nightwatch
Newsletter of the Pomona Valley Amateur Astronomers

The struggle alone pleases us, not the victory. ***Blaise Pascal***

VIRTUAL CLUB EVENTS
SEE WEBSITE FOR DETAILS

Volume 41 Number 02 ***nightwatch*** **February 2021**

President's Message

The big news this month is unquestionably the successful landing of the Perseverance rover on Mars. For the first time, we got to see video of the descent and of the rocket skycrane lowering the rover to the surface of Mars. It's hard to believe that it's already been eight and a half years since Curiosity landed the same way. Perseverance set down in an old lake bed, an area that was definitely wet and which might have been home to life, if ever there was such a thing on the red planet. We will look forward to the new rover's discoveries with great interest.

In the night sky, the winter constellations are giving ground to spring, and the Realm of the Galaxies in Coma and Virgo. Those are best seen from dark skies, but most of the observers I know, myself included, are hunkered down waiting for the pandemic to pass. And who can blame us? The galaxies will still be there when all of this is behind us. We are looking forward to having get-togethers at the park as soon as the weather permits. The PVAA board has been discussing this and we'll be looking for opportunities in the not-too-distant future. Watch this space!

Our speaker this month is Tony Cook, one of the founding members of the PVAA, who will talk to us about the history of Griffth Observatory. The meeting is this Friday evening, February 26, at 7:30 PM. You'll be getting a Zoom link via email. 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	Ken Elchert	626-541-8679
Treasurer	Gary Thompson	909-935-5509
VP Facilities	Jeff Felton	909-622-6726

Board

Jim Bridgewater (2022).....	909-599-7123
Richard Wismer(2022)	
Ron Hoekwater (2021).....	909-706-7453
Jay Zacks (2021) ……	

Directors

Membership / Publicity....	Gary Thompson ..	909-935-5509
Outreach	Jeff Schroeder	909-758-1840
Programs	Ron Hoekwater	909-391-1943

General Meeting 1/29/2021

PVAA had another 'Virtual meeting' using Zoom. Our speaker for the night was Dr. David Kary of Citrus College in Glendora. With the rest of the world, Dr. Kary is giving his classes remotely using Zoom. His presentation was on how to engage his students remotely.

Most of his students are non-STEM (Science, Technology, Engineering, and Mathematics) majors who need to take a STEM class to fulfill their graduation requirements. With that in mind, he tried not to overwhelm the students in math. He already had pre-recorded online lectures and he used the Zoom sessions to encourage student discussions of questions and assignments similar to in-class.

He created breakout rooms to allow small-group discussion and allowed students to participate as a group or individually. His labs are designed to help them develop scientific reasoning skills, making and testing hypotheses, dealing with measurement and uncertainty of the measurements; and to reinforce course ideas.

He had to deal with the fact that some students only had a phone or tablet with no access to a computer, printer or software programs and apps. They may not even be able to go outside at specific times – or at all! To handle this, he created the option of doing one of several labs. Each lab description has the list of requirements: Equipment/Software/Unusual time constraints. They then could choose. He also encouraged the use of discussion boards for questions and answers. Lab Types included:

Simulations – Labster planetarium Software, GEAS (New Mexico State U.)

Data analysis with real data – Imaging, HR diagram, mapping globular clusters

Hands-on physics – Falling bodies, spectroscopy, parallax

Observing projects – Moon observing, gnomon (sun dial), night sky observing

He gave the students a choice of experiments or let them design their own. The choices did not come with detailed instructions. The students must explain what they did. This is usually 1/2 or more of their grade.

The pros of remote learning are having flexible timing and classwork can be spread out over days and weeks. This has opened up more student choices – giving them more control of what they want to learn.

The cons are less direct guidance, remote learning make collaboration more challenging, and you cannot use as much equipment (Telescopes & IR cameras).

Take away for PVAA: Decide what is important and make it work. Do not assume your audience has what you have in experience and equipment. Give people different types of activities to participate in. Try new methods. – Some will work, some will not. – You will find out fast.

Gary Thompson

Special Offer!!

