

Morning Star

Summer 2019



*** Club Info ***

Announcements

Do we have a historian type out there? Jack and Paul have some old VAS records for someone to go through. Consolidate those items we should keep and get rid of the rest.

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.

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, 115v AC power and port-a-potty.

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

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

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

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

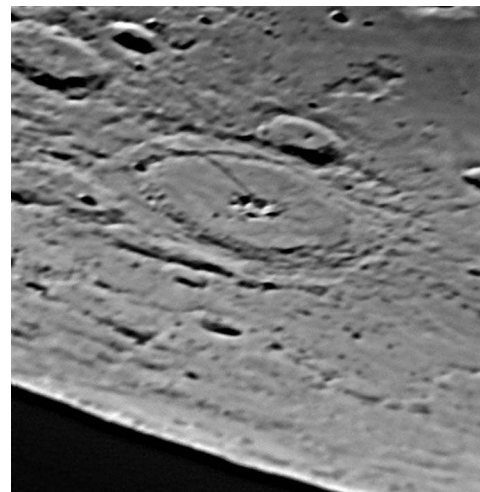
www.vtastro.org
[Twitter@VTAstroSociety](https://twitter.com/VTAstroSociety)
Facebook.com/Vermont-Astronomical-Society-113053818706458/
Email: info@vtastro.org (Goes to President and Secretary)
webmaster@vtastro.org (Goes to Secretary and Webmaster)

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
Keith Lawrence		453-5496
Scott Turnbull	Webmaster	

Editor and Publisher - Paul Walker

Contributors: Joe Comeau, Maura Kelley, Ron Lewis, NASA Night Sky Network, Paul Walker, Terri Zittrich. (My apologies if I missed anyone)



Petavius & Rima Petavius (see page 15). 3.6 day old Moon. ~720x effective magnification.

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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. Airls 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 on impromptu events at the Hinesburg Observing Site (HOS).

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

Events are listed on our website (vtastro.org) and Google Calendar (<https://calendar.google.com/calendar?cid=Nzc5dnQ1bnZrN2ljcDA2NG9vbXFnczI1M2NAZ3JvdXAuY2FsZW5kYXluZ29vZ2xlLnNvbQ>)

Member & Invited Guest Star Gazing & other events

Notes: If you would like to be a host or want some training on the scopes let Paul Walker know.

July 26 or 27 - 8:30 PM, full darkness 10:10 PM. Deep Sky observing. Host TBD.

August 23 or 24 - 7:45 PM, full darkness 9:20 PM. Deep Sky observing. Host TBD.

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

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)

Green Mountain Astronomers (GMA)

Continued from previous page

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, 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)

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

July 5, 26 or August 2 (not decided yet). Deep Sky Viewing. Time TBD (check the VAS Calendar Page). Deborah Rawson Memorial Library, 8 River Road, Jericho, VT (802-899-4962). VAS coordinator, Joel Greene.

July 12 or July 19, 8:30 PM, Viewing Moon & Jupiter (Jupiter, Saturn on the 19th). At the main baseball diamond (NW corner) in the ball field just North of Mary Johnson Elementary School. Put on by Ilsley Public Library, 75 Main Street, Middlebury, VT, Chris Kirby, (802-388-4095), chris.kirby@ilsleypubliclibrary.org. VAS coordinator, Joe Comeau.

July 29 or 30, 3 PM, Solar Viewing. Burnham Memorial Library, 898 Main St., Colchester, VT, (802-264-5668). VAS coordinator, Joe Comeau.

August 16 (Viewing Full Moon & planets), rain date Aug. 23 (deep sky & planet viewing). Time TBD (check the VAS Calendar Page). Ainsworth Library, 2338 Vermont Route 14, Williamstown, VT, Elizabeth Malone, (802) 433-5887, tibs.malone@gmail.com. VAS coordinator, Joel Greene.

July 27 and September 14, Solar viewing. Burlington Farmers Market. VAS coordinator, Joel Greene.

July 28, 10:30 AM (yes AM), VAS is helping with Solar System Walk. Moretown Memorial Library, 897 Route 100B, Moretown, VT, 802-496-9728, moretownlibrary.com. VAS coordinator, Joel Greene.

October 10, rain date Oct. 11, 7:30 - 9:00 PM. Viewing Jupiter, Saturn & the Moon. Location: Waterbury Recreation Field just South of the library. Waterbury Public Library, 28 North Main Street, Suite 2, Waterbury, VT. Judi Byron, (802) 244-7036. VAS coordinator, Joe Comeau.

"Spontaneous Night Under the Stars" July or August.

Joe Comeau will once again hold public observing at his observatory, Orchard Hill Observatory at 70 Poor Farm Rd. Alburgh VT. The plan is to make a list of interested people and contact folks up to a few days in advance based on the weather forecast. This event will likely occur in July but it may not happen until August.

Activities will begin at dusk. This will be a no-cost event for people of all ages. Families with children are welcome.

VAS members are invited to bring their telescopes to show participants around the summer sky. There will be a slide show of pictures taken by Astronomical Society members. Invite your friends for an exciting evening.

Contact Joe at 802-238-1664 or jcomeau@hotmail.com

New Members

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

Ethan Rogati
Joseph Dewan

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.**

July 8

"Houston, Tranquility Base here. The Eagle has landed."

By Steve Quigley



Fifty years ago on July 20, the Apollo 11 crew fulfilled President Kennedy's challenge by successfully landing on the Moon, and returning safely to Earth. The Apollo program was stupendous in scope, and has been called by many the greatest technological achievement of mankind. This presentation will cover many aspects of the Apollo program. All the Apollo manned missions will be covered, but one mission will be covered in great detail. Perhaps you can guess which one.

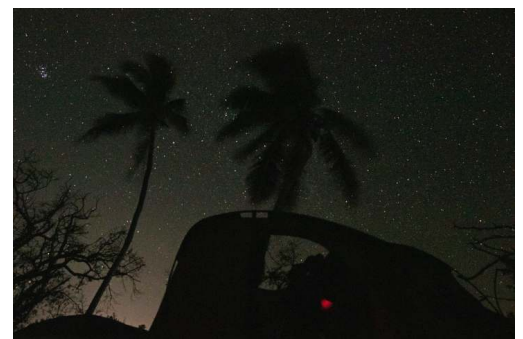
August 5

3 min-talks

**The Winter Star Party
By Terri Zittrich**



Mini-talk on the Winter Star Party. A annual event that has yearly international attendance by both observers and vendors. The Winter star party offers



September 9

Informal Show & Tell and Question & Answer Session

We encourage people to bring questions and equipment they may have questions about. We also encourage people to bring equipment, software, websites, observing techniques, observing aids, etc. to share with others.

Jack will open the meeting as usual. He will ask for a show of hands of people who bought items and ask each to say what they brought. This will end the "formal" part of the meeting and people can mingle.

Oh yea, there will be snacks.

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.



Jupiter Shines in June

By David Prosper

Jupiter stakes its claim as the king of the planets in June, shining bright all night. Saturn trails behind Jupiter, and the Moon passes by both planets mid-month. Mercury puts on its best evening appearance in 2019 late in the month, outshining nearby Mars at sunset.

