



Morning Star

Spring 2019



*** Club Info ***

Announcements

Annual Meeting, Banquet and Auction.

May 6 at St. Johns club. Festivities start at 6 PM. See page 3 for more details.

Elections

Elections this year are for Treasurer, Secretary and the 4 Board Members at Large. Any full member interested in any of these positions please contact any of the board members listed at the end of this page. Note: there will be 2 Board positions up for grabs as Bill Wick and Gary Nowak will not be seeking re-election this year.

Associate Members interested in becoming full members make your interest known to one of the board members.

Wanted - PR person

If interested in either position contact Jack St. Louis or Paul Walker.

We have a new Webmaster. Scott Turnbull has stepped forward as our new webmaster. Thank you Scott.

Moving or Changing Email?

Please send changes to Paul Walker, 53 Valley View, Middlebury, VT 05753, paulwaav@together.net (info@vtastro.org will also work)

Hinesburg Observing Site

We have an observing site in Hinesburg, VT. (Located on town property). A locked gate (required by the town) limits access to the site.

Associate Members can request access to the gate lock. They have to a member for 3 months. This provides access to the Warming Hut and port-a-potty locks and 115v AC power.

Full Members can request access to the gate lock and the locks to the observatories.

Board approval is required. Some training is required. There is a training checklist and an access agreement that need to be filled out.

Note: To become a Full Member one has to actively participate in club functions and events and be active in some other aspects of astronomy (more details are in our by-laws).

Contact the Secretary, Paul Walker, for more information. paulwaav@together.net 802-388-4220

Email for Observing at HOS

We have an email List for Member's interested in getting a heads-up when someone will be at the Hinesburg Observing Site (HOS).

If interested in getting on the list contact info@vtastro.org (Goes to President and Secretary)

Observing Certificates

Several certificates (beginner to advanced) are available to members as encouragement to get out under the stars and hone their observing skills. Follow the link on our web site.

Outreach

Acknowledgment Letter

To help record our broad community involvement with public star gazing events, projects and classes, we have developed an Outreach Acknowledgment Letter with a Sample Form. It is posted on the website and can be found under **Members, VAS Club Materials for Members, Outreach Acknowledgement Letter.**

Direct Link: http://vtastro.org/wp-content/uploads/2018/03/VAS_Outreach_Ack_Letter_V3.pdf

Dues

Membership Renewal Time

- January 1st

Associate Members \$15

Full Members \$25

Send dues and any address or email updates to VAS, PO Box 782, Williston, VT 05495. Or bring to any monthly meeting or Contact Paul Walker, 802-388-4220, paulwaav@together.net.

Connect On-line

www.vtastro.org

[Twitter@VTASociety](https://twitter.com/VTASociety)

[Facebook.com/Vermont-Astronomical-Society-113053818706458/](https://www.facebook.com/Vermont-Astronomical-Society-113053818706458/)

Email: info@vtastro.org (Goes to President and Secretary)

webmaster@vtastro.org

(Goes to Secretary)

Board Members

Jack St. Louis	Pres	658-0184
Joe Comeau	VP	238-1664
Doug Williamson	Treas	388-3482
Paul Walker	Sec'y	388-4220
Bob Horton		879-7802
Gary Nowak		879-4032
Keith Lawrence		453-5496

Editor and Publisher - Paul Walker

Contributors: Joe Comeau, Maura Kelley, Michael Stadtmauer, NASA Night Sky Network, Scott Turnbull, Paul Walker, Allon Wildgust, Terri Zittrich. (My apologies if I missed anyone)

Contents

Announcements _____	Pg 1
Club Info _____	Pg 1
Gary's Astro Events _____	Pg 2
Jack on the Radio _____	Pg 2
Events _____	Pg 2-3
- VAS Events	
- Public Star Gazing	
- GMAAA Events	
New Members _____	Pg 3
Meetings _____	Pg 3-4
<i>Apr 1 Sydney Observatory & Using a Planisphere</i>	
<i>May 6 Annual Banquet & Business Meeting</i>	
<i>June 3 Yerkes Observatory & Refiguring the Patterson 14.5" Mirror</i>	
Articles _____	Pg 4-6
- NASA Night Sky Network	
- OSIRIS-REx Close Encounters of the Asteroid Kind	
Board Talk _____	Pg 7-9 & 19
- Board Minutes	
- Committee Updates	
Observer's Page _____	Pg 9-18
- The Moon in Spring	
- Winter Star Party	
- Andromeda Galaxy (M31)	
- Pinwheel Galaxy (M33)	
- M45	
- Star Trails	
- Lunar Eclipse	
- Monkey Head Neb	
- Jelly Fish Neb	
Locator Maps of Objects _____	Pg 18
For Sale / Wanted _____	Pg 19 & 20

Gary's Astronomical Events for the Month

can be viewed via WCAX at <https://www.wcax.com/weather/astronomy>

Jack on the Radio

Listen to Jack's astronomy update on radio station WJOY AM (AM 1230) on Ginny McGehee's 'Breakfast Table' morning show. Airs the first Wednesday of the month at 8:40 AM.

Stargazing and other Events

All observing events -are weather Permitting unless otherwise stated. Bring extra clothes. Even a summer evening can be chilly after standing still for a couple hours in damp air.

We have an mail List for Member's interesting in getting a heads up when the Hinesburg Observing Site (HOS) will be opened.

If interested in being on this list contact info@vtastro.org

Public Star Gazing at Schools, Libraries, and other, groups.

If you know of a group or institution that would like to schedule a star gazing session have them contact: info@vtastro.org

Public Events

We have requests from several entities for presentations and/or observing events. Members interested in helping or for more info, contact: info@vtastro.org

Member & Invited Guest Star Gazing & other events

Note: Some dates are tentative as we do not have people who have observatory access signed up of all dates yet.

April 5 or 6 - 8:00 PM. Deep Sky Keith or Paul hosting.

April 26 or 27 - 8:15 PM. Deep Sky Keith or Paul hosting.

May 3 or 4 - 8:30 PM. Deep Sky - Terri Zittritsch hosting.

May 10 or 11 - 8:30 PM. Moon night Keith hosting

May 24 or 25 - 8:45 PM. Deep Sky. Host TBD.

June 1, 2, 8 or 9 Russel Chmela Observatory Dedication, 12 noon with dedication activities starting at 12:30. Potluck with VAS will supplying hamburgers and hotdogs.

We may also have impromptu events, watch for short notice emails.

Contact info@vtastro.org

Green Mountain Astronomers (GMA)

All events start about sunset.

Contact Ron Lewis for info
802-779-5913 (cell)
802-247-5913 (home)
vtpoet@gmail.com

Apr 20 (Sat) Observatory Clean-Up Day, with Solar Viewing, Castleton University (Moon rises 9:13pm)

Apr 27/28 (Sat/Sun) Mini Messier Marathon (all-nighter), Tracy Holden's, Wheeler Road, Brandon (Moon rises 3:17am on 28th)

May 4 (Sat) GMA Members Only, Lovers Lane, Brandon (Moon sets 7:41pm)

May 11 (Sat) National Astronomy Day, VAS's Chmela Observatory, Hinesburg (Lunar event)

May 17 (Fri) Public Outreach, Castleton University (Last Day of Finals)(Moon rises 6:52pm)

Jun 8 (Sat) Public Outreach & New Member Orientation, Hubbardton Battlefield. Lunar & Planet Night, 8:30 to 11 PM. Bring a picnic for sunset, with night sky viewing beginning about 9:10.

Jun 22 (Sat) Solar viewing at the Pittsford Village Farm, during Pittsford Town-Wide Yard Sales, 9:00am-Noon

Jun 25 (Tue) Public Outreach, Castleton University (Concert Series Tuesday, 1st of 7)(Moon no issue)

Jun 29 (Sat) GMA Members Only, Hubbardton Battlefield

Continued on next page

Green Mountain Astronomers (GMA)

Continued from previous page

Jul 6 (Sat) Re-enactment Event, Re-enactors and GMA Members Only, Hubbardton Battlefield.

Jul 9 (Tue) Public Outreach, Castleton University (Concert Series Tuesday, 3rd of 7)(Moon rises 1:19pm)

Jul 16 (Tue) Public Outreach, Castleton University (Concert Series Tuesday, 4th of 7)(Moon rises 8:34pm)

Jul 20 (Sat) Hubbardton Family Fun Afternoon & Evening (ending with fireworks) - 50th Anniversary of Apollo 11 - Hubbardton Battlefield, Event begins at 4:00pm (Moon rises 10:47pm)

Jul 23 (Tue) Public Outreach, Castleton University (Concert Series Tuesday, 5th of 7)(Moon no problem)

Jul 27 (Sat) GMA Members Only, Hubbardton Battlefield

Jul 30 (Tue) Public Outreach, Castleton University (Concert Series Tuesday, 6th of 7)(Moon no problem)

Aug 6 (Tue) Public Outreach, Castleton University (Concert Series Tuesday, Last of 7)(Moon sets 11:39pm)

Aug 10 (Sat) Public Outreach, Hubbardton Battlefield Moon and planet viewing night.. Night sky viewing begins about 8:30

Aug 31 (Sat) GMA Members Only, Hubbardton Battlefield

Sep 7 (Sat) Public Outreach, Hubbardton Battlefield Astronomy Night Night sky viewing begins at 8:00.

Sep 20 (Fri) Orwell Star Party & Observatory Visit (GMA assisting)(Moon rises 10:30pm)

Sep 28 (Sat) GMA Members Only, Hubbardton Battlefield

Oct 19 (Sat) Homecoming & Family Weekend, Castleton University (Moon rises 10:01pm)

New Members

VAS welcomes the following new member who joined us since the last newsletter:

Randy Bertrand
Esmer Dzinic

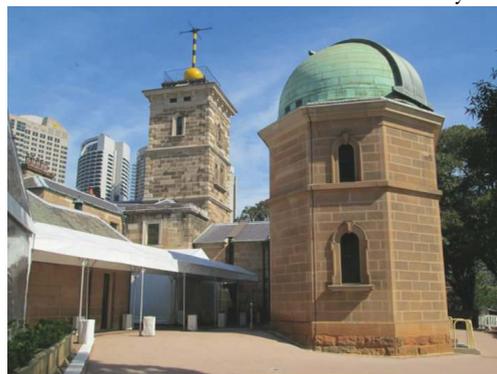
Meetings/Presentations

Meetings are held the first (non-holiday) Monday of the month, at 7:30 P.M. in the Kolvoord Community Room of the **Brownell Library**, 6 Lincoln St., Essex Jct (2nd building north of Essex 5 corners on the left on Rt. 2A). (see Map on our web site, top of Events page). Extra parking is available in the Bank North parking lot across from the library. **For inclement weather call Jack St. Louis (802-658-0184) or Paul Walker (802-388-4220) to confirm.**

April 1
2 mini-talks

Sydney Observatory
by Al Boudreau

The Sydney Observatory was an essential institution dedicated to southern-hemisphere astronomy and accurate timekeeping. Today it is used as an astronomy outreach to help visitors appreciate astronomy and actually use their large telescope to discover the wonders of astronomy. This talk will give you a visit to the observatory and an appreciation of its contribution to Astronomy.



**** And ****

Using a Planisphere
by Paul Walker

Planispheres are practically indispensable. They are used by beginner

and advanced amateurs alike. They are computers but . Planispheres are analog computers that require no power cords or batteries.

They can answers the questions: "What is in the sky tonight?" and "When is the best time to observe a particular object?". And so much more.

You input a date and time and they output the location of the stars. Or input the part of the sky that holds a particular object you want to observe and the planisphere will output a list of suitable dates and times.



Planisphere or Star Wheel

May 6

Annual Banquet & Business Meeting

No Presentation. Members and invited guests only. **Contact any member to get an invite.**

Meal: If you are having the meal, choices are Turkey with all the fixings or Veggie Lasagna. Paul will send out RSVP's in April.

The **meal is \$25 at the door**, no charge if not eating.

Location: St. John's Club, 9 Central Ave. Burlington (take Lakeside Ave from Pine St.).

Time: Social Hour 6-7. Dinner 7-8. Door prizes, awards, annual business meeting 8-9.

Elections

Elections this year are for Treasurer, Secretary and the 4 Board Members at Large. Any full member interested in any of these positions please contact any of the board members listed at the end of this newsletter. **Note: there will be 2**

at large positions up for grabs as Bill Wick and Gary Nowak will not be seeking re-election this year.