We have an interesting item on offer for the PVAA member who thinks they already have everything. First, a short history. Way back in the early 2000s when Alper Ates was our President, we had a member who had a little difficulty hearing his presentations. This enterprising member came up with his own solution and purchased a Radioshack Optimus – the karaoke machine pictured below – for Alper to use during his presentations to the Club. Here we are a decade or two later and this fine item is no longer being used but is still being stored by later Club President, Ron Hoekwater.

The Board would love for this item to find a new home where it can be used to the fullest instead of gathering dust in Ron's closet. It is available to the highest bidder – or lacking that, to anyone who can put it to good use. Please express your interest to nightwatch@pvaa.us and you'll be connected with Ron so he can get the machine to you. If we have more than one interested party, maybe we'll need to have a "Sing Off" at our next virtual meeting to determine the winner!

Claire Stover

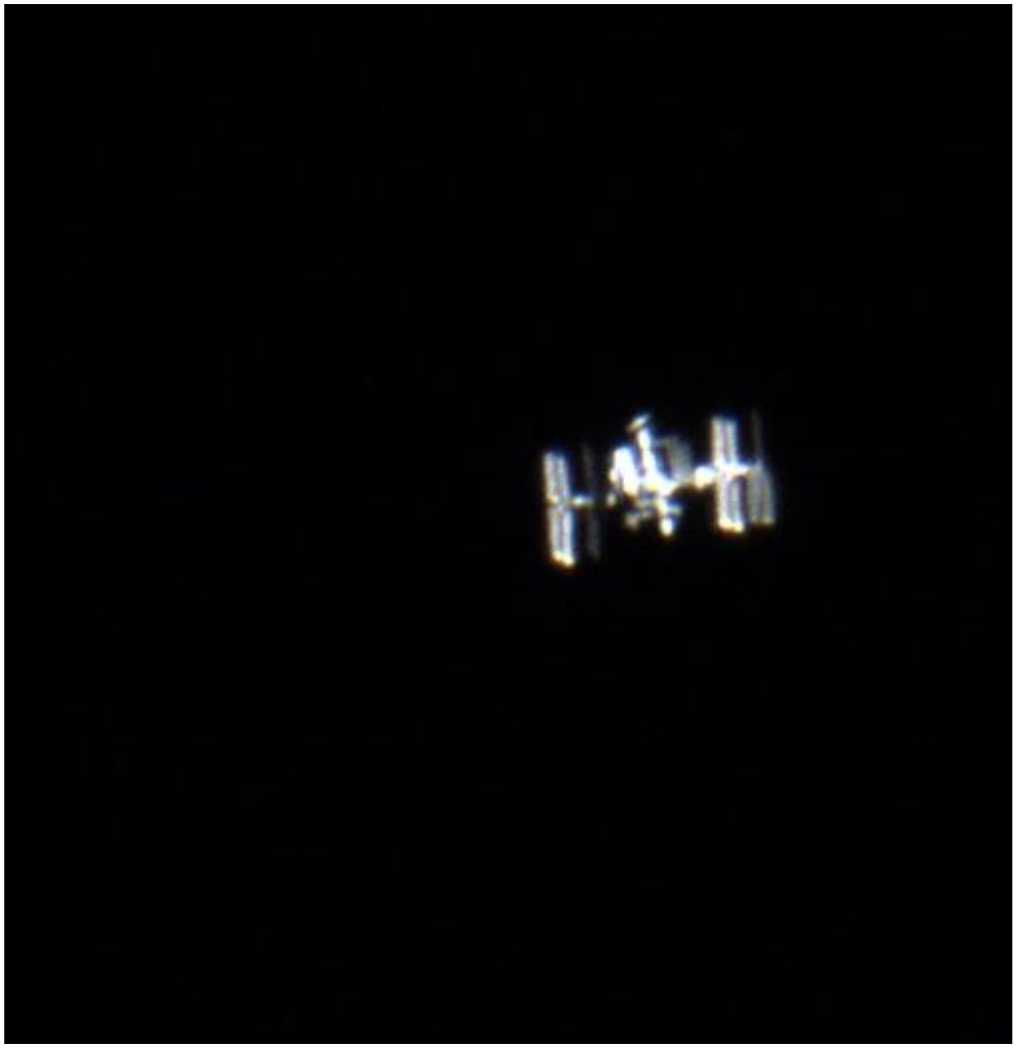
Club Events Calendar

Feb 26	**Virtual General Meeting – Tony Cook "Griffith Observatory"**
Mar 13	**Star Party – Anza-Borrego Desert State Park, Culp Valley**
Mar 17	**Board Meeting**
Mar 26	**Virtual General Meeting**
Apr 10	**Star Party – TBD**
Apr 21	**Board Meeting**
Apr 30	**General Meeting (presentation: TBD)**
May 8	**Star Party – TBD**
May 19	**Board Meeting**
May 28	**General Meeting (presentation: TBD)**
Jun 12	**Star Party – TBD**
Jun 16	**Board Meeting**
Jun 25	**General Meeting (presentation: TBD)**
July 10	**Star Party – TBD**
July 14	**Board Meeting**
July 23	**General Meeting (presentation: TBD)**

ISS by Matt Magilke

On February 7, 2021 at 1748 from Claremont. Alt approximately 79 degrees. Distance approximately 267 miles. 4-inch aperture. F/12.8.

Matt Magilke



Lunar Photography by Jeff Schroeder

I did some lunar photography last December 20th just before the conjunction. All were done with my 11" refractor on its alt-az cartop (thus unguided) mount. Focal length was 4,700mm, CanonT6i, and images cropped and aligned