Jupiter is visible almost the entire evening this month. Earth will be be-

those in the northern climates, the opportunity to escape the cold and enjoy a little fun in the sun, while meeting interesting people and seeing some amazing equipment. This was my first year at the Winter star party, but I don't think it'll be my last.

And

The latest from the EHT (Event Horizon Telescope)

By John Pacanzi & Steve Lupo

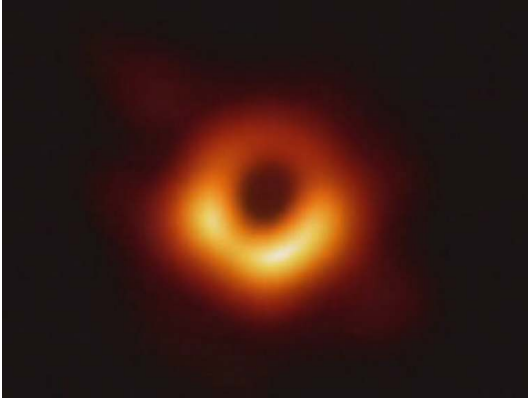


Image credit: Event Horizon Telescope Collaboration

We will talk about what EHT is and what the latest News has is.

Pictures and Videos of it's latest results.

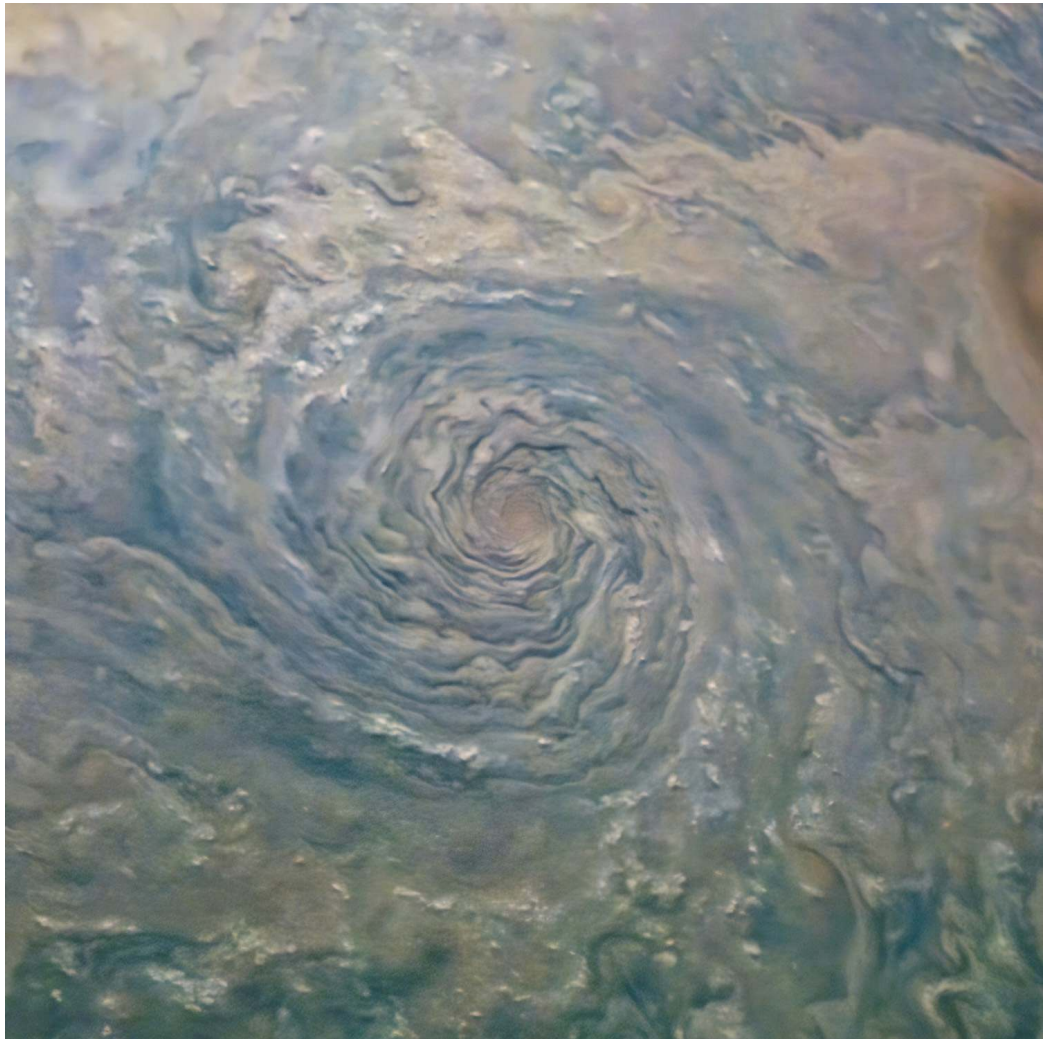
The first picture of a black hole opens a new era of astrophysics.

And

The Texas Star Party By Steve Grimsley

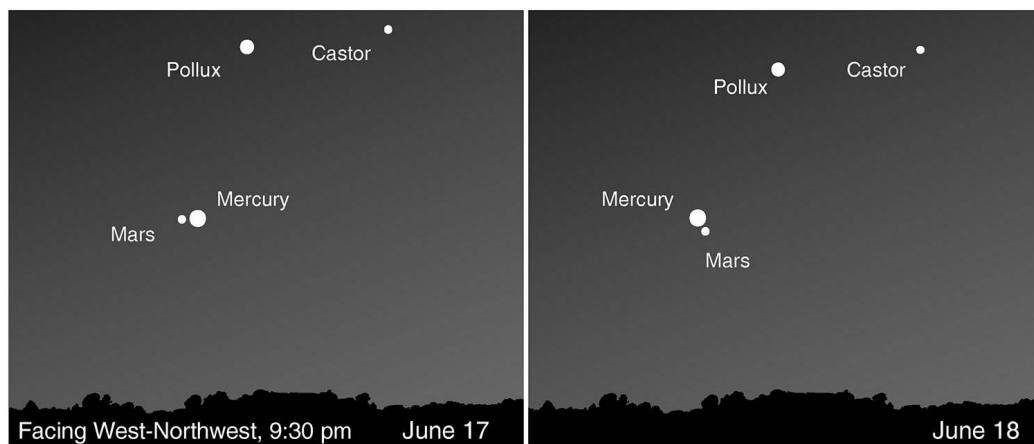
The visual theme of the 2019 observers list were galaxy groups. The challenge was to spot a faint galaxy near a brighter one. We had five nights of clear enough weather for observing three of which were good for deep sky imaging. I captured six of these galaxy groups at prime focus through my telescope. There are many stories to tell about these objects.

Below is one of the groups Steve imaged.



Caption: A giant storm in Jupiter's north polar region, captured by JunoCam on February 4, 2019. Image processing performed by citizen scientists Gerald Eichstädt and Seán Doran.

Source: bit.ly/JupiterSpiral



Caption: Mars and Mercury after sunset the evenings of June 17-18, 2019. Image created with assistance from Stellarium.

tween Jupiter and the Sun on June 10, meaning Jupiter is at opposition. On that date, Jupiter rises in the east as the Sun sets in the west, remaining visible the entire night. Jupiter will be one of the brightest objects in the night sky, shining at magnitude -2.6. Its four largest moons and cloud bands are easily spotted with even a small telescope.