Silent Auction

By popular demand, the VAS Annual Meeting & Dinner Silent Auction is back again this year. We already have a number of interesting items to auction such as an Orion Pro 17 power station, a Tirion's Star Atlas 2000, a heavy duty camera tripod and several eyepieces including a Televue Nagler. This auction helps offset the cost of our meeting and dinner plus any addition funds help support the Society's ongoing projects, like the Library Loaner Telescope program.

We are looking to broaden our selection of items at the auction, so if you have any new, nearly new or used but in good condition items that you would be willing to donate (astronomy related or not) please give me a call or e-mail. It is very helpful if I have the items ahead of time so you can bring them to the March or April meetings, but if you can't get them to me please call or e-mail so I can make plans to put them in the auction.

My contact information is as follows: [802-453-5496](tel:802-453-5496) or sleepingbearwoodworking@yahoo.com.

Thanks for supporting the club.

Keith Lawrence

June 3

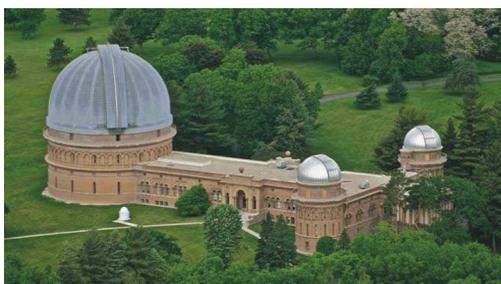
2 mini-talks

Yerkes Observatory The beginning of the "Big Eyes in the Sky"

for George Ellery Hale and me

By Cale Shipman

The 40 inch refractor is the largest and last Alvan Clark telescope ever build. It is housed in an observatory that can only be described as a national treasure. Located near Lake Geneva, Wisconsin and currently under threat of destruction.



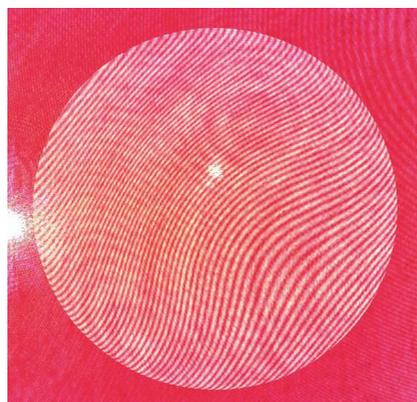
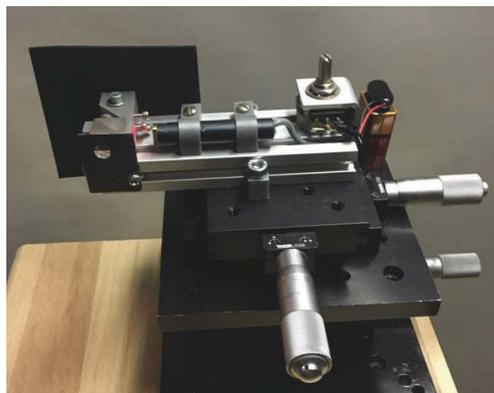
**** And ****

Refiguring the Patterson 14.5" Mirror By Robert Horton

In this mini-talk we will explore the techniques that were used to refigure a medium sized Newtonian telescope mirror using both traditional Foucault testing as well as the latest advances in amateur interferometric analysis. First, we will walk through the various means by which we can measure the mirror to compare it to the desired shape and then we will see how to utilize that information to drive the refiguring steps needed to bring the mirror to that goal.

Example instruments of both a Foucault tester and a Bath interferometer will be shown and the process through which their measurements are made will be demonstrated and the pros and cons of each method will be explained. In the end, the precise shape of the mirror will be known and the expected performance can be simulated. Hopefully, when the mirror is installed at the HOS (aka GMO) sometime this spring, the actual performance will match these simulations.

Below are images of the Bath Interferometer and an example Interferogram of this mirror:



Articles

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and



more.

Mars the Wanderer By David Prosper

April's skies find Mars traveling between star clusters after sunset, and a great gathering of planets just before sunrise.

Mars shows stargazers exactly what the term "planet" originally meant with its rapid movement across the evening sky this month. The ancient Greeks used the term planete, meaning wanderer, to label the bright star-like objects that travelled between the constellations of the zodiac year after year.

You can watch Mars as it wanders through the sky throughout April, visible in the west for several hours after sunset. Mars travels past two of the most famous star clusters in our night sky: the Pleiades and Hyades. Look for the red planet next to the tiny but bright Pleiades on April 1st. By the second week in April, it has moved eastward in Taurus towards the larger V-shaped Hyades. Red Mars appears to the right of the slightly brighter red-orange star Aldebaran on April 11th. We see only the brightest stars in these clusters with our unaided eyes; how many additional stars can you observe through binoculars?

Open clusters are made up of young stars born from the same "star nursery" of gas and dust. These two open clusters are roughly similar in size. The Pleiades appears much smaller as they are 444 light years away, roughly 3 times the distance of the Hyades, at 151 light years distant. Aldebaran is in the same line of sight as the Hyades, but is

actually not a member of the cluster; it actually shines just 65 light years away! By comparison, Mars is practically next door to us, this month just a mere 18 light minutes from Earth - that's about almost 200 million miles. Think of the difference between how long it takes the light to travel from these bodies: 18 minutes vs. 65 years!

The rest of the bright planets rise before dawn, in a loose lineup starting from just above the eastern horizon to high above the south: Mercury, Venus, Saturn, and Jupiter. Watch this month as the apparent gap widens considerably between the gas giants and terrestrial planets. Mercury hugs the horizon all month, with Venus racing down morning after morning to join its dimmer inner solar system companion right before sunrise. In contrast, the giants Jupiter and Saturn move away from the horizon and rise earlier all month long, with Jupiter rising before midnight by the end of April.

The Lyrids meteor shower peaks on April 22nd, but sadly all but the brightest meteors will be washed out by the light of a bright gibbous Moon.

You can catch up on all of NASA's current and future missions at nasa.gov



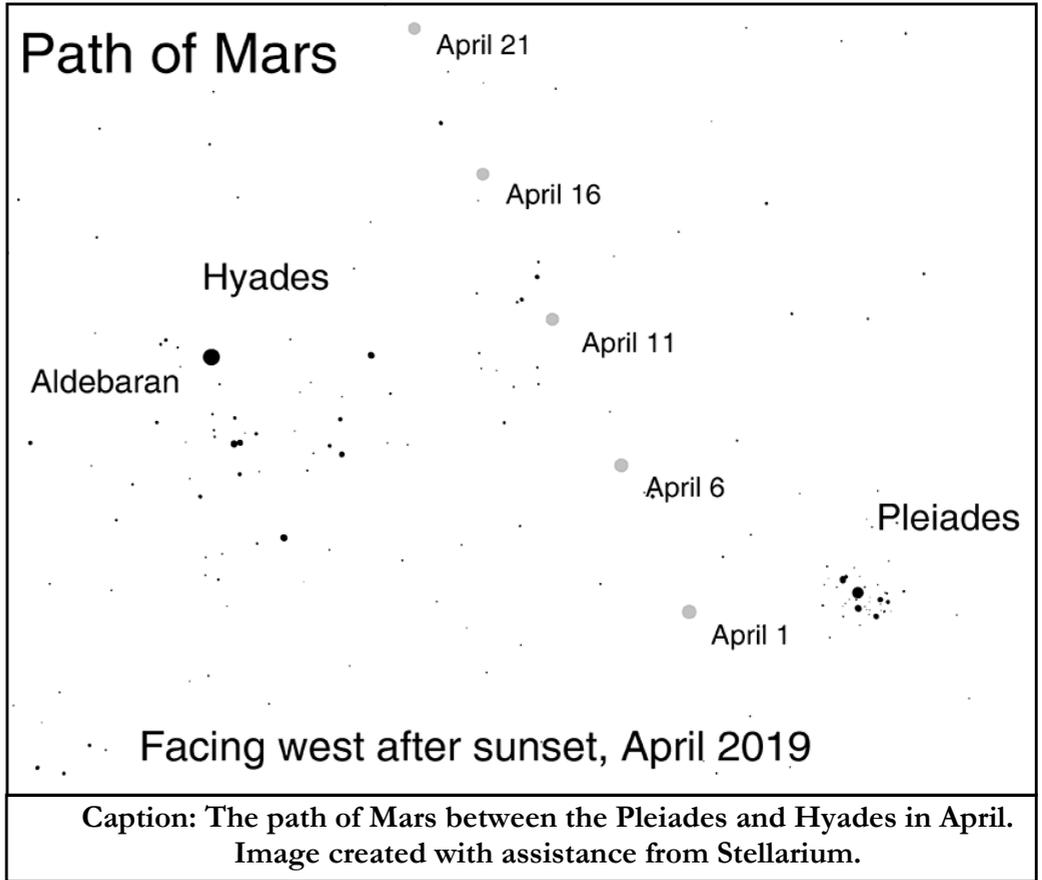
OSIRIS-REx

Close Encounters of the Asteroid Kind

--by **Scott Turnbull, VAS Member and Solar System Ambassador**

This article explores NASA's ongoing OSIRIS/Rex mission to the Asteroid Benu.

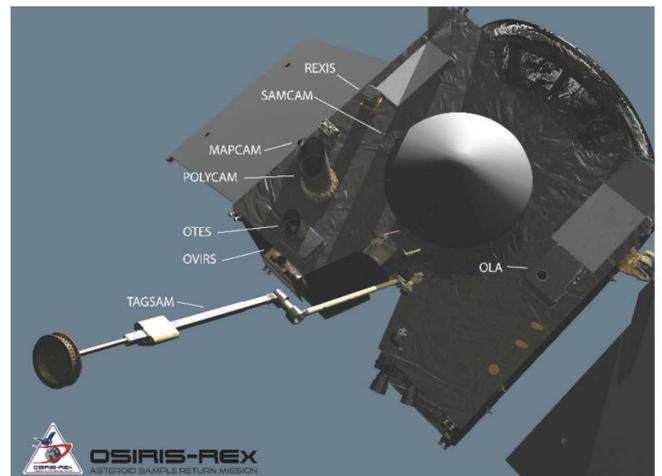
This is the second article in a series exploring the wide variety of our off-world hardware. When it comes to space exploration, the mind is willing, but the flesh is weak. That is why we



send metal. Our metal emissaries venture into the void to provide us access to information we otherwise could not clearly observe.

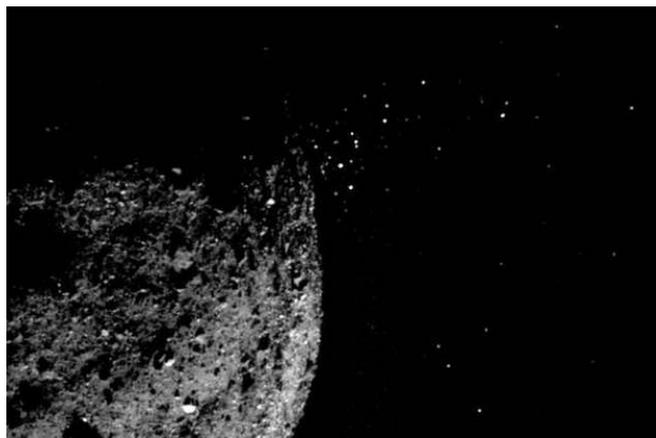
The Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer (OSIRIS-REx) spacecraft has traveled to the near-Earth asteroid, Benu (formerly 1999 RQ36). Onboard remote sensors include a telescopic (POLYCAM), wide field mapping (MAPCAM), and closeup sample monitoring (SAMCAM) visible light cameras. Also onboard is a 3D mapping laser system (OLA), thermal emission spectrometer (OTES), visible and infrared spectrometer (OVIRS), and x-ray imaging spectrometer (REXIS).

After executing its detailed remote sensor inspections, OSIRIS-REx will make brief contact with the surface of Benu using the TAGSAM sample arm and bring a physical sample back to Earth for study. See the accompanying



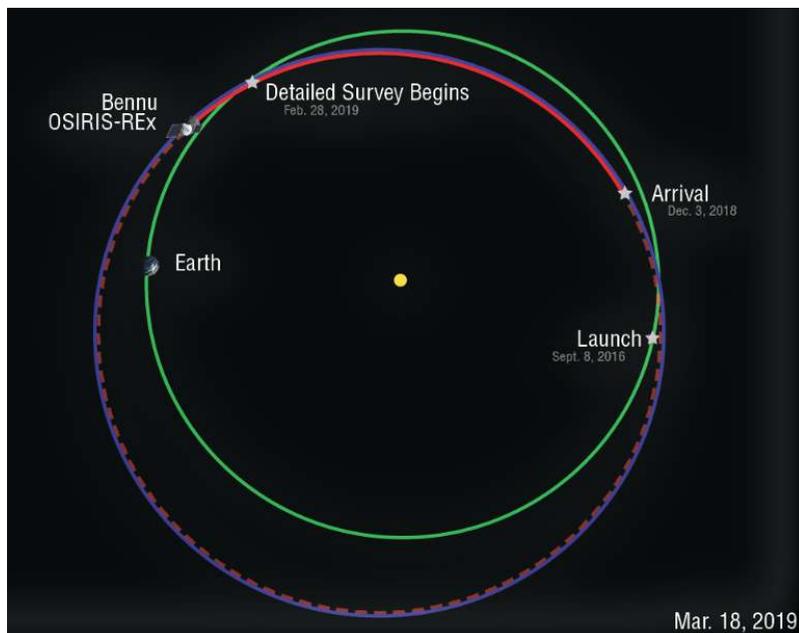
Spacecraft Name Decoder Table to parse the spacecraft name and how it relates to the mission goals.