The Apollo11 landing site area at an effective focal length of over ten meters. The twin craters just below and left of center are Ritter below and Sabine above. The Hypatia rille extends diagonally up and to the right from just right of Sabine crater. Not quite halfway up from the center of the image is the crater named after Neil Armstrong. The interior shadow of this 2-mile crater is the most noticeable part of it. Collins and Aldrin are in a line below Armstrong extending towards Sabine, and can be seen if the image is examined closely. The actual landing site is just above center near a barely visible feature called the Cat's paw.

The resolution varies across this image due to seeing effects; the best is about 1km.

Here is a labeled image of the Apollo 11 site. The angular field of this image is six by four arc minutes and has a resolution of .5 arc seconds, or about one kilometer on the moon. I think this is the highest resolution image I've yet taken. 1/150 sec exp. with my 11" refractor.

And finally, here's a labeled, closer crop of the same image which might make seeing the features easier. Width of this crop is 3 arc minutes, or about four Jupiter diameters. Sabine C is the leftmost of three darker low contrast features in a line under the landing site. My position for the Apollo 11 LM should be accurate to within 1 km. The Cat's paw is a brighter one between them and the site. The rim of the Cat's Paw can be seen on the lunar horizon in photos from the surface. All are shallow craterlets near the limit for amateur imaging. I plan on trying again in the coming months, when the moon is higher, to get a sharper one!

Jeff Schroeder

NASA Night Sky Notes March 2021

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!

Taking the Dog Stars for a Springtime Walk: Sirius and Procyon

David Prosper

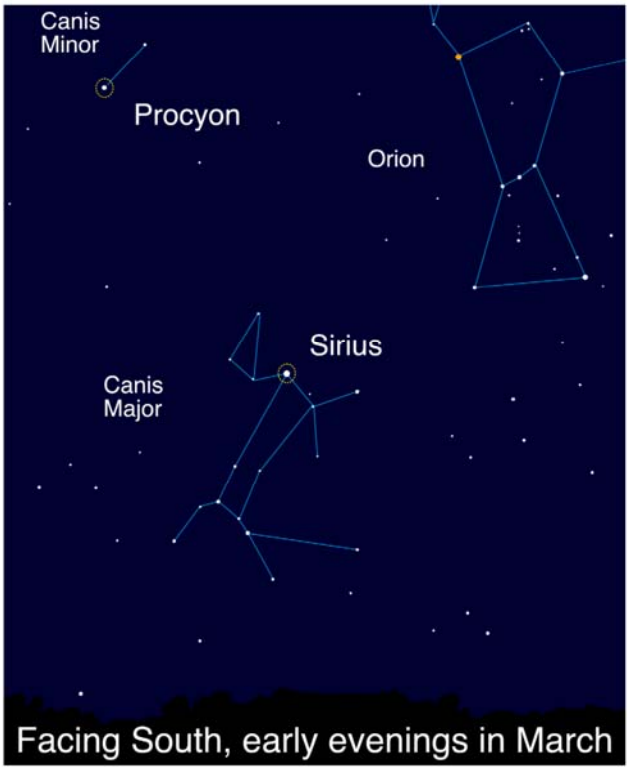
March skies feature many dazzling stars and constellations, glimmering high in the night, but two of the brightest stars are the focus of our attention this month: Sirius and Procyon, the dog stars!