What if your sky is cloudy or you don't have a telescope? See far more of Jupiter than we can observe from Earth with NASA's Juno mission! Juno has been orbiting Jupiter since 2016, swooping mere thousands of miles above its cloud tops in its extremely elliptical polar orbits, which take the probe over 5 million miles away at its furthest point! These extreme orbits minimize Juno's exposure to Jupiter's powerful radiation as it studies the gas giant's internal structure, especially its intense magnetic fields. Juno's hardy JunoCam instrument takes incredible photos of Jupiter's raging storms during its flybys. All of the images are available to the public, and citizen scientists are doing amazing things with them. You can too! Find out more at bit.ly/JunoCam

Saturn rises about two hours after Jupiter and is visible before midnight. The ringed planet rises earlier each evening as its own opposition approaches in July. The Moon appears near both gas giants mid-month. The Moon's tour begins on June 16 as it approaches Jupiter, and its visit ends on June 19 after swinging past Saturn.

Mercury is back in evening skies and will be highest after sunset on June 23, just two days after the summer solstice! Spot it low in the western horizon, close to the much dimmer and redder Mars. This is your best chance this year

to spot Mercury in the evening, and nearly your last chance to see Mars, too! The two smallest planets of our solar system pass close to each other the evenings of June 17-18, coming within just $\frac{1}{4}$ degree, or half the width of a full Moon, making for a potentially great landscape photo at twilight.

Discover more about NASA's current and future missions at nasa.gov
NASA Night Sky Notes June 2019

Cherry Springs Star Party 2019, Hosted by The Astronomical Society of Harrisburg

By Ron Louis

Four members of the Green Mountain Astronomers (Pete Favreau, Pat Porch, Cale Shipman, and myself) took to the road to visit the hallowed grounds of Cherry Springs State Park this late May, for a four day visit to the famed Cherry Springs Star Party in Pennsylvania. The 50-acre observation field at Cherry Springs, located in remote Potter County, is a 370-mile drive from my hometown in Brandon, Vermont (or a 275-mile drive from New York City), and has become a magnet for passionate amateur astronomers like us, as well as for ordinary folk who just want to tilt their heads back and ponder the vast majesty of our universe. Talking post-CSSP with Bob Gent, president of the board of the International Dark Sky Association in AZ, which fights light pollution all across this nation, says, "Cherry Springs State Park is doing an excellent job of preserving the

dark skies; the park management in Pennsylvania really appreciates this."

Anyone over 50 can recall staring up into skies that pulsed with stars, that only are distant memories nowadays, as mankind's artificial light has all but erased those views. It is a fact that only ten percent of the United States population has seen a true dark sky, or has seen the Milky Way, something taken for granted in places like Cherry Springs or Vermont. Hence, lured by the dark skies at Cherry Springs, more than ten thousand visitors come to gawk at the darkness, many from far-flung out-of-state locales. On good nights, it can be a life-altering experience. The dark-sky field at Cherry Springs is open year round, with between sixty and eighty-five nights a year that are ideal for stargazing. Conditions are better in the fall and winter, when the humidity is lower and, of course, the nights last longer. Besides two annual star parties at Cherry Springs (the Black Forest Star Party in September being the other), both of which draw hundreds of amateur and professional astronomers, the park has programs, most free, for those who just want to peek at the stars. Volunteer star guides provide history and facts and often share their telescopes.

Because it sits in the Allegheny Mountains, about sixty miles northwest of the nearest city, Williamsport, Cherry Springs offers optimum stargazing conditions. The park sits atop a 2,300-foot mountain, surrounded by relatively undeveloped state forest (and little commercial air traffic). The main stargazing field is a fifty-acre lawn, speckled with clover and grasses, and rimmed with low-standing pines, offering a view that nearly stretches from horizon to horizon — a natural planetarium. The park sits off State Route 44, so it is much more accessible than other ideal stargazing locales. Its location was crucial in helping it become an established International Dark Sky Park (the second one so formed), one of only twenty in the U.S., and the only one in the east. The park manager, a Mr. Harrison, said he noticed a man peering through a telescope at Cherry Springs back in 1998. He asked the man why the park was such a good place to look at stars. The

astronomer, recalls Mr. Harrison, had found his way to Cherry Springs because nighttime satellite photos of the Earth's surface had shown it to be smack-dab in a black patch — one of the best spots east of the Mississippi River for stargazing. So, Mr. Harrison figured Cherry Springs was dark enough and big enough for the public to share the sky with astronomers. As Mr. Harrison tells it, "Being from here (in nearby Coudersport), I'd always appreciated the dark skies at night, but I didn't have a true appreciation until I'd met these astronomers." The rest is history.

A Cherry Springs Dark Sky Fund has been established to finance enhancements to the park in order to make it even better for stargazing. For example, to cut back on light pollution, all the park's fixtures are shielded. Entrance to the Cherry Springs Star Party is \$45, and the cost of a visit is minimal: \$4 to use the observation field and \$20 to \$25 to use one of the three large white domes and a shed at the field that is open so that astronomers can set their telescopes inside and look at the skies, or take photographs without the telescopes being affected by the wind. For less sophisticated stargazers, there are Music and Stars programs that include a concert, hot chocolate and cookies, plus a 10 PM tour of the night sky by a retired local self-taught astronomer called "Stash," (Stanley Nawrocki), who has started a company called Crystal Spheres, that also offers Star talks to private groups.

Some miscellaneous items to note: no green lasers, no dogs, no music, no booze allowed, and no showers available. No driving after dark. Power and WiFi are available, as are Port-A-Johns. This is bear country, so take precautions; we actually saw a dead bear on the roadside when we left. Attendance is limited to only 500 people. There is always a diverse number of tent talks. Of the eleven talks, I attended some good ones: "Amazing Deep Sky Astrophotography with Your DSLR," "Initial Discoveries From TESS: NASA's Newest Exoplanet Hunting Telescope," "Measuring Pluto's Atmosphere. Wait a Minute - Pluto has an Atmosphere?," and "50-inch Telescope at Cherry Springs?"

Our group's few days were forgettable, as we had only a single night of so-so seeing. Prior to that night, it had rained (and rained, and rained, and . . .), making the ground very soggy. We saw one car being pushed by five people, but it wasn't until a sixth person helped to push, that the car finally made it out of difficulty. One night obviously is not a good test of just how good the night skies can be, especially since the skies were "fogged" with smoke from the forest fires burning in Canada. It was a long drive there, and we expected more than what we got, so a return trip will probably be made sometime distant, but not right away. For now, all of us are content to stay close to home, to set up our scopes at nearby sites, and if we have to travel, it will be either or both Stellafane and/or NEAF, both of which we find very rewarding.

We must say, however, there was one item of interest that was quite striking, and it had to do with just how friendly everyone at Cherry Springs was to us, and to each other. Now, astronomy hobbyists are a friendly lot, but at Cherry Springs, everyone was MORE THAN friendly. We were visited by any number of people, and we also visited them; our neighbors were an LGBT couple with no telescope, a couple with a 2-1/2 year old daughter (mom was from Trinidad, dad was an electrician who worked in NYC for the film industry — what stories he had to tell!), who came armed with binoculars and a desire to dip his feet gingerly into this hobby, and on it went, people from all walks of life. It was all great fun, even the funky food vendor (two old ladies on the grill), the bathroom (that flooded during the rains), the commercial vendors (all four of them), and of course the Swap Tables (maybe five people, complete with Gary Hand's (Gary was the owner of Hands On Optics) 10th annual Going Out of Business sale!).