OSIRIS-REx launched from Cape Canaveral, Florida, on an Atlas V 411 rocket on Sept. 8, 2016. In September 2017, OSIRIS-REx used Earth's gravitational field to assist it on its way to Bennu. On Dec. 31, 2018, OSIRIS-REx used an array of small rocket thrusters to match the velocity of Bennu and rendezvous with the asteroid.

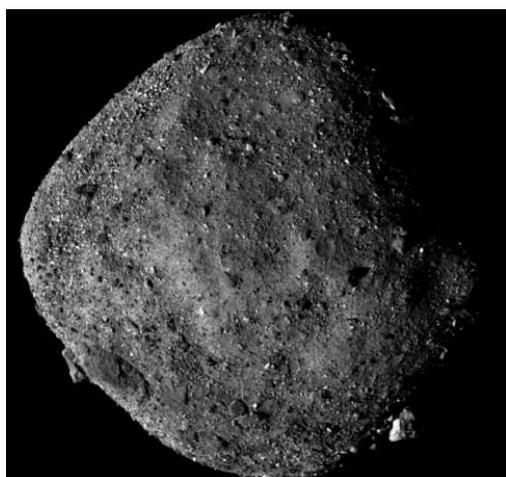


said Rich Burns, the project manager of OSIRIS-REx at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "Bennu has issued us a challenge to deal with its rugged terrain, and we are confident that OSIRIS-REx is up to the task."

There is time in the mission schedule to work on



The accompanying photo shows Bennu as being roughly the shape of a double cone, with the wide point being the equator of the axis of rotation.

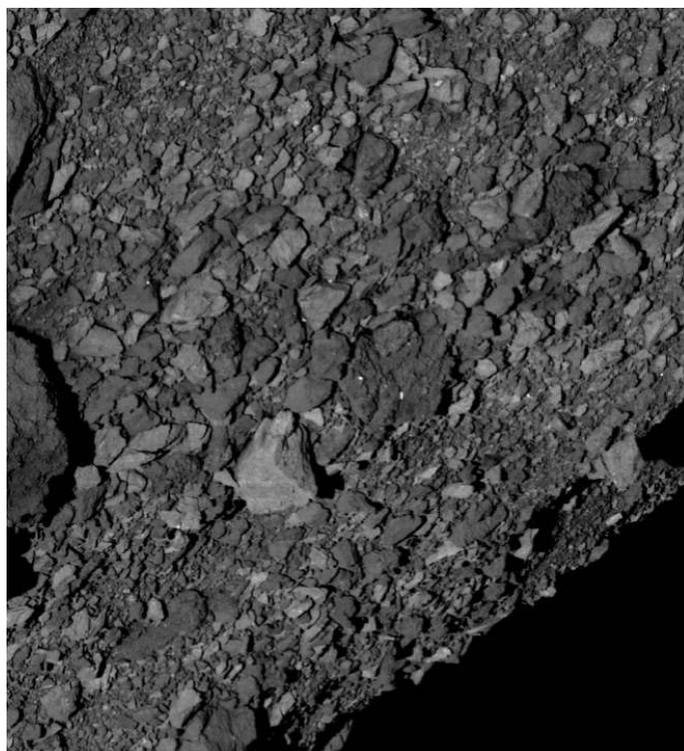


In the time following NASA's OSIRIS-REx spacecraft entering into orbit around Bennu, the OSIRIS-REx team detected multiple, bright, point sources near Bennu in the images obtained by the spacecraft. Closer observation has revealed that particles are being actively ejected from the surface of Bennu. The science team is still investigat-

ing the exact cause of this phenomenon. One theory is that the active period is correlated with the asteroid's recent pass through the perihelion position in its orbit around the Sun.

The surface of Bennu has proven to have a much higher density of boulders than expected, with a decided lack of large areas of smooth terrain. This means that the mission's plans for the Touch-and-Go (TAG) sample collection need to be refined. The original mission design was based on a hazard-free sample site with a 25-meter radius. The team has been unable to identify a site of that size. It has begun to identify potential sites that are much smaller in radius, which in turn will require more precision in the sampling approach control. A new control method is under development, named Bullseye TAG.

"Throughout OSIRIS-REx's operations near Bennu, our spacecraft and operations team have demonstrated that we can achieve system performance that beats design requirements,"



refining the revised sampling process. The window for departing Bennu opens in March 2021. That is when OSIRIS-REx will begin its return journey to Earth, arriving two and a half years later in September 2023. The sample return capsule will then separate from the spacecraft and enter the Earth's atmosphere. The capsule containing the sample will be collected at the Utah Test and Training Range.

Resources

The information presented in this article was provided by NASA/JPL from their online mission resources.

For more information, please refer to

<https://www.nasa.gov/osiris-rex>

<https://www.asteroidmission.org/where-is-the-spacecraft/>

https://www.nasa.gov/sites/default/files/atoms/files/osiris_rex_factsheet_5-9.pdf

Board & Committee Meetings

January

Jack opened the meeting.

The Chmela telescope is assembled and ready for installation. We will wait for better weather to install it.

We need to clear out the club's scopes from Jack's garage. We may seek to find other places to store some. Others we will likely sell and/or give away to interested members, schools, students interested in astronomy who don't have a scope, etc.

Terri Zittritsch has made a request for Full Membership. (see Motions below).

Maura Kelley has made a request for gate access to the HOS. (see Motions below).

Doug brought up at the last meeting the need to have money set aside in case we ever need to decommission any of our observatories or other buildings.

Paul reported on progress of the Chmela Observatory Dedication Committee. Went over the items the Boards needs to address/decide - What to have for plaques and signs, whether/how to honor donors, committee members and construction participants. Board decided to put this into a handout for the Dedication Committee. Who, if anyone to highlight (other than Russ of course) - Jack will give speech and decide on those details.

The board directed the Dedication Committee to work on the wording on the plaque for Russell Chmela. And to come up with a budget for the event.

Keith presented an improved locking mechanism for the observatories. Keith will refurbish an observing chair that had been donated by Moe Cloutier and will install hooks in the Chmela observatory for storing it on the wall. Waterbury Public Library has purchased a Library Loaner Scope. We have placed 9 scopes to date. Waitsfield Library is interested in getting one.

Doug gave an update on the finances. We still have some funds that can go toward some of the remaining items and work needed for the new observatories.

Bob is done with the re-figuring of the primary in 14" Paterson telescope. He will bring it to a place in Montreal that coats mirrors. He has offered to do a mini talk on the re-figuring of the 14".

From Joe - The Shelburne Community School sent us thank you letters. Burlington will be holding an Earth-hour event in March. The club will participate. There will be a presentation and observing event by VAS at Milton Library at their request on April 3.

MOTIONS:

Jack made the motion that we approve Terri Zittritsch for Full Membership. Keith 2nd the motion. All voted in favor.

Paul made the motion that we approve Maura Kelley for gate access to the Hinesburg Observing Site. Keith 2nd the motion. All voted in favor.

February

Jack opened the meeting.

Joe - Earthhour is scheduled for March 30 at the Unitarian Universalist Church at the head of Church Street, Burlington.

VAS will do a Presentation and Stargazing at Milton Library on April 3, 6:30 - 8:30 PM.

Bob - The mirror for the 14" Paterson scope is re-coated and ready for installation.

Doug - Our Williston PO Box fee is due. Our insurance policy premium went up a little. We worked on updating the Resource List.

Keith - Membership Committee meeting is scheduled for tomorrow (ended up canceling due to weather). The Membership Committee will consider promoting VAS members to join the Astronomical League. Keith suggested we consider getting a used Camper to use at the HOS as a warming hut and meeting place.

Paul - We are set for Presentations for the through July. Larry Garrett, has suggested, as a way to help promote amateur astronomy, that he and Gary Nowak write bios that highlight their accompaniments in astronomy and post them on the web site. Larry also had asked Paul if the club was going organize an event to commemorate the 50th

anniversary of the Apollo 11 Moon landing (July 20th). There is some interest in this, possibly an event in the Burlington area. The Annual Meeting is scheduled for May 6 at St. Johns Club. Board approved Paul's request that he send an email to all members letting them know they can request access to the HOS and inviting them to do so. Terri Zittritch (now that she is a Full Member) has requested access to the observatory sheds. The Board approved her request. Paul will provide the training. Paul reported on the status of the Site Survey result analysis.

March

Jack opened the meeting. We are set for the Annual Meeting / Banquet

Keith has been making a list and collecting items for silent auction at the Annual Meeting.

Gary said the Chmela scope is ready for installation. However, we have a few things to take care of at the site before we will be ready to install it for use (we are looking into replacing the bottom door gaskets with a different design that may not get frozen down so badly, the height of the pier may have to be adjusted a little).

Steve Grimsley and Gary will be going up to Morrisville tomorrow (3/27/19) where Steve will do a presentation for the teachers at People's Academy who will be operating the refurbished Grout Observatory.

The Board may look into the possibility of having a joint Rocketry / Stargazing event with the Champlain Region Model Rocket Club (CRMRC) to commemorate the 50th anniversary of the Apollo 11 landing on the Moon.

A suggestion from a club member was brought up to the board about creating an on-line forum for members to post questions and answers and as another way for members to communicate and connect. The general consensus was that currently the vtastronomy@list email list serve provides a reasonable means for interested members (and non-members) to ask questions, get answers and share knowledge an experiences. There seems to be enough knowledgeable members on this list serve to field the occasional question that comes up. A forum

would likely require some level of active management to ensure timely and accurate responses to forum posts.

Paul updated the board on the new observatory dedication and survey analysis by emailing them the meeting minutes.

Since Paul forgot to bring a copy of the proposed update to the clubs by-laws he will email them to the board for final comments (the board has seen and commented previously). A paragraph is being added directing the board to set aside funds in case we ever need to decommission any buildings. The change would direct the board to decide how much to set aside. The board will then vote on the change. If it passes it will be put to the Full Membership for a vote.

Elections at the Annual Meeting this year will be for Secretary, Treasurer, and 4 Board Members at large. Paul will run again for Secretary and Doug for Treasurer. Bob and Keith will run for 2 of the 4 at large positions. The Rev has stepped down and Gary will be stepping down (lack of time for both) so there are 2 at large positions up for grabs. Jack will put out a request for nominations (for all positions).

We had further discussion on the proposal to consider getting an RV camper (5th wheel type) for the site. Would need town approval. Jack thinks the town would likely give approval. We could get a 2nd hand one for \$3K-\$5K. Benefits would be a reliable place, most of the year, to hold board and committee meetings, built-in propane heater and possibly beds for napping on those long observing nights. We have at this time the old observatory building to use as a warming hut. Consensus was to hold off any serious consideration for now. We will focus on increasing use of the site. If use warrants we can reconsider an RV for the site.

Keith did a Library Loaner Scope presentation for Waitsfield Library today (3/26/19). They agreed to purchase one. Keith will deliver it tomorrow (3/27/19). This makes 10 that we have placed.

Keith suggested we put a stockade fence across part of the south end of the observing area to block the lights of

cars coming up North Rd from Rt. 116. The board was amenable to the idea.

We talked about contacting some of the state parks to see if they may have some interest in the Loaner Scope program.

Earth Hour update. Weather is looking to be wet. Joe will bring a canopy to keep things dry.

Joe has some Boy Scouts coming to his place on April 10. He reminded us we still owe Wake Robin a stargazing event at the site.

We spent the remainder of the meeting updated the clubs Resource List. Deciding what to sell and what to drop from the list.

Motions: None

VAS Membership Committee

There were no meetings this quarter. There is a meeting scheduled April 1 5:30 to 7:00 PM at the Brownell Library (just before the monthly presentation).