Sirius is the brightest star in the nighttime sky, in large part because it is one of the closest stars to our solar system at 8.6 light years away. Compared to our Sun, Sirius possesses twice the mass and is much younger. Sirius is estimated to be several hundred *million* years old, just a fraction of the Sun's 4.6 *billion* years. Near Sirius - around the width of a hand with fingers splayed out, held away at arm's length - you'll find Procyon, the 8th brightest star in the night sky. Procyon is another one of our Sun's closest neighbors, though a little farther away than Sirius, 11.5 light years away. While less massive than Sirius, it is much older and unusually luminous for a star of its type, leading astronomers to suspect that it may "soon" – at some point millions of years from now – swell into a giant star as it nears the end of its stellar life.

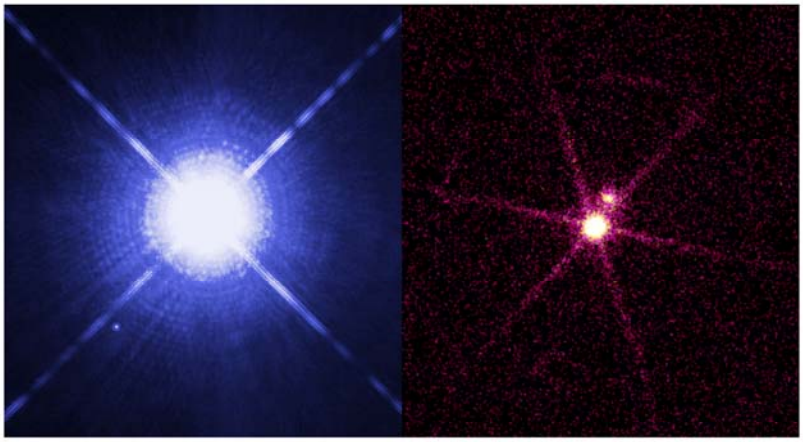
Sirius and Procyon are nicknamed the "Dog Stars," an apt name as they are the brightest stars in their respective constellations – Canis Major and Canis Minor – whose names translate to "Big Dog" and "Little Dog." Not everyone sees them as canine companions. As two of the brightest stars in the sky, they feature prominently in the sky stories of cultures around the world. Sirius also captures the imaginations of people today: when rising or setting near the horizon, its brilliance mixes with our atmosphere's turbulence, causing the star's light to shimmer with wildly flickering color. This vivid, eerie sight was an indication to ancient peoples of changes in the seasons, and even triggers UFO reports in the modern era!

Both of these bright stars have unseen companions: tiny, dense white dwarf stars, the remnants of supermassive companion stars. Interestingly, both of these dim companions were inferred from careful studies of their parent stars' movements in the 1800s, before they were ever directly observed! They are a challenging observation, even with a large telescope, since their parent stars are so very bright that their light overwhelms the much dimmer light of their tiny companions. The white dwarf stars, just like their parent stars, have differences: Sirius B is younger, brighter, and more energetic than Procyon B. Careful observations of these nearby systems over hundreds of years have helped advance the fields of: astrometry, the precise measurement of stars; stellar evolution; and astroseismology, the study of the internal structure of stars via their oscillations. Discover more about our stellar neighborhood at nasa.gov!

