nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

A fool is wise in his eyes. *King Solomon*

VIRTUAL CLUB EVENTS SEE WEBSITE FOR DETAILS

Volume 42 Number 1 ***nightwatch*** **January 2022**

President's Message

I need to start this message by thanking you all for your patience and forbearance while I've been away. As you probably know, my spouse of 24 years, Vicki, passed suddenly and unexpectedly last May, and that knocked me right out of orbit. Between the feeling of desolation and the real struggle with being a single parent for the first time, I was AWOL for a long time. In retrospect I should have passed the mantle of club president to someone else for a year. Many thanks to everyone who kept the club running in my absence, especially our dedicated board members and Claire and John Stover.

The evening sky is just beautiful this time of year—at least when there are no clouds in the way. In particular, the winter Milky Way from Gemini to Puppis is just clotted with open clusters and asterisms for binoculars and scopes of all sizes. I have a little write-up about two of my favorite views a little later in this newsletter.

The next general meeting is this Friday, January 14th, at 7:30. Our speaker will be physicist Claude Plymate, an astronomy club member himself who recently retired from the Big Bear Solar Observatory. He will speak to us about Adaptive Optics. I hope to see you there—and I will be happy for you to finally see me there!

Matt Wedel

Club Events Calendar

Jan 14	**Virtual General Meeting – Claude Plymate "Adaptive Optics"**
Feb 5	**Star Party–TBD**
Feb 9	**Board Meeting**
Feb 18	**Virtual General Meeting**
Mar 5	**Star Party – TBD**
Mar 9	**Board Meeting**
Mar 18	**Virtual General Meeting**
Apr 2	**Star Party – TBD**
Apr 6	**Board Meeting**
Apr 22	**General Meeting (presentation: TBD)**
May 4	**Board Meeting**
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 6	**Board Meeting**
July 15	**General Meeting (presentation: TBD)**
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 9	**General Meeting (presentation: TBD)**
Sep 24	**Star Party – GMARS**
Sept 28	**Board Meeting**

Lee Collins

Many of us knew longtime PVAA Member Lee Collins. He was a board member for many years, helping fellow members run and guide the Club. He was also a regular speaker at monthly Club meetings, presenting a “What’s Up” feature using an overhead projector and transparencies (in the days before PowerPoint presentations were common) to share with us what we could expect to find overhead during the coming month. His close friends Barbara and Mark Ashworth shared with us the sad news that Lee passed away in mid-December and included these thoughts. “Our dear friend, Lee, passed away on Tuesday. He was an exceptional human being - gentle, kind, and selfless. He was a brilliant poet and astronomer, and our lives will be forever changed by having known and loved him”.

Sometimes a person speaks best for themselves and I think this is the case for Lee.

Please enjoy this sample of Lee’s writing:

Autumn's Waltz of Equinox
A poem by Lee Collins

A time to set your clocks,
in a twirling waltz of equinox.
A day to weigh your balance
in that cosmic ballroom dance
when daylight and night are equal.
Soon Earth will tilt into chill,
once a year in its orbital act,
in its spin twice forth and back.
On this ballroom sky you can depend,
they knew it in ancient Stonehenge.
So hold your whirling partner tight
before you lean back into night.
Heel and toe for a harvest Moon,
for you know that all to soon
winter's dark and cold
will take reeling hold
of your old unbalanced
solstice soul.

Angel Nebula

The end of December was very rainy here in SoCal, so much so that it wasn't looking good for the new moon weekend. New moon was January 2 so camping would start on New Year's Eve. While some websites forecast Friday to be partly cloudy, most had Saturday clear. We took a chance and went Friday which was, of course, very cloudy with possible overnight showers. So, I only got one night of imaging on Saturday. The good news is that we did get some much needed rain.

Nebulae having multiple dust, emission, and reflection areas have always been tough for me. NGC 2170, the Angel Nebula, and surrounding region did not disappoint in that regard. NGC 2170 is apparently only a small part of this region, being the bright bluish "star" just right of center in the image. The center of the region is dominated by a dark dust cloud cutting between a red emission region and a blue reflection region that includes NGC 2170. This region is a star-forming molecular cloud in Monoceros located about 2,400 light years away. While I can't find any confirmation, I believe the orange area just left of NGC 2170 is where new stars are being formed and illuminating the region.

This photo is an LRGB image constructed from just over seven hours of data. I had planned for eight hours, but didn't realize how far south the target was and it ended in the trees about halfway through the luminance session. I shot 2 hours of 10-minute photos through the green and blue filters and, since I included the framing shot, an extra 10 minutes through the red channel. I managed one hour and 14 minutes of 2-minute photos through the luminance filter. The color frames were calibrated with 29 dark frames, 21 flat frames, and 21 flat dark frames while the luminance frames were calibrated with 21 dark frames, 21 flat frames, and 21 flat dark frames. I didn't like the stacked images from my usual stacking program, so the frames were stacked in Nebulosity and for some reason appeared better. The color frames were combined and the stars removed from the color and luminance stacks before stretching in Photoshop. Stars were added back and the luminance combined with the color. Since I didn't get my usual two nights of data, and was particularly light in the luminance data, I had to be a little heavy-handed with noise reduction, which in turn resulted in having to reduce the image scale to clean up some of the artifacts. Finally, the frame was moderately cropped to showcase the features around NGC 2170.