Site & Russell Chmela Committees

There was no meeting this quarter. There is a meeting scheduled April 17 7:00 to 9:00 PM at the Carpenter-Carse Library in Hinesburg.

Chmela Observatory Dedication Committee

January

Discussed and recommended dates and time of the event – First good day of the following dates – **June 1, 2, 8, or 9** and a start time – 12:30 PM

Potluck. Suggested that we coordinate dishes.

Possibly use Google to do this. Bill Wooden will look into the details.

Discussed what plague(s) to have. Paul will ask the board to decide this.

Discussed how to display a list of donors, a list of Site & Chmela Committee Members, a list of financial and in-kind donors and a list of volunteers who worked on the construction. Paul will bring this to the board. [Minus anonymous donors - Board is thinking of having a handout listing donors at the Dedication Event.]

Who will speak at the dedication - Jack will give opening remarks, Gary Nowak will likely give some words on Russell and his contributions.

Who's efforts, if any, in the project to highlight - Jack will likely do this as part of his opening remarks at the dedication

Whether to have a slide show of the project (in the Warming Hut). Paul plans to produce a slide show (for the Annual Banquet) of the construction project that could be used for this.

Site preparations - Mow the grass, service the Port-a-Potty

Who to invite - All VAS Members, family and friends, Springfield Telescope Makers members (Russ was an member and officer of the STM)

March

Reviewed "Scope of Work", no changes.

Bill will setup Google spreadsheet for potluck. Place for name, make categories of types of dishes.

Discussed what we need for plaques and where to place them. 1 for the west observatory building "Russel Chmela Observatory". 1 for the east observatory building "Green Mountain Observatory" (houses the 18"). Both suggested to be mounted on the front of the sheds if there is room. We will put a small plaque on the Patterson 14" scope. 1 on the Warming Hut "Bob's Warming Hut" (the old observatory) in honor of Bob Williams. In the Russell observatory and Warming Hut will will post write ups and pictures of them respectively. Jack will deal with figuring out the size of the plaques and with getting the plaques made. They need to be made with materials and methods to handle being outside.

We will produce a handout for the event with information about Russ and contributors to the project. Paul will spearhead this.

Speakers -Jack to do opening remarks and MC event. Gary is has agreed to talk about Russ. Jack will say some words about Bob.

Paul is working on a slideshow of the construction process for the Annual Meeting, this will likely be set up for viewing at the dedication. Probably in

the Warming Hut on a TV monitor as a revolving slide show.

Went over the list of who to invite. Along with members and their invited guests we will invite the Hinesburg Select Board, folks at the town garage, members of the Springfield Telescope Makers (STM) (Russ was a member and officer of that club) and Bob William's family members.

It is estimated that there will be about the same number of VAS related attendees as attend the annual meeting (about 40). Town officials are likely to be 5. Bob's family maybe 5. STM maybe 2. Dr. Patterson (donated the Patterson 14" scope). Total 53.

Food: Club will provide hamburgers and hotdogs, buns, silverware, tables.

The VAS Board has asked us to provide them an estimated budget (for food and plaques).

Site Survey Analysis Committee

January

Reviewed/updated Survey "scope of work" - Jack suggested to add "what members would like to use it (the site) for"

Goals of Survey - 1. Increase the number of people using the Hinesburg Observing Site (HOS). 2. Improve the quality of the experience of the people who use the site. Jack wanted to know if #2 included other equipment. Paul said it is a broad statement that covers anything people want to suggest that would improve the experience.

Paul suggested we create a Multi-level summary: an overview summary for reference with more detailed information below that. Maura volunteered to create this summary. The plan is to provide this summary to society members and to notify them what we are doing to address the survey results.

We will develop a list of recommendations for the VAS Board to consider relating to the goals.

- Make list of "low hanging fruit"
- Make list of suggestions that will require moderate activity and/or cost.
- Make list of suggestions that will require substantial activity and/or cost.
- List any other suggestions not related directly to this survey separately.

Reviewed analysis of survey: 96 invites were sent out with 54% response. Bill - "Why are people not going?" Maura - Communication - many people didn't know there was an email list of when people are going. How do we get information to people for them to determine if they are interested? To try to address this Paul plans to send info about our 3 email lists in 3 separate emails rather than in 1 email as is currently the case. Bill suggested using Facebook events to promote site visits and group activities. Can create closed group for members only to secure information about site location. Bill can help show how to create or edit a Facebook group to do this.

Brainstorming: Paul suggests we have the site open more often, which will require other members to support. They could open the site on a rotating basis. Improve communication about when people are going to the site. Send information to members about site access and how to get it. It was suggested we expand our communication methods with: Private Facebook group: would require everyone to have a Facebook account. And shared Google calendar - Individuals can update with the dates they will be there, people can subscribe and see what times someone else will be there. They do not need a Google account to edit and view. This may be more effective than email. Bill thinks we can set it up to automatically send a notification when a scheduled opening is happening.

March

Reviewed action items and ensured each was assigned to someone:

Related to opening the HOS on a regular basis - Because there are only 14 or so members on Observing notification email list, there was a question as to how a member could inform all the VAS members that they were opening the site, on an impromptu basis. They will have to request Jack, Paul or other board member to forward this to the VAS News list.

There was a question about whether the vtastronomy@list could be used for communication opening of the site.

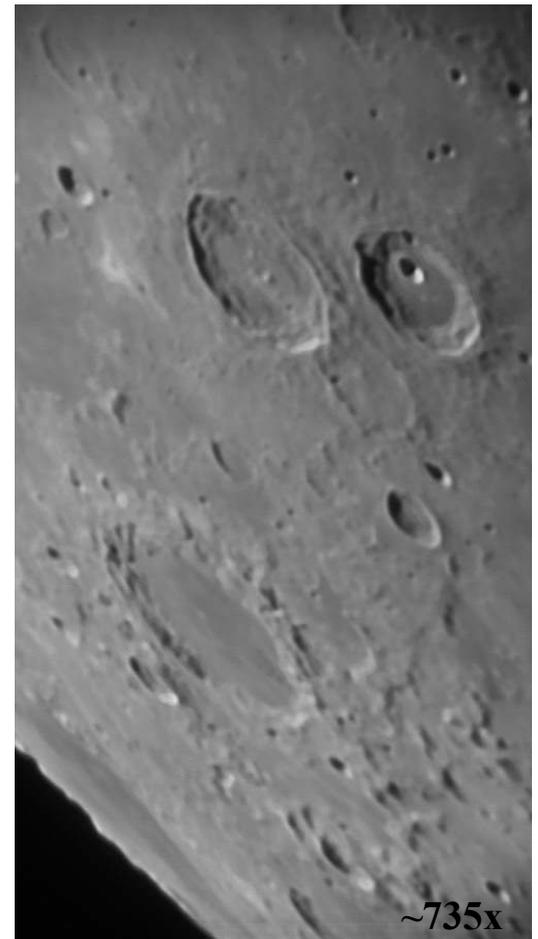
[Survey Minutes Continued on page 19](#)

Observers Page

The Moon in Spring

Spring is great time to view the Moon. This is because the path (called the ecliptic) that the Sun, planets and Moon follow across the sky runs high above the Southern horizon. The ecliptic is high in December, January and February as well, but its **cold** around here in those months. Come March and April the nights are warmer.

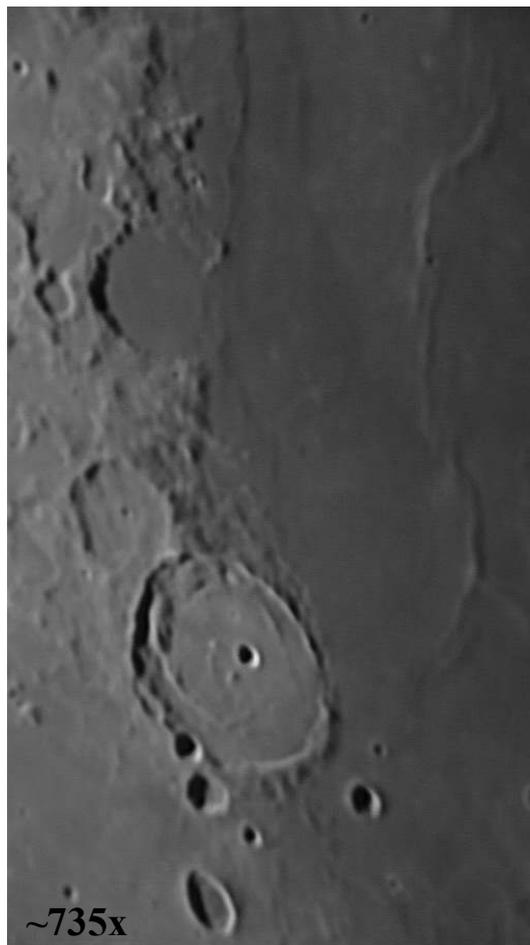
If you forget what months the ecliptic is runs high, just check your handy-dandy planisphere. Most have line representing the ecliptic. I will try to remember to mention this during my planisphere mini-talk at the April meeting. Remind me if I don't.



Note: North is down in these images.

Remember Hercules, the upper right crater here? And the smaller crater within it, Hercules G. I think it was the year before last that Larry Garrett directed us to it in one of his Lunar Gazettes. Since then, any time it has been visible when viewing or imaging the Moon, I have checked it out. Because of this it and the large crater next to it, Atlas, have become familiar features to me. It

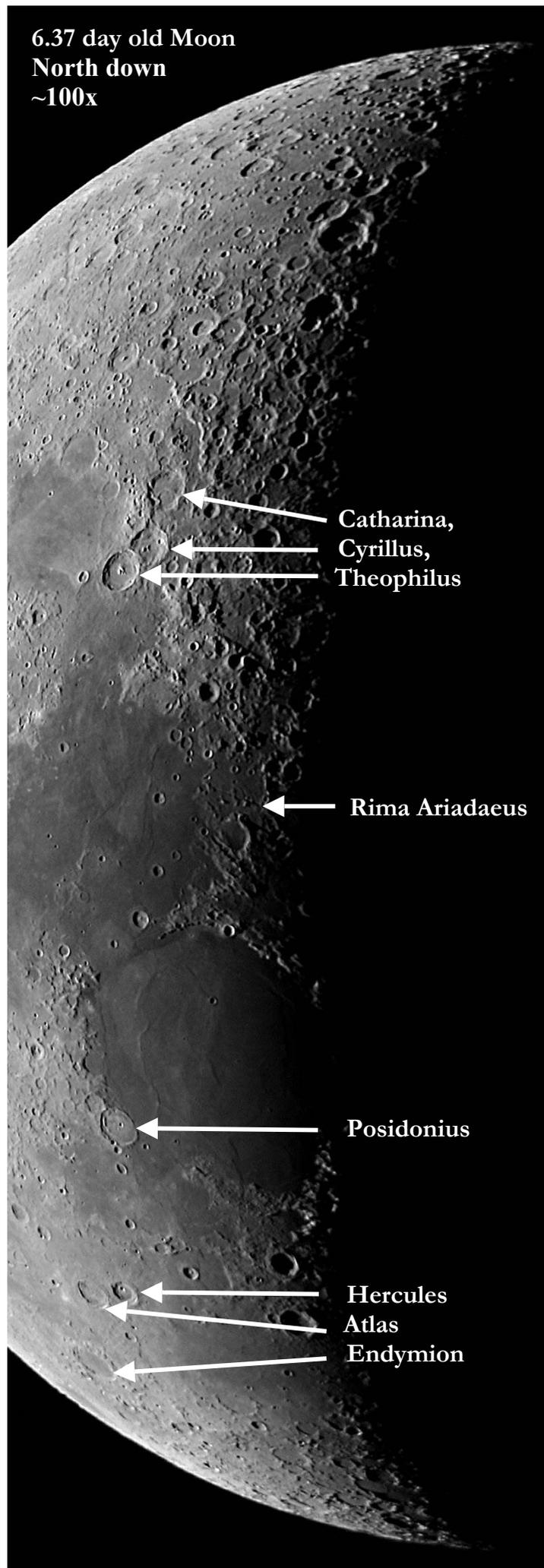
has been interesting to see how the appearance of these craters change as the Sun gets higher and higher above them. Also worth checking out is the larger crater to the lower left, Endymion and Mare Humboldtianum, the darker gray patch on the limb of the Moon.



A little south of there (up) is the large crater Posidonius, with Posidonius A just off the small central peak. Posidonius is in the low ring of mountains that surround most of Mare Serenitatis (Sea of Serenity). The Sea of Serenity is the smooth area on the right side of the image. At this low Sun angle a long "S" shaped "wrinkle ridge" is clearly visible on the Mare.