Going to Cherry Springs might prove to be the most rewarding experience of our astronomy lives, however. It got us to be thinking about our wonderfully dark skies in Vermont, particularly at the Hubbardton Battlefield. I've recently renewed my membership in the IDA (International Dark Skies Association), and have already approached the

Regional Historic Site Administrator for the Vermont Division for Historic Preservation with the idea of making the Hubbardton Battlefield an IDA International Dark Sky Park or Preserve (ID-SP), with an enthusiastic initial response. I hope to have more for you on this at a later date.

The 2020 Cherry Springs Star Party is June 18-21.

Board & Committee Meetings

Board Meetings

April

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

We continued the task of updating the asset list.

Work Party for bush cutting at the Hinesburg Observing Site scheduled for May 4 or 5.

A suggestion for heating Bob's Warming Hut is an RV type propane heater. Still need to see how much use the site gets. A heater could be nice on some of the colder Spring, Summer and Fall nights as well as for Winter.

Without the bushes the headlights of the cars coming up North Road from Rt 116 are quite bothersome, especially from the new deck. The Board approved spending up to about \$700 to build a light blocking fence on the southern edge of the observing area.

Received updates from the Observatory Site & Russell Chmela Committees and the Chmela Observatory Dedication Committee (see minutes for those committees).

MOTIONS:

None

ACTION ITEMS:

Paul will send notice of work party.

Paul will contact the Town of Hinesburg to find out if we need a permit for the light blocking fence.

Paul will send out RSVP's for the Dedication.

May

(Annual Banquet & Business)

Jack opened the meeting.

Jack gave the President's Report.

Joe gave the VP's report. We are getting a lot of requests from libraries and other entities for presentations and/or observing events.

Paul gave the Secretary's Report. The total paid up members as of December 31, 2018 was 79, compared to 79 for the previous year. We had 12 new members in 2018. New members so far in 2019 is 3.

The Observatory Site Committee did a "Site Survey" to gauge members interest and thoughts about the observing site. From the results we are or will: Scheduling more observing events at the site. More frequently send email notices informing members they can request site access. Have training sessions at the site for people to get help using their scopes (much of this will likely be done as part of scheduled observing events). Encourage more members to get site access, have impromptu observing events, get on the observing email list and use the observing list.

Doug gave the Treasurer's Report: Gave beginning and ending balance, revenues for the year and update on the financial's for the Chmela Project.

Gary and Steve Quigley are still working on the Grout Observatory at Peoples Academy in Morrisville. The school is low on funds for the project.

Jack thanked Gary for his service to the club as a Board member (Gary is not running for another term).

The positions of Treasurer, Secretary and the 4 board member at large positions were up for election this year. Doug Williamson re-ran for Treasurer, Paul Walker re-ran for Secretary, Bob Horton and Keith Lawrence re-ran for Board at Large, two positions for Board at Large had no candidates. The voting results are; everyone was unanimously re-elected, the 2 open Board at Large positions are vacant.

Paul gave a slide show presentation on the Russell Chmela Observatory Project. This included some history of Russ with the club, the observatory design and the stages of the construction.

Jack called out the staff of St. John's Club and thanked them.

Jack talked about having a social event so members can get to know each other better.

Keith tallied up the proceeds from the silence auction, total was \$xxx.

ACTION ITEMS

None

MOTIONS:

Peter Gillette made the motion that we accept the officer's reports as read. Terri Zittrisch 2nd it. The P's have it.

Paul Walker made the motion that the Board Members approve Bob Szczerbak for gate key access at the Hinesburg Observing Site. Doug Williamson 2nd the motion. Votes were 5 yes, 1 no.

Ron Anstey made the motion that we adjourn the meeting

June

Jack opened the meeting. We went over a list of VAS equipment that Jack brought to the HOS for storage. Since moving he does not have the space for them.

Jack suggested we put a plaque on the observatory deck that has the date of the dedication. We all agreed and discussed some options. Jack will proceed with this.

Jack has a bunch of extra tools he would like to donate to the club. We will go through them this Friday and see what the club can use. He also has a bunch of VAS records and is wondering what we should do with them and how many of them we should keep. It was suggested we send an inquiry to the membership and a notice in the newsletter for help.

A suggestion from the Site Survey Analysis Committee is to create an on-line forum for VAS members to post questions, answers, suggestions, etc. and to better connect with their fellow club members. Being a forum, it will be possible to search the posts for previous topics answers and info. Terri Zittrisch will head up this effort and has agreed to be the moderator / administrator of the forum.

Mark Moyer has requested to use the Patterson scope to look for some of the faint moons around Jupiter and Saturn. For this he needs a large scope on a motorized mount like the 14.5" on the Byers mount. We will install the 14.5" this Friday when a few of us are up there for a small work party. (due to

the weight and size of the 14.5" it requires 3 people to swap out the scopes safely)

Joel Green has requested to become a Full Member. Joel has been very active in the club, participating in public events, and at the monthly meetings. The Board has approved his request.

Steve Scaravla has donated a weed whacker to the club.

Motions:

None

Action Items:

Paul will send an email to the membership to see if we have a historian out there that is interested in sorting through and figuring out what we should keep and what to throw away.

Paul will send out an email to the Full Members to vote on Joel's request to become a Full Member.

VAS Membership Committee

April

Before the meeting Keith proposed scheduling a few stargazing events at the HOS: April 5/6, April 26/27, May 10/11 and May 24/25.

Other scheduled events: April 3, presentation and stargazing at the Milton Library.

Keith asked how the Membership Committee could help with the Dedication/Open House. It was decided the Dedication planning was going well and no additional help needed.

We will develop a list of future activities.

We discussed ways to promote VAS members to become members of the Astronomical League (AL). Keith will bring AL materials for members to check out and he will promote the AL at monthly meetings.

Proposal to create a list of objects suitable for viewing with binoculars and finder charts for each.

Suggested adding a list of Libraries with Loaner Scopes to the VAS Handbook that Maura is creating.

Scheduled 2 more VAS stargazing events: July 26/27 and August 24/25.

Next Membership Committee Meeting scheduled for 5:30 August 5 at Brownell Library.

Observatory Site & Russell Chmela Committees

April

Reviewed what is left to do on the new observatory:

Verify height of upper pier for the Chmela and Patterson scopes (this has been done and the pier shortened by 4").

Add jackscrews to the lower pier to stiffen the pier for the Chmela and Patterson scopes (this has been done) (not needed at this time for the 18" pier) .

Finish running wire and installing electrical outlets for the new observatories:

1 outlet on the south side west end of the deck (not done)

1 outlet attached to the upper pier in the Chmela Observatory (done)

1 outlet in the 18" observatory (wire is run but outlet not installed)

Current plan is to mount this outlet under the decking next to the pier with access via a hinged piece of deck board. This way there is nothing to trip over. This is primarily so we can add an AC adapter (in place of the 12v batteries) to operate the cooling fan for the primary and heater for the secondary (see item 6 below).

Apply a second coat of paint to the gray trim on both sheds.

Discussed tarps or other means for shielding the light of cars in the parking area (planning to rig up a removable tarp, not done yet).