Ron Ugolick

https://www.astrobin.com/users/ruccdu/

Winter Highlights

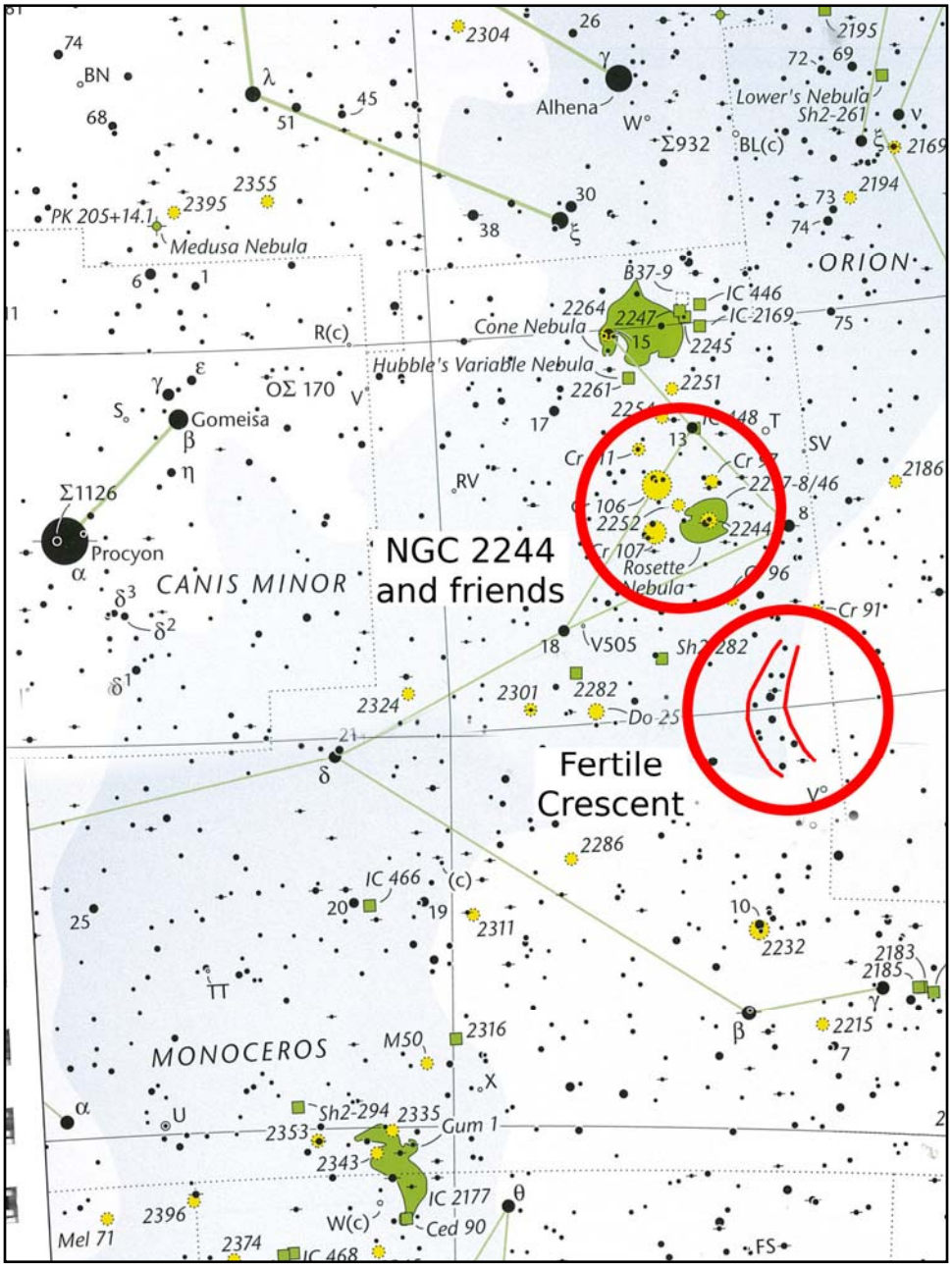
To be honest I'm kind of a wuss about observing in the cold. On winter evenings I tend to favor binoculars because they're so quick and easy to use, and I tend to go for bright targets. Here are a couple of my favorite views in the winter evening sky.

East of Orion and south of Gemini you'll find an arc of bright stars straddling the celestial equator. This group spans just over 3º, from 1º North to -2º South, at 06 28 RA, and it forms an arc that opens to the west. If this lovely asterism has a name, I haven't found it yet, so I've taken to calling it the "Fertile Crescent". It's a perfect match for 70mm binoculars, but it looks good in smaller instruments, too.