Next up are 3 more large craters, each different in appearance with plenty of details to investigate (Catharina, Cyrillus and Theophilus). Mare Nectaris (Sea of Nectar) is the smooth region to the left and the south end of Mare Tranquillitatis Sea of Tranquility) is on the bottom.



Here we have a couple different images of a rille, Rima Ariadaeus, 4 miles wide and a total length of 133 miles. This is believed to be a graben, a section of the crust that has sunk down between two parallel faults. A higher resolution image would show that the ridges and other raised features that appear to cross the rille are in fact cut through by the rille which formed later.

The 2 images below were taken an hour and a half apart at 7:42 PM for the top one and 9:11 PM for the bottom. That was enough time for the Sun to rise over a ridge to the right and expose more of the rille. I could see the details visible in these images through the telescope.



~735x



~460x

Here we have a close-up of the craters Catharina, Cyrillus and Theophilus. You can see that Theophilus is older than Cyrillus because its rim intrudes into Cyrillus. Also based on the softer rims of Catharina and Cyrillus you can tell they are both older than Theophilus.



~662x

Technical Details

Telescope: 10" f/5.6 Newtonian (1407mm fl)
 Camera (high magnification shots): Nikon AW-110 point & shoot (28-140 mm EFL, 5x)
 2.8X Klee Barlow
 15 mm and 24 mm eyepieces
 The camera was clamped to the eyepieces with a ScopeTronic EZ-Pix II universal camera adaptor.
 Camera (whole Moon shot): Canon Xti, DSLR

All pictures were taken on the same evening, 2019-03-12 when the Moon was approximately 6.37 days old.

The whole Moon shot was taken at prime focus using the Canon.

For the high magnification images I used the Nikon using the afocal method (eyepiece in the scope and camera held up to the eyepiece, clamped in this case). To boost the magnification I used the Barlow between the scope and eyepiece. This gave me 162x and 263x with the 15mm and 24mm eyepieces. The 5x zoom on the camera gave up to an additional 2.8x magnification (140mm/50mm, assumes 50mm fl provides 1x magnification). This provided maximum magnifications of 460x and 735x for the eyepiece / Barlow / camera combinations. The Nikon was used in video mode (720x480 pixels) for ~1 minute clips. Images are stacks of 200 to 700 video frames. The images as printed were rescaled slightly and therefore are not necessarily properly scaled to each other.



Winter Star Party By Terri Zittritsch

This February Peter Gillette, my partner Chris and I had the pleasure of attending the Winter Star Party (WSP) in the Florida Keys, sponsored by the Southern Cross Astronomical Society (SCAS) of Miami.

Peter first brought up the idea of attending, driving down, and generously offering to haul our equipment if we were interested in attending. After a little research Chris and I were all in. Chris and I have been going to the Keys for a spring vacation for the last few years so this only required us to move our plans up by a month or so. We both prepared the gear we wanted to bring, and Peter and I arranged a gear drop off, and we were on our way. Peter made quick time of the long drive down in his home-made RV, while Chris and I flew down to Miami and rented a car. We met up the day before the event opened, and Peter stayed with us at the Tranquility bay resort in Marathon, which allowed us to watch the super bowl together and for Peter to be well rested so he could get up bright and early to grab a good spot in line the next morning. RVs get priority entry before tenters or us 'resorters'. This is a popular event, and RVs and cars line up in wee hours of the morning to get the best camping/RV sites before the noon gate opening. Peter was able to get us a prime setup site right on the water.



The 2019 event is the SCAS's 35th anniversary of the WSP and as we found out, this year's event came close to not occurring at all. The site for the star party is a girl scout camp called Camp Wesumkee located on the West Summerland Key, also called Scout Key, which is in a small narrow set of minor keys between the populated Big Pine and Marathon keys. The land mass is approximately 500' wide at Camp Wesumkee and maybe only 1/2 of that is on the side of route 1 that is the camp.

In August of 2017 Hurricane Irma hit this area in full force and wiped out many of the small buildings, facilities, and structures, and the clean up has been slow. In fact, there were doubts about whether the star party would come off this year at all, but the organizers of the SCAS pulled it off with the help and cooperation of those that attended. There was no electricity

at most of the site, so people were encouraged to bring and share small generators which were allowed to run all night. The shower and bathroom facilities at the girl scout camp were destroyed by the hurricane, and not yet rebuilt, so the organizers had port-a-potties brought in and were able to get permission to use shower facilities at the boy scout camp next door. The talks and seminars that usually occurred at the girl scout camp were moved to a pavilion at the boy scout camp. All in all, everything worked out just fine for the attendees.

The winter star party is a serious astronomical event and is advertised as such. People and vendors from all over the world attend, including some top vendors such as Software Bisque, ADM, Explore Scientific, Disc Mount, Lockwood Optics and others. This year there were fewer than normal due to the uncertainty of the event and condition of the venue. There were over 350 attendees this year (about half what usually attend when the facility is up and running in good order) and most either came in RVs or setup a tent. We were able to meet friendly astronomers from many states and see, and look through, some amazing equipment including telescopes up to 32"! The organizers and attendees are all friendly and helpful, the setting is beautiful, and there are many things to do if you want to go out and explore, or come with a significant other who needs time away from the 'geek squad' now and then. And best of all, the sky was expansive and dark. The weather was good to us and we were able to get some viewing or imaging in every night we were there. Both Peter and I were able to take some astrophotos along with a few snapshots of the event. I've included some photos from both of us. I highly recommend the event if you have the opportunity.



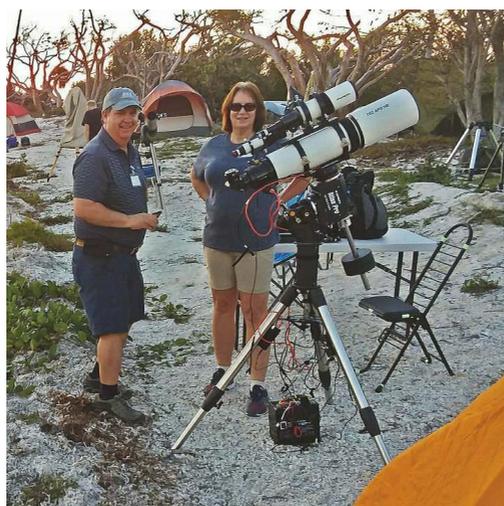
VALLEY OF THE DOBS: The guys with the big Dobsonians congregate around the northern end of the camp each year. There are numerous very large dobs up to 32". I had a chance to look through some of these scopes and the images were amazing.



Large 32" Dobsonian: This large 32" has a fan suspended by wires in the shadow of the central obstruction. The maker is in the picture behind the scope and this has a mirror by Mike Lockwood who was in attendance giving lectures.



THE BERM: Many set up on the berm which almost disappeared from the storm. My understanding is that it used to be much bigger. This is a view from each end.



Peter, Chris and Me: Both pictures were taken on day one as I recall.



Evening viewing: Nighttime view of observers looking out over water towards the old Bahia Honda bridge.

WILDLIFE AROUND THE KEYS:



KEY DEER: An endangered species of deer live in the keys. They are very tiny, like the size of a medium dog. We saw these on Big Pine Key next door.



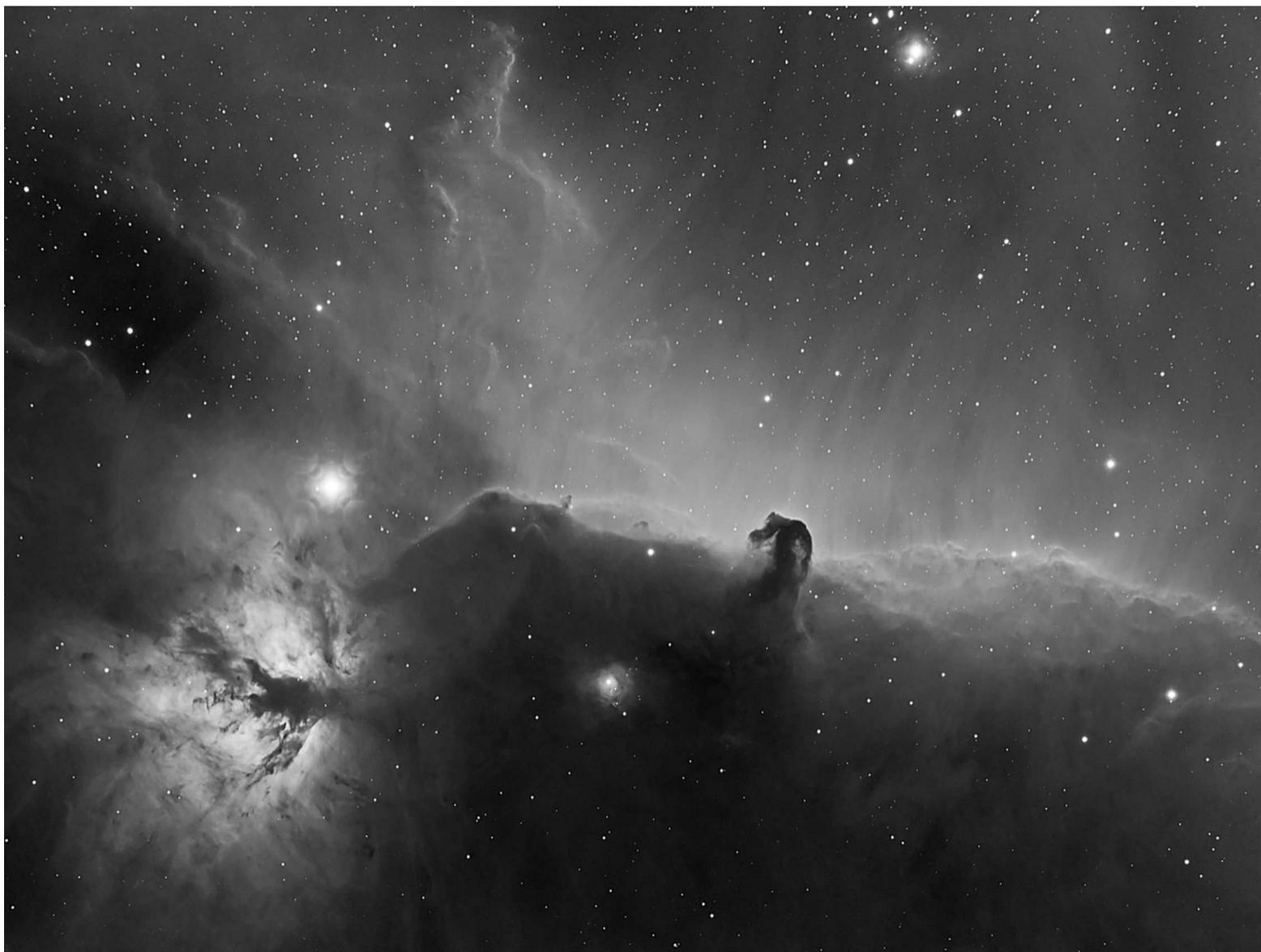
GATOR: What would a trip to Florida be without seeing some gators. We came across this one over on Big Pine Key on a wildlife sanctuary.



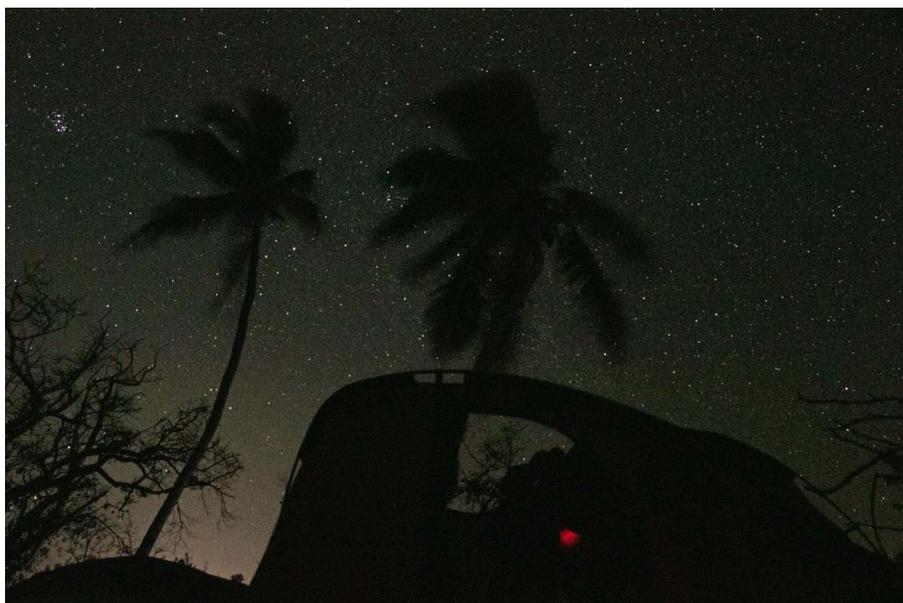
WANNA IGUANA: If you're looking down during the day, you'll find many creatures around. Peter spotted this one during one of his many wildlife searches.