Modify the 18" by installing a hollow bolt and electrical slip ring so we can replace the battery that rides on the front of the 18" with a 12vdc adapter located under the deck (not done).

Other items relating to the new observatories we had missed: We will need to use the 5 step stool, currently used on the 18", when using the 14" Patterson scope and maybe get a shorter one for the 18". Need to add stops to prevent the wind from being able to push the sheds back onto the deck when they are open.

(This item is separate from new observatories) Discussed changes to consider regarding using the old observatory as a warming hut. Discussed

whether we want both 115vac and 12vdc power access in the Warming Hut and what the lighting options should be. No final decisions have been made. Jack has put a string of red incandescent lights in the Warming Hut.

(This item is separate from new observatories) Discussed installing an opaque fence at the south end of the observing field to shield car lights coming up North Road. This is in process. The Board has approved it. We are working on getting approval from the town (requires an update to the site plan).

We scheduled a work party for bush clearing. (We had the work party. We finished cutting the brush which was started last Fall). Still some small trees to the West to cut. We still need to pile the brush and trees out of the way (they don't want them thrown over the edge of gravel pit).

Chmela Observatory Dedication Committee

April

Jack will order plaques- 1, front of Chmela, 1, front of Green Mountain Observatory, 1, front of Bob's Warming Hut. Jack suggested painting the letters on front of the Warming Hut using stencils. Maura suggested we use plastic signs. Concern was expressed that the plastic may not hold up to UV from the Sun. (We ended up with vinyl banners. They are under the eaves where they will get minimal direct sunlight).

Speakers:

MC - Jack will MC the event and say a few words about the project and the members who worked on it.

Gary will say a few words about Russ.

Paul will say a few words about Bob.

Paul will put together a slide show on the Chmela Observatory Project.

Handout - Paul - needs to pass this to someone else. Terri has stepped in to do the handout.

Committee brainstormed items for handout - Picture of Russ, list of members on the 2 committees that spearhead-

ed the project, list of people who helped on the construction and a list of financial donors.

Who to invite:

Members and invited guests - Paul will send email to the membership.

Hinesburg Select Board - Jack will do this.

Hinesburg Highway Dept - Paul

Bob Williams family - Paul has done this.

Members of Springfield Telescope Makers - Jack ;

Dr. Patterson - Jack.

Food:

Bill will work on setting up an on-line spreadsheet for members to sign up for pot-luck food items.

Keith will get Hamburg (50-75, 1/3 lb patties), hotdogs (40), Hamburg & hotdog buns from Lantham's store

Terri, Maura and Jack will pick up Soda (4- 2 liter bottles each).

Jack and Terri will bring paper plates, cups, napkins.

Tables - 1 at the site, Paul has 2, Keith has 1. Paul to ask for more so people can sit at them to eat.

Canopies - Paul has 2, Jack or Keith has one, Terri has 1. Terri suggested that Paul ask for more. We could use one to put the grills under.

Grills - Paul will bring 1 and Keith will bring 1.

Budget:

Food - hamburger ~\$100, hotdogs ~ \$15, Soda, 12, 2 liter bottles ~\$37, what types? -we talked about what types but I did not write them down in the notes.

Handouts- we will likely print and fold the handout ourselves.

Total budget ~ \$150.

Games:

Paul will send request for members to bring games. The coordinator would receive the responses and vet them to ensure they are safe for all ages. Currently Terri will bring badminton, Paul a toss game and Keith a toss game.

Other:

Jack will arrange to have the port-a-potty freshened up.

Observers Page

Itinerary for the Dedication:

Starts at 12:00, dedication at 12:30 with Jack MC'ing, and speaking about the project, Gary will say some words about Russ Chmela, Paul will say some words about Bob Williams. Lunch will start about 1:00.

Site Survey Analysis Committee

April

Reviewed action items and noted the status of each

1. Signage status – Jack – in process.
2. Query monthly meeting attendees for preferred contact method – Paul did this, 30 indicated email, 1 indicated text message. Should Paul also send this inquiry to all members? No.

3. Can we send a “mass” text message to members for last minute updates on observing events – Bill (was not at the meeting).

4. Member's Handbook – Maura has draft version that looks good.

5. Kerosene heater for warming hut – concern was voiced at the last board meeting and again at the last Site Committee Meeting about the possibility of high CO2 concentrations. Site Committee at some point will look into feasibility of installing a camper type propane heater.

6. Send 3 separate emails to the members explaining each of the 3 email accounts used by the club (observing@vtastro.org, vasnews@vtastro.org, vtastronomy@list.uvm) – Paul – has sent one of the 3. Paul has now sent all 3 emails.

Brainstorm and discuss any additional recommendations. Terri is advocating for having a VAS Member only Forum to encourage questions and answers among the membership and as a way for members to get to know each other better.

Side note: The Hinesburg Zoning Regulations have a pretty good lighting ordinance, section 5.29 (pg 101) updated July 12, 2018.

May

No meeting

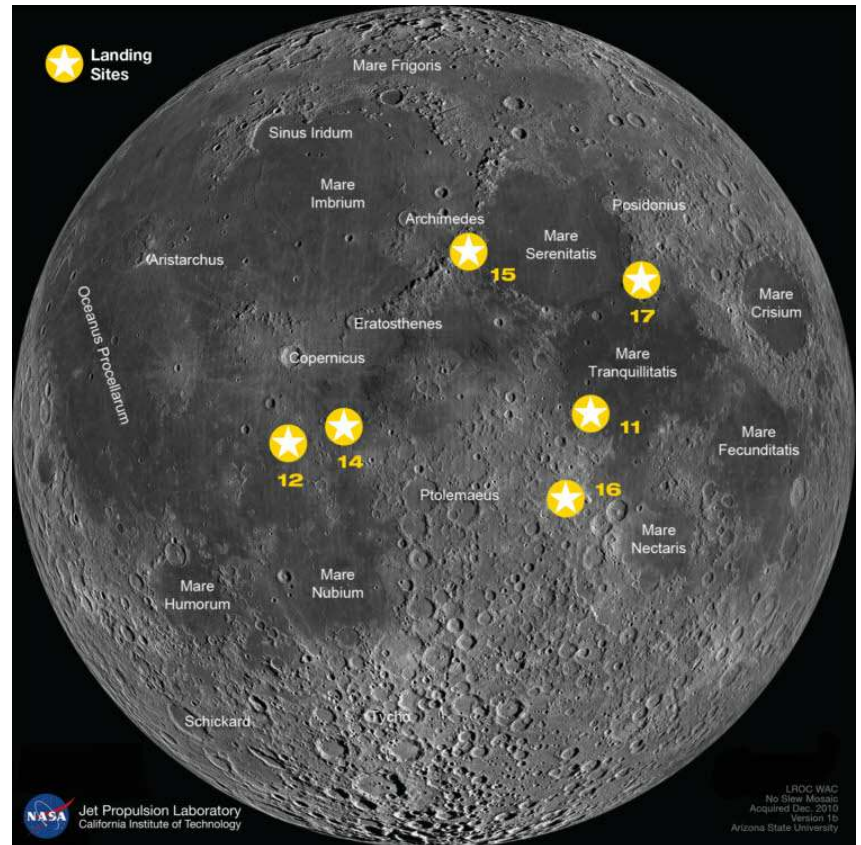
June

No meeting

Find the Apollo Landing Sites

This map of the Moon shows the general location of the Apollo landing sites. For more detail maps and images go to on-line sites like this Sky and Telescope page- www.skyandtelescope.com/observing/how-to-see-all-six-apollo-moon-landing-sites/.

