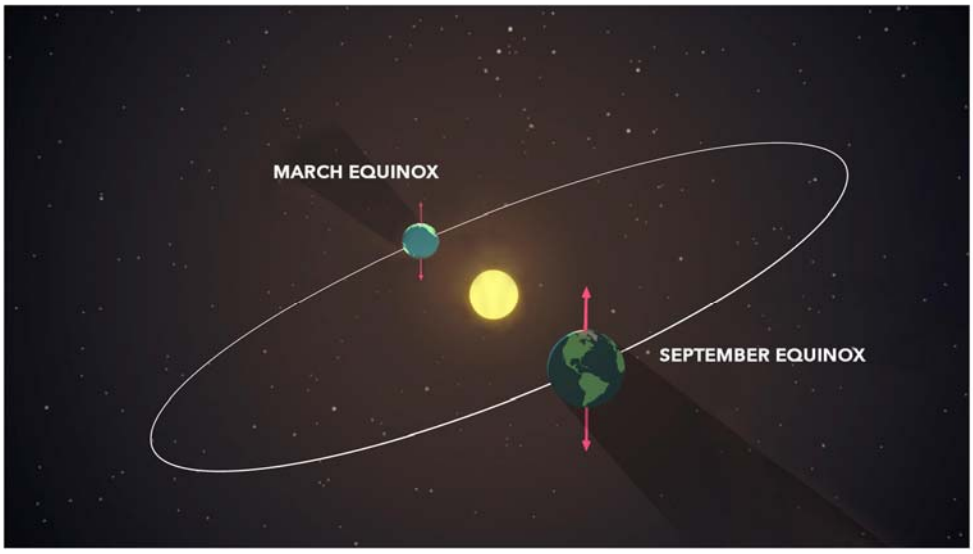
David Prosper

Depending on your locale, equinoxes can be seen as harbingers of longer nights and gloomy weather, or promising beacons of nicer temperatures and more sunlight. Observing and predicting equinoxes is one of the earliest skills in humanity's astronomical toolkit. Many ancient observatories around the world observed equinoxes along with the more pronounced solstices. These days, you don't need your own observatory to know when an equinox occurs, since you'll see it marked on your calendar twice a year! The word "equinox" originates from Latin, and translates to **equal** (equi-) **night** (-nox). But what exactly *is* an equinox?

An **equinox** occurs twice every year, in March and September. In 2022, the equinoxes will occur on March 20, at exactly 15:33 UTC (*or 11:33 am EDT*), and again on September 23, at 01:04 UTC *(or September 22 at 9:04 pm EDT)*. The equinox marks the exact moment when the center of the Sun crosses the plane of our planet's equator. The day of an equinox, observers at the equator will see the Sun directly overhead at noon. After the March equinox, observers anywhere on Earth will see the Sun's path in the sky continue its movement further north every day until the June solstice, after which it begins traveling south. The Sun crosses the equatorial plane again during the September equinox, and continues traveling south until the December solstice, when it heads back north once again. This movement is why some refer to the March equinox as the **northward equinox**, and the September equinox as the **southward equinox**.

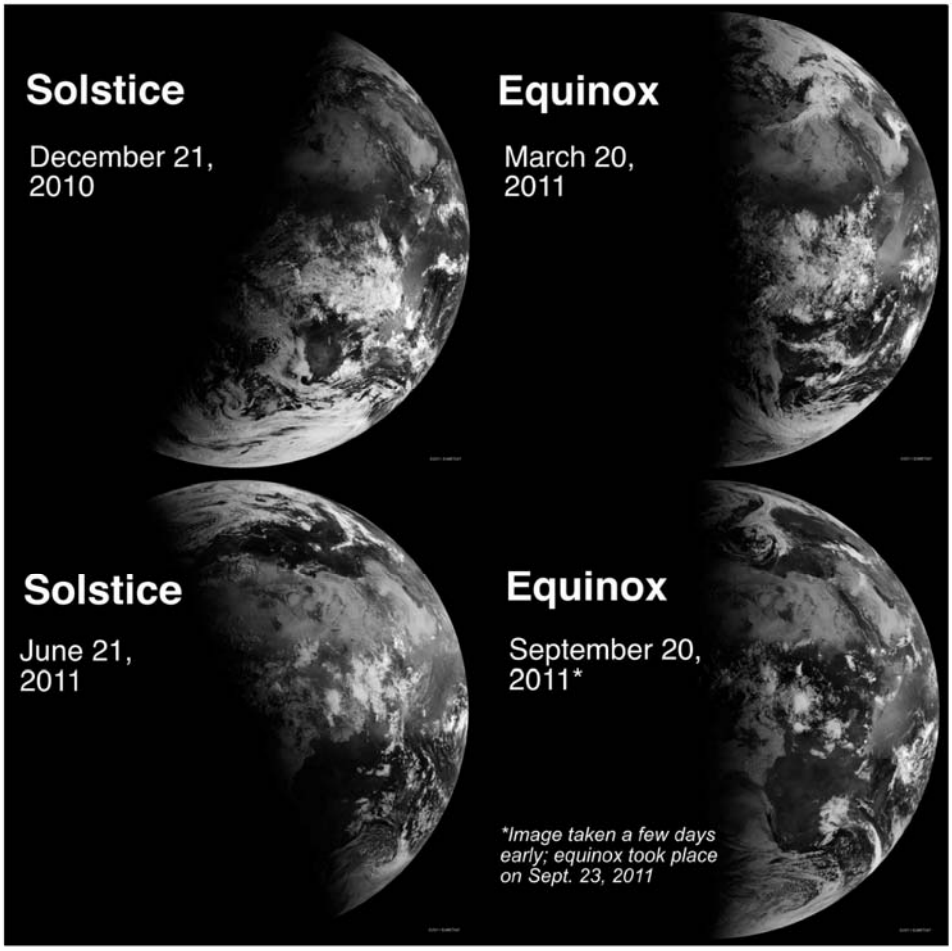
Our Sun shines equally on both the Northern and Southern Hemispheres during equinoxes, which is why they are the only times of the year when the Earth's North and South Poles are simultaneously lit by sunlight. Notably, the length of day and night on the equinox aren't precisely equal; the date for that split depends on your latitude, and may occur a few days earlier or later than the equinox itself. The complicating factors? Our Sun and atmosphere! The Sun itself is a sphere and not a point light source, so its edge is refracted by our atmosphere as it rises and sets, which adds several minutes of light to every day. The Sun doesn't neatly wink on and off at sunrise and sunset like a light bulb, and so there isn't a *perfect* split of day and night on the equinox - but it's very close.

Equinoxes are associated with the changing seasons. In March, Northern Hemisphere observers welcome the longer, warmer days heralded by their **vernal**, or spring, equinox, but Southern Hemisphere observers note the shorter days – and longer, cooler nights - signaled by their **autumnal**, or fall, equinox. Come September, the reverse is true. Discover the reasons for the seasons, and much more, with NASA at nasa.gov



This (not to scale) image shows how our planet receives equal amounts of sunlight during equinoxes.

Credit: NASA/GSFC/Genna Duberstein



enes of Earth from orbit from season to season, as viewed by EUMETSAT. Notice how the terminator - the
en day and night - touches both the North and South Poles in the equinox images. See how the shadow is l
ıch solstice, too: sunlight pours over the Northern Hemisphere for the June solstice, while the sunlight dram
favors the Southern Hemisphere for the December solstice.
Source: bit.ly/eartheequinox Images: NASA/Robert Simmon