Lectures: There were only 2 lecturers this year, and my understanding is that it was much less than normal. This one is Mike Lockwood, from Lockwood Optics talking about the performance parameters for large mirrors and stressing the importance of the cell designs and cooling.



The Horsehead Nebula: The Horsehead and the Flame Nebulae in hydrogen-alpha. I shot this with my ASI1600 Mono-cooled camera, ASI 6nm Ha filter on the TEC140. This is a stack of 15 frames of 400 seconds shot at unity gain and cooled to -20C. On either side of the Horsehead it looks like ocean waves crashing onto a beach.

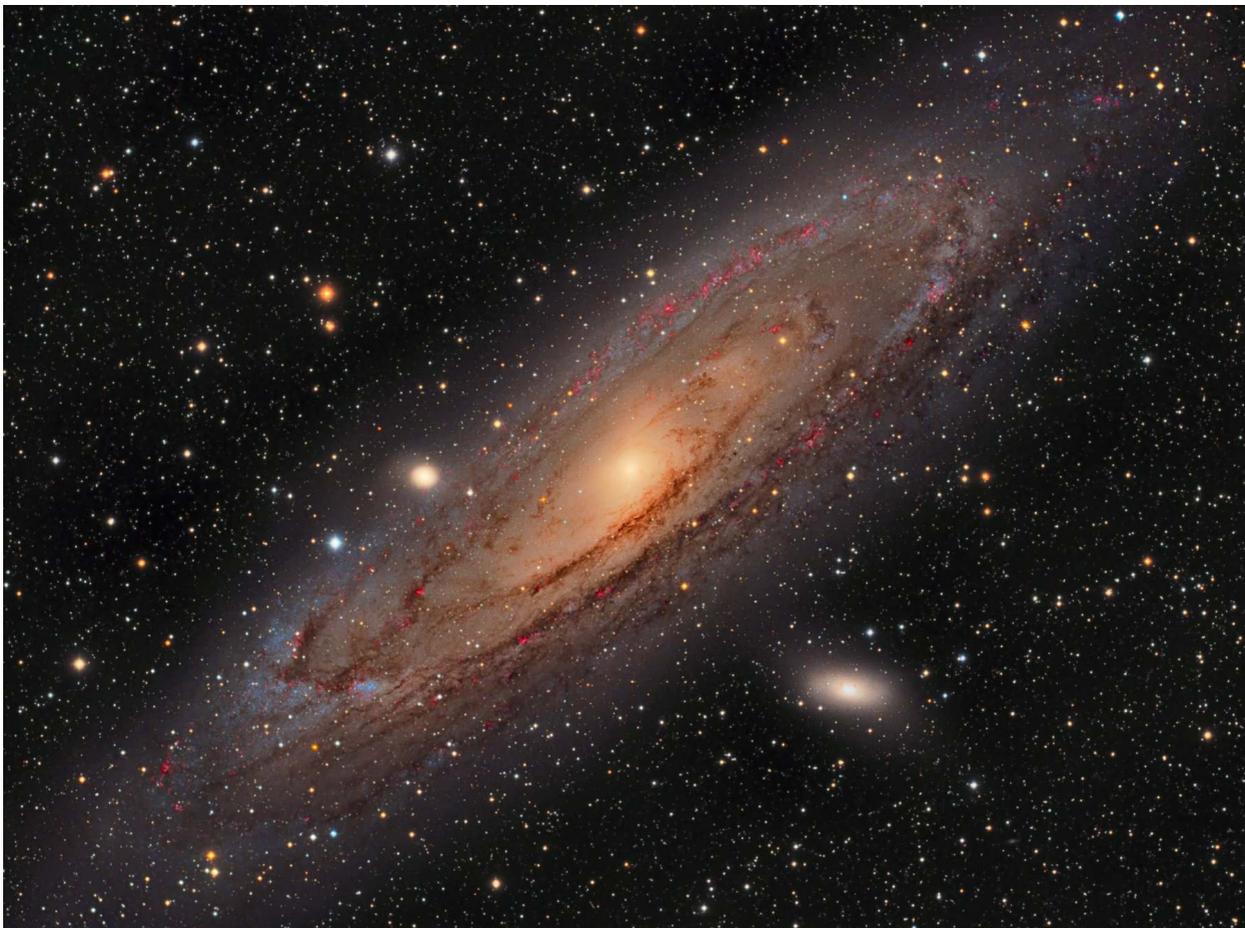


Sky above Peters portable observatory: The sky above Peters portable observatory tent.

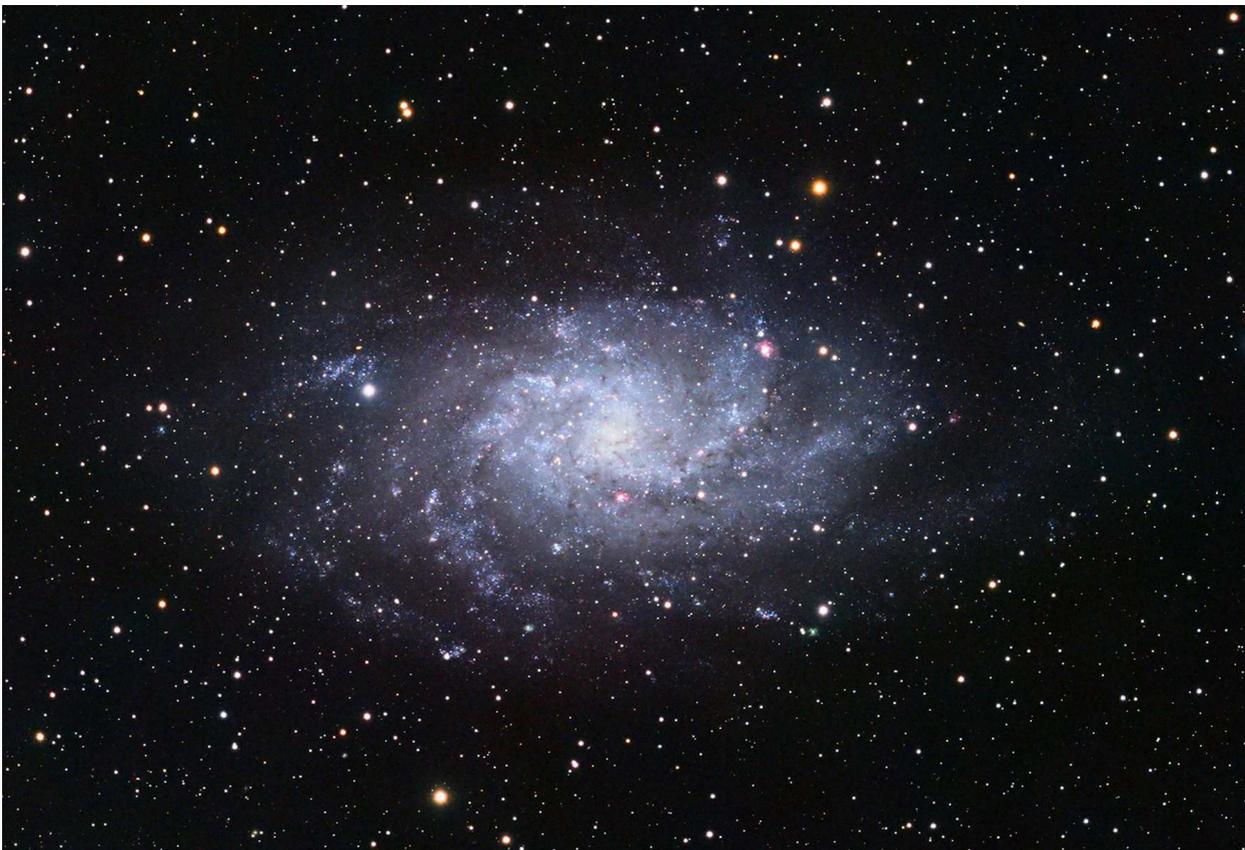


M42: Peter took this shot with a Canon Powershot camera (50x zoom lens) guided by his SCT on a fork and wedge. This was a 3 minute exposure at ISO1250.

For a winter with not so good weather for astronomy we have a surprising number of image submissions. Here we have the 2 most prominent galaxies in the northern hemisphere. Both visible in the Fall and Winter.



This one was taken early this winter. For those of you who may not have gotten a good view of it on his laptop, it is the image of the Andromeda Galaxy (M31) that Michael Stadtmauer took and used for his March presentation “Astroimaging with PixInsight”. It is an LRGB + Ha image. Including the H-alpha data really makes the star birth regions (red) pop out.



This is the Pinwheel Galaxy (M33) not far from M31. This was taken by Terri Zittritsch. This also was taken early this winter. About 4.5 hours of integration, taken with an Explore Scientific 102mm f/7 telescope with a 0.8 reducer/corrector that gives 571mm fl. M33 with its low surface brightness is a difficult target. Both for this image and the Mike’s image above, cooled B&W CCD astronomical cameras and color filters were used.

Next up are 2 nice images of the Great Orion Nebula (M42). The nebulosity called the Running Man is above M42. As this newsletter comes out M42 is still easily viewed in the Southwest when the sky gets dark. These images demonstrate how the same object can look quite different based on the equipment used and how they are processed.

The image to the right was done by Maura Kelley. She processed it to bring out the details and highlight the colors throughout the nebula. Gives it a 3-D effect. Taken with Explore Scientific 80mm f/6 air-spaced triplet ED apochromatic refractor in carbon fiber and Explore Scientific EXOS2-GT equatorial mount with PMC-Eight GoTo System, and Olympus OM-D E-M1 Mark II Mirrorless Micro Four Thirds DSLR camera.



This image to the right is by Terri Zittritsch it is processed to bring out the faint dust clouds in the vicinity of the Orion Nebula while maintaining a reasonable dynamic range (i.e., not blowing out the bright regions too much). The processed image retains detail all the way in to the Trapezium stars but unfortunately no monitor nor printed page can display the full range of brightness.

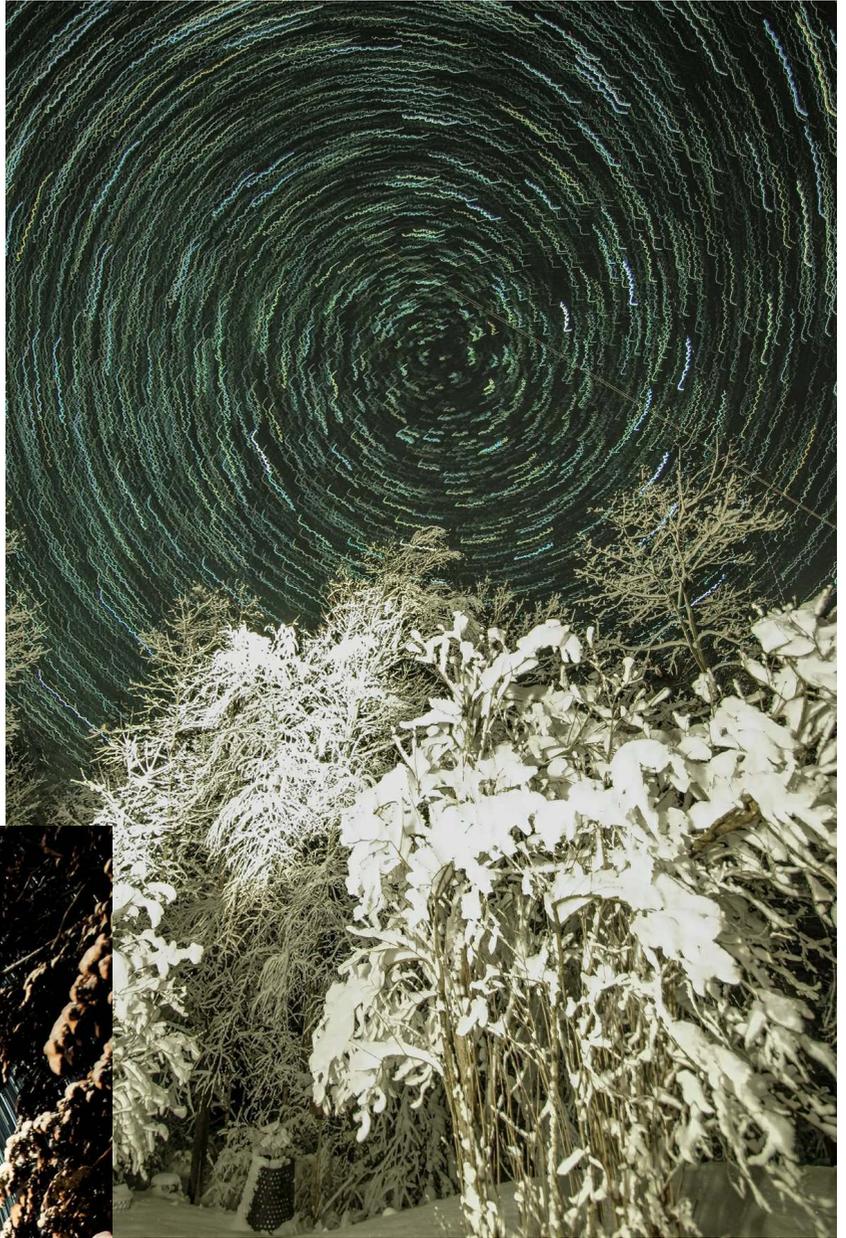
This is 2h 45m or so of total exposure. 2 hours of which are with 4 minute exposures (typically called subs) and 45 minutes of 90 second subs. "The Trapezium in this image is the only thing entirely saturated when I do an HDR (High Dynamic Range) composition, combining long and short exposures".