Happy hunting!



Possible Meteor Picture By Maura Kelley

The "meteor" pic was taken through my telescope on March 25th, 11:06 PM. I believe I was in Ursa Major. I tried looking it up at heavens-above.com [to see if it was a satellite] with no results. It was a single frame - 25sec. @ ISO 10,000, focal length 480mm, focal Ratio f/6. I was not looking up at that moment so I didn't notice it at all until I was looking at my frames. Ursa Major would have been slightly to the east of Polaris, higher in the sky.



**The Leo Trio
(M65, M66, NGC 3628)
By Maura Kelley**

All 3 are about 35 million light-years away.

Taken over 3 nights.
4/1/2019, 59 images, 15 sec at ISO 10,000 no darks, 4/3/2019 169 images, 25 sec at ISO 10,000 + 21 darks, 4/4/2019 238 images, 25 sec at ISO 10,000 + 21 darks = 466 subs and a total of 3.07 hours

Taken with an Explore Scientific 80mm f/6 air-spaced triplet ED apochromatic refractor with carbon fiber tube and Olympus OM-D E-M1 Mark II Mirrorless Micro Four Thirds DSLR camera on an Explore Scientific EXOS2-GT equatorial mount with PMC-Eight GoTo System, .

This a cropped approximately 60% from the original image.



**Western Veil
NGC 6960
By Joe Comeau**

This is just 1 piece of a large supernova remnant in Cygnus that spans 3 degrees. It is the remains of a star that exploded 8,000 years ago. It is about 1,500 light-years away.

Taken with his 6"f/4 using a modified Canon XT at ISO 1600. Unguided, 90 1 minute subs. It is one of Joe's favorite objects



Jupiter and Saturn

By Paul Walker

Jupiter has come around again with Saturn close on its heels.

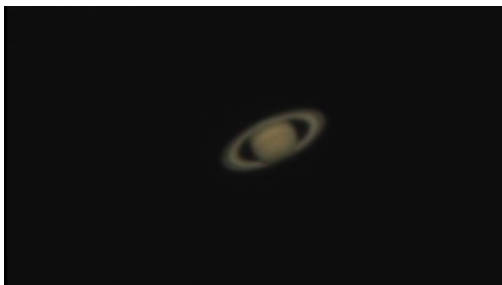
A couple of days after Jupiter's opposition we had a clear night. Using Starry Night Pro I checked to see what may be happening with Jupiter and its moons. It showed that 2 moons and their shadows were going to transit Jupiter's disk and very late (early the next morning) the Great Red Spot. It was so close to opposition that one of the moons, Io, was actually going partial block it's own shadow.

The big question was whether the seeing going to be good enough to see any of this. It is not uncommon around here to only be able to vaguely glimpse a moon's shadow or not it at all. Well, this night was a good night.

I couldn't see Io but I could see Io's shadow and that it was partially blocked by Io. This can be seen in the image below. Io and it's shadow are to the lower left, Gamemede's shadow to the lower right. Ganemede is just to the left of its shadow but blends in with Jupiter's clouds. The bands around the perimeter of Jupiter are artifacts of the image processing.



Taken 12:26 AM on 2019-06-12. Stack of 400 frames from a 1 minute video. Effective magnification ~1100x. 10" f/5.6 Newtonian, Nikon AW-110 point & shoot at 5x optical zoom, 10 mm eyepiece, Atmospheric Dispersion Corrector (ADC), 2x Barlow operating at 2.75x.



Saturn 1:58 AM on 2019-06-12. Stack of 50 frames. Same setup as above except effective magnification ~760x.



Rosette Nebula

By Terri Zittrisch

NGC 2237, also the Rosette Nebula, is a large spherical H II region of gas and dust with a cluster of young stars at its center, located in the Monoceros region of the Milky Way. It's one of the most photographed of the H II nebulas because of its beauty and brightness. This region is also associated with numerous other NGC including NGC 2238, NGC 2239, NGC 2246 all associated with the nebulous regions and then NGC 2244 denoting the small open cluster of young stars in the middle of the Rosette. The Rosette Nebula is approximately 130 light years in diameter and 5,219 light years from Earth.

The open cluster NGC 2244 was first discovered by John Flamsteed and William Herschel in 1690, but the nebular regions weren't discovered until Herschel's sons: John, Marth and Swift, discovered them somewhat later. Some trivia is that the Oklahoma legislature has made the Rosette Nebula the official state astronomical object.

My Image of the Rosette Nebula was taken through a TEC140 telescope with an Astro-Physics quad telecompressor/corrector yielding 705mm of focal length. The camera used is an ASI1600 monochrome CMOS camera cooled to -20C and imaged through a set of narrow band filters at two, three and four minute exposures yielding a total integration time of 5.5 hours.

The image is depicted in what is known as the Hubble Palette or SHO narrow band, meaning a Sulfur image replaces Red, a Hydrogen Alpha image replaces Green and an Oxygen image replaces blue in the resulting RGB image. I automated my imaging session using Sequence Generator Pro and I used Pixinsight and Photoshop to perform the image processing.