Scan a few degrees north of the Fertile Crescent to find a cluster of clusters, including NGC 2244 (Caldwell 50). NGC 2244 is full of bright young stars, so it looks smashing even across the intervening 5200 light years. The cluster is outlined by six bright stars in two bent lines, like the outline of an open book. NGC 2244 is the cluster embedded in the Rosette Nebula. From the remote Sonoran Desert I have seen the Rosette Nebula enclose the cluster like the petals of a rose. Be warned, though, this faint flower only blooms under dark skies, and it doesn't take much light pollution to kill it. If you can see the nebula, great, but if not, don't fret – the field offers plenty of wonders besides. NGC 2244 is the southwest corner of a 1.5º square whose other corners are marked by Collinder clusters – Cr 97 to the northwest, and Cr 106 and 107 to the northeast and southeast. With keen eyes and dark skies, you may also spot a fifth cluster, NGC 2252, in the middle of the square.

Of course all of these objects are even easier to see and show more detail in telescopes. Whatever instrument you choose, go have a look, have fun, and stay warm!

Matt Wedel



James Webb Space Telescope Deployment Video

Member Ludd Trozpek shared with us a link to a Northrup Grumman video showing the JWST deployment steps - which as of the time of writing this have all been successful!

https://www.youtube.com/watch?v=v6ihVeEoUdo&t=614s

Comet Leonard

Here we have another Comet Leonard photo from fellow amateur astronomer Mike Magras of the Tucson area in Arizona.

This photo was taken on December 20, 2021 and is a 30 second exposure at ISO 100, taken with Canon 6D DSLR thru a C14 with HyperStar adapter = EFL 715mm @ f/2; mount running but not guided. It is the same configuration Mike uses at the Grand Canyon Star Party but he removes the diagonal & EP, and adds HyperStar & a camera to the corrector plate. Since in this configuration the camera sits at the "wrong" and inconvenient end of the telescope, I control it with my phone via WiFi (Canon app) and the mount via Bluetooth using SkySafari. The latter makes easy aiming at the comet.

https://starizona.com/products/hyperstar-14?variant=37405606150306

Deep Sky Stacker freeware was used to stretch low-level contrast of dim tail to enhance. Note the cool blue bow wave and reddish rayed tail.

PVAA General Meeting 11/19/2021

Our speaker for November's meeting was Professor David Kary of Citrus Community College. The topic for the night was "The Race to Find Life in the Universe". For more than a century the public and scientists have looked for signs of life in the cosmos. In the last 25 years this endeavor has become more and more respected. Recent developments in science and hardware to detect life have increased science interest.

A meteorite designated ALH84001, found in Antarctica on December 27, 1984, was determined to be from Mars. The scientist studying the meteorite found chemical evidence in 1996 that suggested life inside the meteorite. These scientists were so respected that President Clinton had a press conference announcing the findings. After further study, these findings could be explained without the presence of life. At the same time, the number of known exo-planets exploded due to the Kepler spacecraft. Kepler showed that most stars have their own planets.

In 2017 we found Oumuamua – the first extra-solar meteor found. NASA has truly put money behind the search for life. The funding was no longer in question.

Professor Kary defines two types of life. First, any life requires energy, raw materials (carbon) and liquid (water?) Any life includes single celled organisms which create biosignatures. This is what we are looking for. The second category of life is intelligent life which uses technology - looking for radio waves or other technosignatures.

Looking for life in our solar system: Via telescope, meteorites, Mars rovers & Space probes/satellites. If life formed twice in our solar system – that would mean that life would be abundant in the universe. It is assumed that Mars in the past was a lot more habitable that it is today. Ocean worlds such as Europa, Enceladus, and Titan. The Europa Clipper is planned to be launched in an October 10-31, 2024 window, on a Falcon Heavy rocket. Titan has lakes of liquid methane & ethane. The upcoming Dragonfly mission launching in 2027 will explore Titan. (Launch vehicle not yet selected.)

Outside of our solar system we are looking for evidence of biosignatures and technosignatures on exoplanets. We are looking for terrestrial planets in the habitable zone. There are 3 types of biosignatures we are looking for. As a planet passes in front of the star, some of the star's light passes through the exoplanet's atmosphere. The assumption is that life alters the planetary atmosphere. We are looking for biosignature spectra – oxygen/ozone and maybe methane and nitrous oxide. The James Webb Space Telescope (JWST) may be able to detect this.

Temporal (Seasonal) Biosignature – the amount of CO_2 in our atmosphere goes up and down with the seasons, as changes occur in vegetation.

Looking for intelligent life via electromagnetic signals. Finding radio or laser signals is a big challenge as the distances are huge. We are looking for pollution in the atmosphere. Cloro-floro carbons, heavy metals, artificial light. Megastructures – as in a Dyson sphere/swarm, a ringworld, or Bishop rings. A Bishop ring is a very large ring that spins to create gravity, and doesn't need a "roof" to keep the atmosphere in.

We are currently monitoring the solar system and found two extra solar objects. The assumption is that we would be able to detect alien spacecraft as they would be fairly large to make such a long voyage. As for UFOs, we now have over 6.4 billion smartphones with cameras & video that could capture images.

In conclusion, with JWST, the Europa Clipper, and Dragonfly missions, along with the on-going Mars missions, the future will be very interesting.

Gary Thompson

More info:
https://astrobiovideo.com/en/
http://chrisimpey-astronomy.com/

PVAA Officers and Board

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