NASA Night Sky Notes March 2021



Sirius and Procyon, the loyal hunting dogs of nearby Orion the Hunter! What other stories can you imagine for these stars? Learn about "Legends in the Sky" and create your own with this activity: https://bit.ly/legendsinthesky *Image created with assistance from Stellarium.*



Sirius A and B imaged by two different space telescopes, revealing dramatically different views! Hubble's image *(left)* shows Sirius A shining brightly in visible light, with diminutive Sirius B a tiny dot. However, in Chandra's image *(right)* tiny Sirius B is dramatically brighter in X-rays! The "Universe in a Different Light" activity highlights more surprising views of some familiar objects: http://bit.ly/different-light-nsn *NASA, ESA, H. Bond (STScI), and M. Barstow (University of Leicester) (left); NASA/SAO/CXC (right)*

PVAA Bylaws changes

The PVAA Board has identified several issues with the current club Bylaws. Per Article IX of the Bylaws, the procedure for amending the Bylaws is that proposed changes will be published in the club newsletter to be read and openly discussed at two regularly-scheduled general meetings. A final vote will be held at a third regularly-scheduled general meeting. Proposed changes must pass by a vote of 2/3 of the members present.

The proposed changes are detailed below.

Article V - Officers and Members of the Board of Officers, Section 1, 1.0

Current language:
The Board of Officers of the Pomona Valley Amateur Astronomers shall consist of the following elected officers (in order of succession): President, Vice President, Secretary, Treasurer, Vice President of Facilities and Resources, Four Board Members at Large.

Proposed new language:
The Board of Officers of the Pomona Valley Amateur Astronomers shall consist of the following elected officers (in order of succession): President, Vice President, Secretary, Treasurer, and Four Board Members at Large. AVice President of Facilities and Resources may be elected when the club has facilities and resources that would benefit from or require such oversight, and a Workshop Director may be appointed by the Board if the need arises for someone to oversee workshops in the future.

Rationale for the change:
The club does not currently have any facilities, and our shared resources are down to a handful of pieces of equipment in a few members' garages. We currently have a VP of Facilities and Resources—club member Jeff Felton—but for the last several years that person has had no facilities or resources to oversee. So it seems logical to thank Jeff for his service and dissolve the position, while leaving open the option of electing someone to the position in the future, should there be a need.

Similarly, the position of Workshop Director is currently unfilled, and since we have not given workshops in several years, it seems best to make this an ad-hoc position. Per Article VII, the Workshop Director is not elected, but appointed.

Article XI - Membership Database and Mailing List, Section 1, 1.0

Current language:
The full membership list, including names, addresses, and phone numbers, is to be made available to any member of the club on request in printed form, on gummed labels, or on computer disk. (The member requesting the information must pay any associated costs.) A mailing originating from individual members must state that it is not an official club mailing.

Proposed change:
The Board proposes to delete this article in its entirety and change the numbering of Article XII to Article XI.

Rationale for the change:
The idea of giving out the contact information of everyone in the club to any member that asks is out of

step with modern privacy concerns. The problem of getting information out to club members has been largely solved by the advent of email and the internet. If any member needs to get information out to the entire club, they can post it to the club Facebook page, or send it to the Board to be distributed to the membership pending the Board's approval.

Article XII - Incorporation and Tax-Exempt Status, Section 3, 1.0 - Ongoing Reporting Requirements

Current description:
(This section lists the state and federal entities to which the club must report regularly to maintain its status as a tax-exempt 501(c)(3) nonprofit public benefit corporation, and currently also lists the specific forms required and their URLs.)

Proposed new language:
For the Pomona Valley Amateur Astronomers to maintain its federal and state tax-exempt status and operate as a 501(c)(3) nonprofit public benefit corporation in the state of California, regular (annual or biennial) reporting is required to the US Internal Revenue Service, California Franchise Tax Board, California Secretary of State, and California Attorney General's Registry of Charitable Trusts. The specific forms, their annual due dates, and the websites where they may be found will be kept in a separate document, which will be assigned to a PVAA officer to keep up-to-date.

Rationale for the change:
The problem with listing the specific forms and their URLs in the Bylaws is that although the forms are easy to find online, the specific URLs often change from year to year as various government entities overhaul their websites,and occasionally the names of the forms change as well. Listing the precise forms required in any given year as well as their URLs means that the Bylaws will regularly become out of date and require revision. For these reasons, the board unanimously approved Claire Stover's recommendations that

1. a separate document be created to list the current URL for each document that is required to be filed by the PVAA as a non-profit organization
2. this document be assigned to a PVAA officer to keep up-to-date
3. this document be referenced in Article XII of the by-laws

All Articles

The board unanimously approves correcting all the typographical errors in the Bylaws. The club secretary, Ken Elchert, has compiled a list.