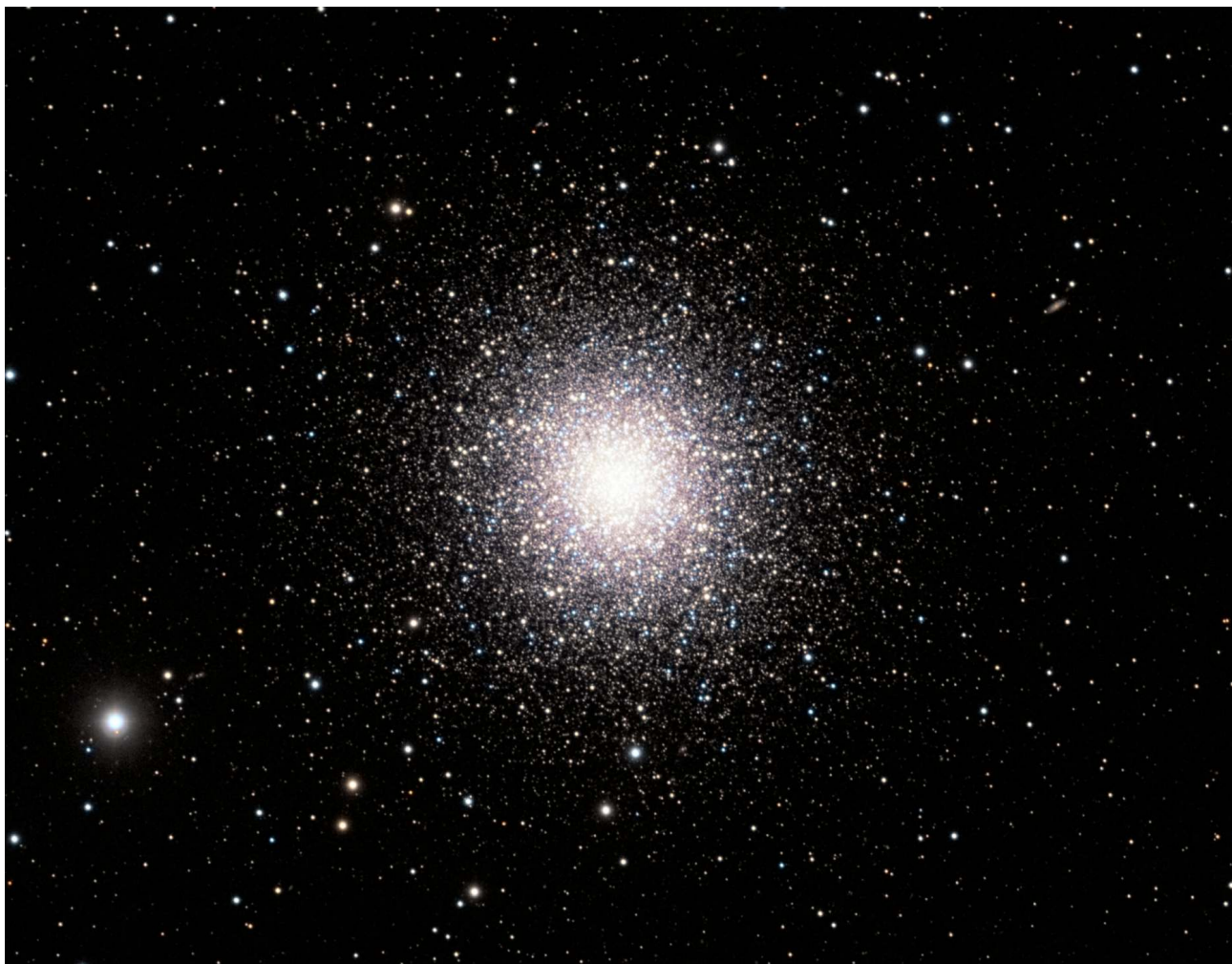
The Whirlpool Galaxy
By Terri Zittrisch

M51, also known as the Whirlpool Galaxy or NGC 5194, is a bright and beautiful spiral galaxy in the Canes Venatici constellation. M51 is one of the most conspicuous and best-known spiral galaxies in the sky. What most people see as M51 are actually two galaxies, M51 the larger spiral and then NGC 5195 is a smaller companion galaxy interacting with M51. NGC 5195 is typically described either as a lenticular galaxy or as an amorphous or irregular galaxy.

M51 shines at a brightness of 8.4 magnitude so can be seen in most small telescopes, but the view is sensitive to light pollution. M51's angular diameter appears as 11.2'. It is 23 million light years distant from earth and 76,000 light years in diameter and "weighs" in at 160 billion solar masses.

M51 was discovered by Charles Messier in 1773.

My image of M51 was taken through a TEC140 telescope with an Astro-Physics field flattener yielding a focal length of 1015mm. I used an ASI1600 monochrome CMOS camera cooled to -20C and L-R-G-B filters. I used exposures of 60, 120 and 180 seconds to yield a total of 8 hours of image integration to create the final RGB image. I automated my imaging session using Sequence Generator Pro and I use Pixinsight and Photoshop to perform the image processing. When skies allow, I hope to capture some data using a hydrogen alpha filter to add to my image.



The Great Hercules Cluster
By Terri Zittrisch

Messier 13, also known as the Great Hercules Cluster because of its location in the Hercules constellation, or as NGC 6205, is probably my favorite object in the northern skies after the large gas planets. M13 is what's known as a globular cluster and is estimated to consist of several hundred thousand to over a million stars and shines with a luminosity of a quarter million suns. M13, like most globular clusters is made up of older red stars, and is estimated to be 12 billion years old, which is almost as old as the Milky Way itself! The brightest individual star in the cluster is magnitude 11.95 but the entire cluster shines at magnitude 5.8 and can be seen by the naked eye under good seeing conditions. Its angular size in our sky is 23' but is actually 125 light years across at a distance of 25,100 light years.

M13 was first discovered in 1714 by Edmond Halley and later cataloged by Charles Messier in 1764.

My image of M13 was taken through a TEC140 telescope with an Astro-Physics field flattener yielding a focal length of 1015mm. I used an ASI1600 monochrome CMOS camera cooled to -20C and L-R-G-B filters. I used exposures of 60 and 120 seconds to yield a total of 5.5 hours of image integration to create the final RGB image. I automated my imaging session using Sequence Generator Pro and I use Pixinsight and Photoshop to perform the image processing.



The Heart Nebula
By Terri Zittrisch

IC 1805 is part of a bright nebulous area within Cassiopeia region of the sky. Another much imaged nebula due to its red nebulosity which forms somewhat of a heart shape. The loose open cluster at the middle of IC 1805 is called Merlotte 15 and supplies much of the illumination for IC 1805 and excited hydrogen gas gives it its gorgeous red color when imaged either in RGB or in Narrowband wavelengths.

IC 1805 shines with an absolute magnitude of 6.5 and is approximately 7500 light years from earth and hails from the Perseus arm of our galaxy.

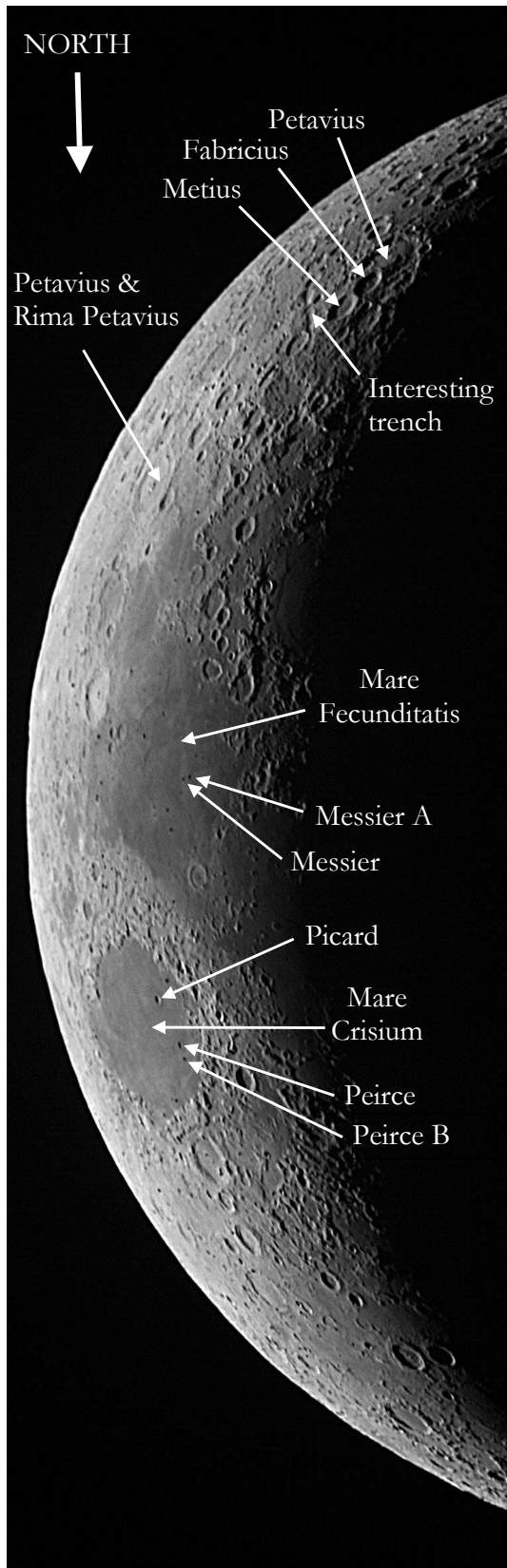
My image of IC 1805 barely contains the object and in fact leaves out some of the brightest areas due to limitations in my field of view, so you can just barely make out that it's a heart shape with a little imagination. I used a TEC140 telescope with an Astro-Physics quad telecompressor/corrector yielding 705mm of focal length. I used an ASI1600 monochrome CMOS camera cooled to -20C and exposures of six and ten minutes through Ha, OIII and SII narrowband filters for a total integration time of over 7.5 hours. I ended up depicting the image in only H-O-O which means Hydrogen filtered data for the red channel, and blends of Oxygen and Hydrogen for the green and blue channels to come up with my interpretation. I automated my imaging session using Sequence Generator Pro and I use Pixinsight and Photoshop to perform the image processing.