She used a ZWO ASI071MC one shot color astronomical camera on an Explore Scientific 102mm f/7 telescope with a 0.8 reducer/corrector that gives 571mm fl at f/5.6

Winter Star Trails By Allon Wildgust

I was out the other night [1/13/19] taking pictures of star trails. I used a 10mm lens at f-2.8, ISO 800 for an hour. I used continuous shooting mode for 120 shots @ 30 sec each = 60 minutes. The continuous shooting resulted in one image (jpeg) using the bright mode. The trees in the good photo [below] is only illuminated with moon light. The other was after the moon set and I painted the trees with a flash light.

The "poor" photo [right] shows how cold it was that night ; zero degrees. Even the stars were shivering. Actually Murphy's law was in effect, I had a nut loose on my tripod and every time the shutter tripped, the camera jerked a bit. Live and learn.



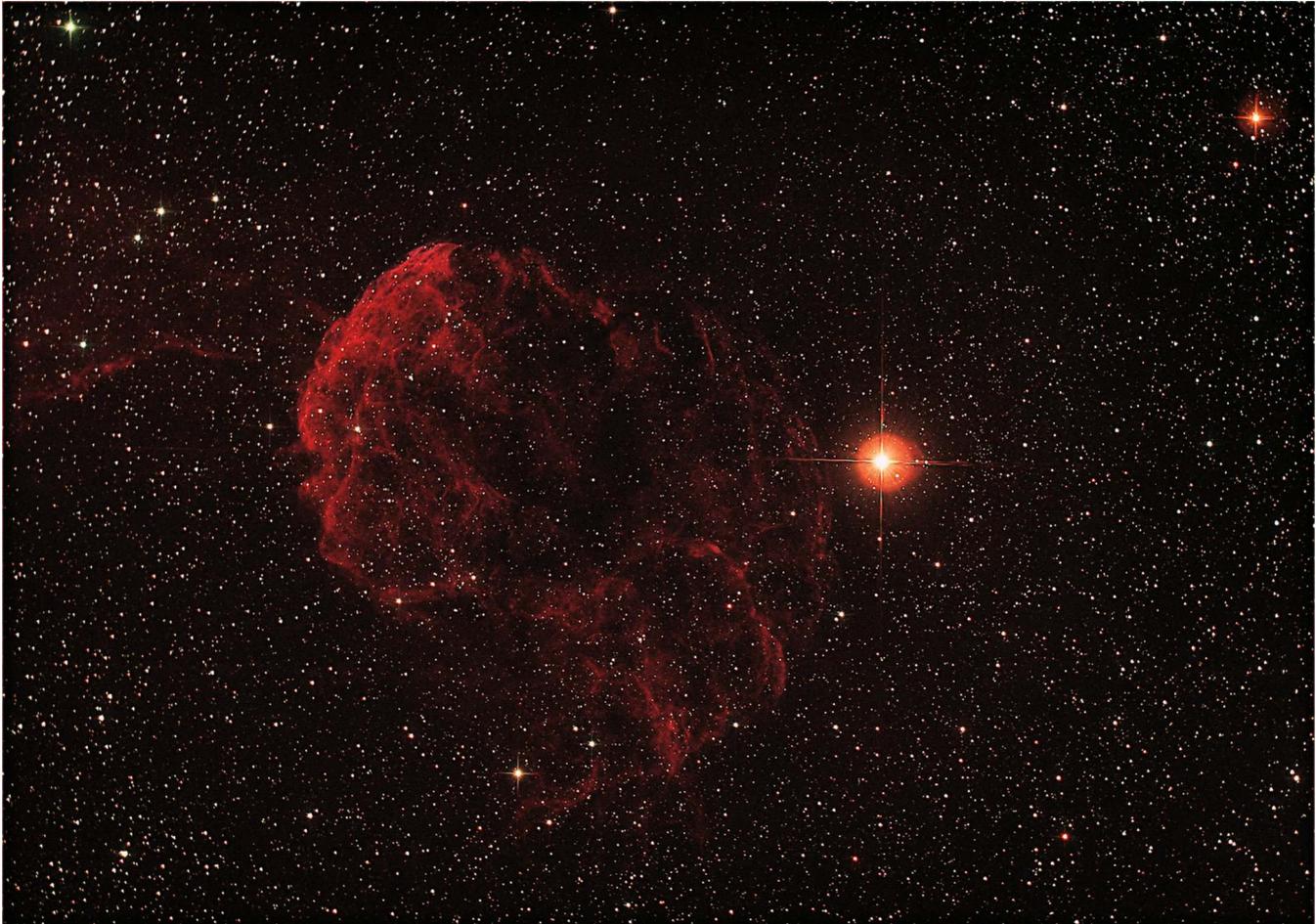
Allon also got to view and image the January 21 Lunar Eclipse. This is crop from his results.

"I was surprised and pleased to have clear skies for the lunar eclipse. I took pictures off my tripod and combined 10 photos. Due to the cold I was outside for only 20 minutes at the beginning of totality. I shot with a 300mm [lens] at 1/8 sec at f/4 at ISO 1600. Deep Sky Stacker could not stack the photos so I manually did it in Photoshop Elements."



The Monkey Head Nebula (NGC2174 & IC2159)

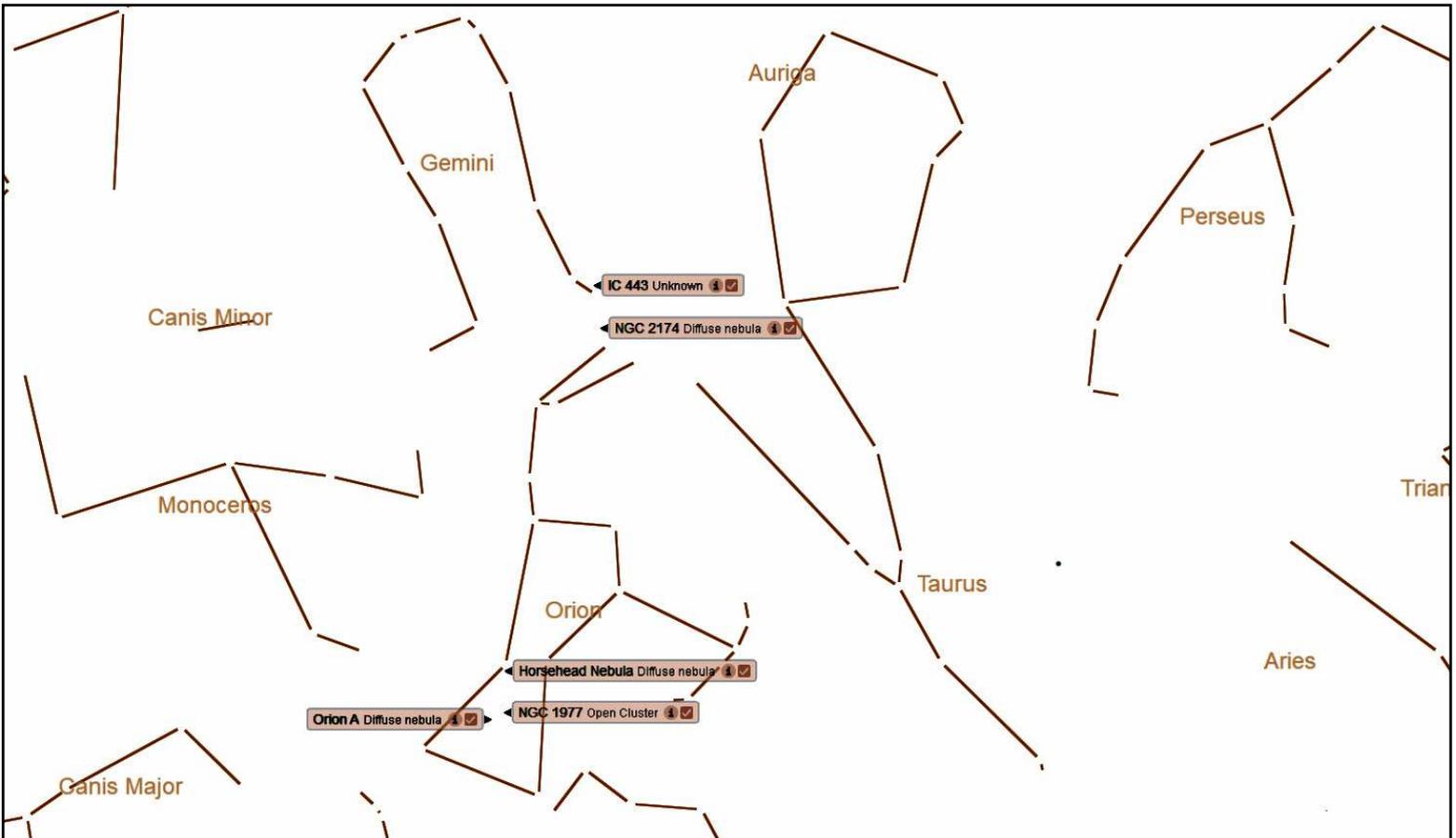
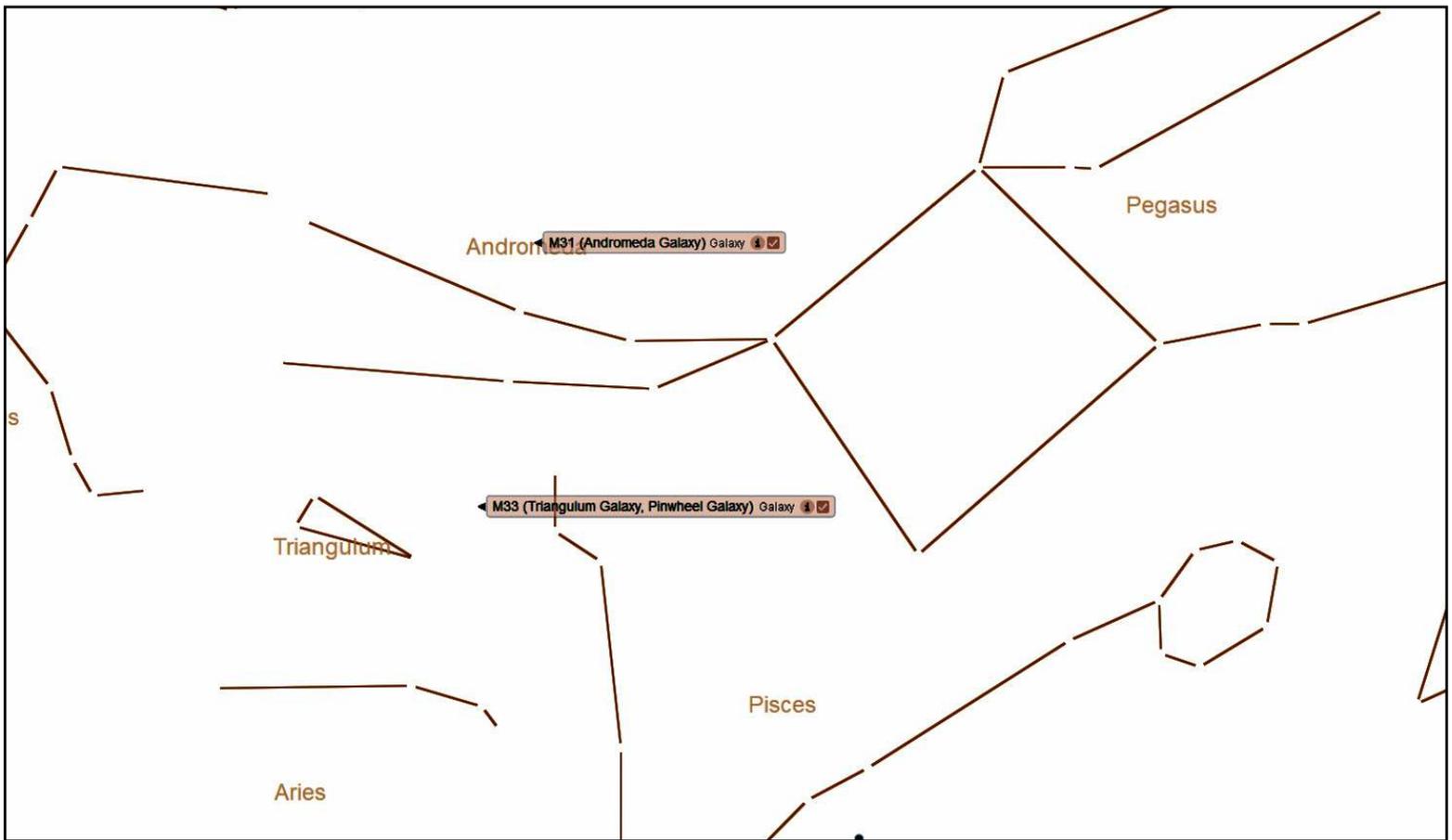
Here is another example where the equipment used and the processing produces different results. Both images are cropped considerably. The image on the left was taken by Paul Walker on 2019-02-28 through an 8 inch F/4 Newtonian with a modified Canon XT camera, comma corrector and Orion Broadband light pollution filter. A relatively short integration of 4 min X 9 (36 min. total). On the right is an image by Joe Comeau taken through a 6 inch f/4 Newtonian with a modified Canon XT camera, [presumably a comma corrector] and Celestron UHC light pollution filter 30 sec X 292 (146 min., 2.43 hr. total). With the light pollution filters, contrary to the Model descriptions, are both “broad band” filters with similar band passes. The Monkey Head is a hydrogen emission nebula.



The Jelly Fish Nebula (IC443) (a Supernova Remnant, SNR) next to 3.3 magnitude Eta Geminorum

Taken by Paul Walker on 2019-02-09 through an 8 inch F/4 reflector with a modified Canon XT camera, comma corrector and Orion Broadband light pollution filter. An stack of 4 min X 48 (192 min. 3.2 hr. total). The Jelly Fish and Monkey Head only 3 degrees apart near the right foot of Gemini and the upraised club of Orion. I tried viewing the Jelly Fish with my 10” f/5.6 Newtonian using a light pollution filter but was unable to detect it.

Location Charts for the deep sky object images in this issue.
Created using Starry Night Pro 7 & Picture Window Pro 7.



Survey Minutes Continued from page 9

There 93 people on this list. This is an open list, most of the people on this list are not VAS members and most VAS members are not on this list so it will not work for this purpose. Last fall Paul did sent the notices for impromptu observing to the VAS News list. He also sent notices to the vtastronomy@list with the idea that occasionally a non-member on that list may be interested in coming to the site. Any non-VAS member had to request directions, which provided some record of who they were and let us know they were coming.

Jack - suggested we add signage with VAS contact information at site for people who randomly show up while walking their dog or going for a walk through the area. At least one on the north end of warming hut.

Google calendar is used for generating the list of events seen on our website. Bill suggested using it for impromptu observing events as well. Paul asked whether it may be possible have Google calendar auto send events to a list serve.

Bill suggested that at the next monthly meeting that we ask members "what is their preferred contact method?" - Email, Facebook, etc. Just to confirm we are focusing efforts on the right communication method for growth.

Terri asked what is our reason(s) for having the observing site?" Answers - To give a sense of community. It is something the members have consistently said the club should have.

The Board approved sending all associate members (of 3 months+) an invitation to gain access to the site and approved the same for full members.

It was suggested that we may be able to use text messaging (along with email) to send out last minute communications about observing events. Bill will research whether/how this can be done for a "mass" text message to members with cell phones.

Maura will work on creating a "Member's Handbook" that can be handed to new members or emailed. The handbook would help ensure members have all the pertinent information about emails and site access.

Paul will send her some of the info to be included in the handbook. Such as, Site info, info about history of the club.

Terry suggested adding that info to website. Paul will inform new webmaster (Scott) to review website and possibly update. [Paul checked the web site, this info is already there.]

Jack - Suggested new Member's "welcoming kit" is not applicable for this site survey committee as it is out of it's scope of work.

A suggestion on a closed Facebook group is pole people at monthly meeting as to whether it is something they are interested in. Also send email out about same thing.

Telescope training sessions / workshops - This is a long term activity that is out of current scope of this committee. Paul will bring it up at the next Membership committee. It is the type of thing that committee has done before.

Heating the Warming Hut: Paul noted the other day, when he trained Terri for site access, that the club has a Kerosene heater in the Warming Hut. He suggested we see how that works as a winter heat source - need to get a kerosene container (Jack thinks he has one), kerosene and matches. Also need to add how to use the heater to site training check list.

Paul - The current plan is for the of Site Survey Analysis Committee to disband once it has completed its scope of work. Paul's expectation when he formed this committee was for the Membership Committee and Board and perhaps to some degree the Site Committee adopt and work on recommendations from the Survey Analysis Committee. And that anyone wishing to help with implementation of the recommendations volunteer on one or more of them. Recommendations not taken up by the Board, Membership or Site committees do, could with sufficient interest from members, be taken up by a new ad hoc committee.

A long-term plan is to repeat the Site Survey in a couple years and convene another ad hoc committee to analyze the results and compare it to the 2018 survey to see how well we are accomplishing the Survey goals.

For Sale**Celestron Omni XLT 102 achromat refractor f/9.8**

Excellent condition, includes:

2" crayford style focuser

1.25" diagonal

Rings and vixen style dovetail

9x50 right angle finder scope

\$175.00

Contact Pat Porch 802-236-2463

pcwzard2600@gmail.com

Light duty machining and custom hardware for astronomy. Simple adapter plates and other custom made or custom modified hardware for VAS members.

I have a moderate amount of scrap aluminum, mostly flat stock. **For a nominal fee (~\$10 - \$50 depending on size and complexity)** I will consider making custom mounting brackets and adapters. I can also do some custom modifications to existing brackets and hardware. Dependant on availability of material and my time.

I have a 2-way cross vise on a heavy duty drill press (allows for light milling and precision drilling, +/- 0.005"). And a light duty mini-lathe (for round stock).

Paul Walker 802-388-4220 or paulwaav@together.net

4 inch, 550mm f.l. brass Televue Renaissance scope with carrying case

Equatorial mount with oak tripod

2", 20mm Nagler type 2

2" 45deg. righting prism

2" Big Barlow

2", 4.8mm Nagler

1-1/4", 26mm Plossl

2", 45deg. Prism camera adapter

New Price \$1950 - will negotiate.

Contact Richard Cummings at Rick@vsbmetal.com

Or you can contact Ron Anstey anstyer@myfairpoint.net

Celestron SLT mount w/handset and Talentcell Lithium-Ion battery pack--
\$100

AWB OneSky 5" F/5 Collapsible
Newtonian--**\$150**

Meade Super Plossls: 32mm, 26mm, 20mm, 15mm, 12.4mm, 9.7mm, and 6.4mm. All are Japanese made excepting the 32mm and 20mm, which are Chinese. Excellent condition. **\$150**

ETX-125 OTA only--This one has the USA made optics. Just too heavy for my needs. Needs some TLC but gives the images you expect out of this model. Contact me for more details if interested. **\$125**

Orion Tri-mag 3x Barlow in very good condition - **\$30**

Celstron Omni 2x Barlow in excellent condition - **\$25**

HoTech Green Laser Pointer - Bought from Agena Astro a couple years ago for \$80 and only been used 2-3 times for a couple minutes total. Like new. **\$45**

Wooden Astro Chair - This is the chair I made during the VAS workshop held a few years back. Still in great condition--I'm just looking to recoup costs. **\$40**

Contact [Paul Marino](mailto:paulmarino@gmavt.net),
paulmarino@gmavt.net or call (802) 482-5128

Meade 6" LXD55 telescope with the following: 26mm eyepiece, Finder Scope, Anniversary eye piece kit with 15mm; 6.4mm; 9.7mm; 12.4mm; 40mm; 32mm; and 20mm. Solar filter, Dew cap, Autostar Instruction Manual, Martin Preston users guide
Asking \$350 with the accessories listed.

Contact [Bruce Harmon](tel:802-876-7535), 802-876-7535 or bdhinv@yahoo.com.

Celestron SP-C80 refractor telescope and tripod, rarely used. Comes with the original manuals, and 3 books on astronomy and a viewing the universe tool.

Asking \$350 or best offer.

Contact [Aimee Green](mailto:leftlanegreen@yahoo.com),
leftlanegreen@yahoo.com

Orion Skyquest Intelliscope XT10 Dobsonian

Orion Skyquest Intelliscope XT10 Dobsonian

10" Objective, barely used. Comes equipped with software, stand with wheels, collimating device, finder and eyepiece. Orion List price new is \$899.95 (excluding extras named above).

Will sell for \$349 OBO.

Contact [Gary Glick](mailto:gargli@aol.com) at 203-247-5354 or gargli@aol.com

Copies of "Mirror Mirror" - A History of the Human Love Affair with Reflection by Mark Pendergrast of Colchester, Vt. available for **\$25**.

Mark will split the profits with VAS.

Contact [Mark](mailto:markp508@gmail.com) at markp508@gmail.com or see [Jack St. Louis](#) at any monthly meeting.

Modified Orion XT10 10 Inch Dobsonian Telescope

For Sale: One Orion XT10 Dobsonian telescope with accessories. This scope has been flocked and sits on a mount I modified. Four adjustable legs attach to the bottom plate to keep the 'scope out of dewy grass or snow. The bottom plate is hexagonal and has a 360 degree compass rose attached. The rocker box has a cutout so you can read the azimuth. I lost the little paper clip pointer. You'll have to make your own.

This sale is in two packages.

The first package is the telescope and mount, \$450 :

- (1) Modified, flocked Orion XT10 Dobsonian Telescope
- (1) Orion padded zippered carry bag with shoulder strap
- (1) Tube cap
- (1) Rocker box
- (1) Hexagonal base with compass rose
- (4) Adjustable legs
- (1) Orion 2" Crayford style focuser
- (1) Set Orion Crayford Focuser hex keys

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The second package is the telescope accessories, \$250 :

- (1) Large plastic toolbox with sliding tray
- (1) Orion stock rack and pinion 2" focuser
- (6) Homebrew foamcore Hartmann Masks and (3) blanks
- (1) Plastic engineer's magnetic compass
- (1) Zhumell 26mm wide field lens
- (1) Olympus CLA-10 Lens Adapter
- (1) Sirius Plossl 10mm lens
- (1) Sirius Plossl 25mm lens
- (1) Orion Shorty 2x Barlow lens
- (1) Large to small lens diameter adapter
- (1) Orion 13% moon filter
- (1) Camera adapter
- (1) 9 in 1 Hex key set
- (1) 7 in 1 Hex Key set (metric)
- (1) Crescent wrench
- (7) Various bubble levels
- (2) Spare lens caps
- (14) Small round magnets
- (1) 2 in 1 pocket screwdriver
- (1) Bag milk jug spacers
- (2) Mirror end dust covers
- (1) Orion 9x50 90 degree finder scope
- (1) Orion 9x50 straight thru finder scope
- (1) Magnetic base inclinometer
- (1) 12v hair dryer
- (1) Tie down strap
- (1) 360 degree protractor
- (6) Orion rocker box screws with hex keys
- (3) Collimation screws
- (1) Orion LaserMate Deluxe collimator
- (1) Telrad reflex sight

This sale is AS IS. I've homebrewed some features but I also cared for it. The mirror is clean and was collimated the last time I put it away. I added the nice smooth Orion Crayford focuser.

[Gene Harriman](#)
Middleboro, Massachusetts
bigwingboyatverizon.net

Wanted

[For selling & buying also check out:
www.marketplace.skyandtelescope.com](http://www.marketplace.skyandtelescope.com)