The Young Moon

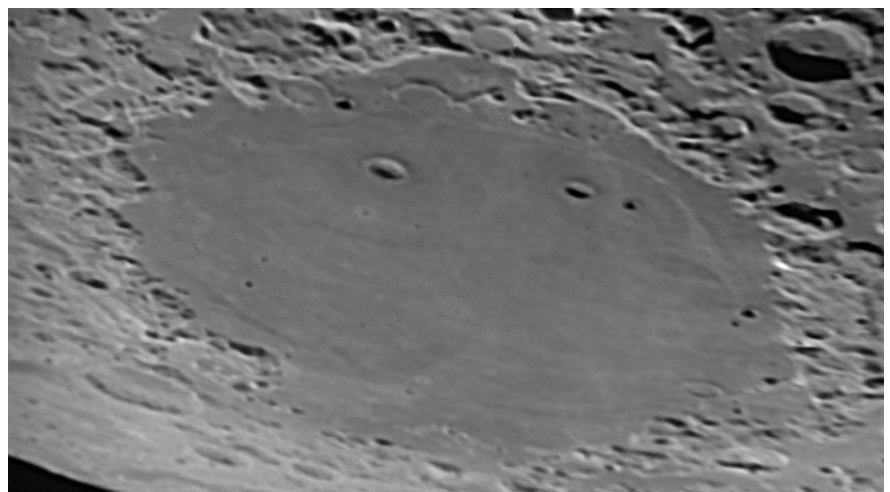
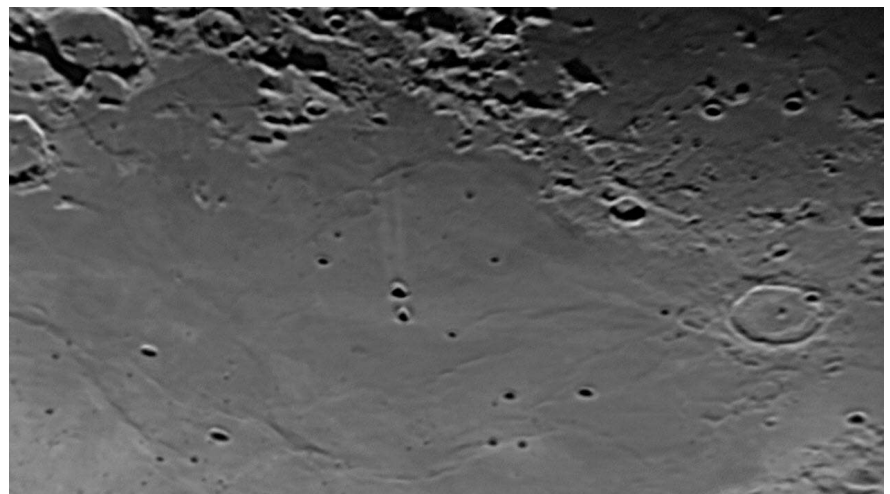
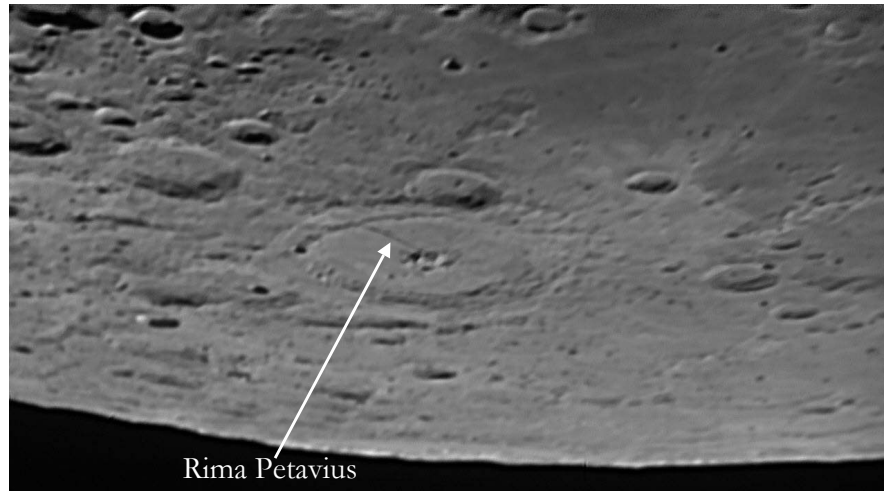
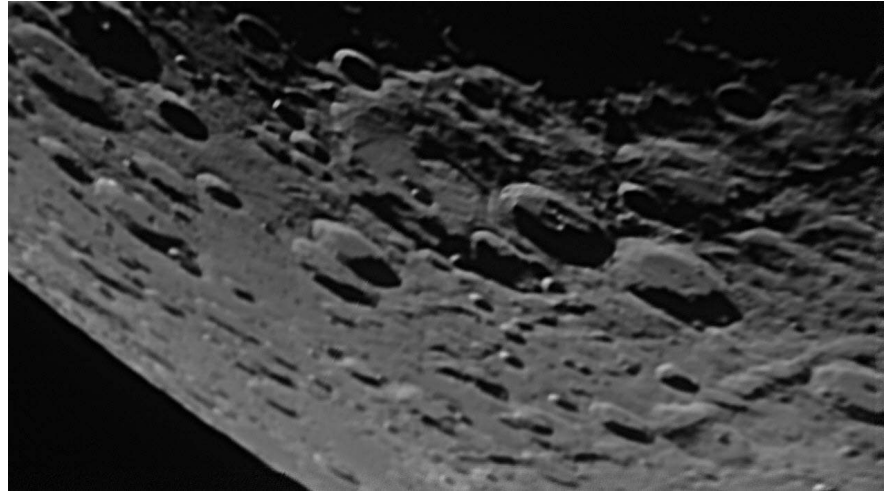
By Paul Walker

Some features are best viewed on a young Moon. Though it can be hard to catch it before settling into the muck, the alternative is to wait until after the Full Moon and stay up late waiting for the Moon to rise above the muck.

4.09 day old Moon. 10" f/5.6 Newt. Close-ups taken with Nikon AW-110 point & shoot at 5x optical zoom, 3x Barlow, 24mm eyepiece for an effective

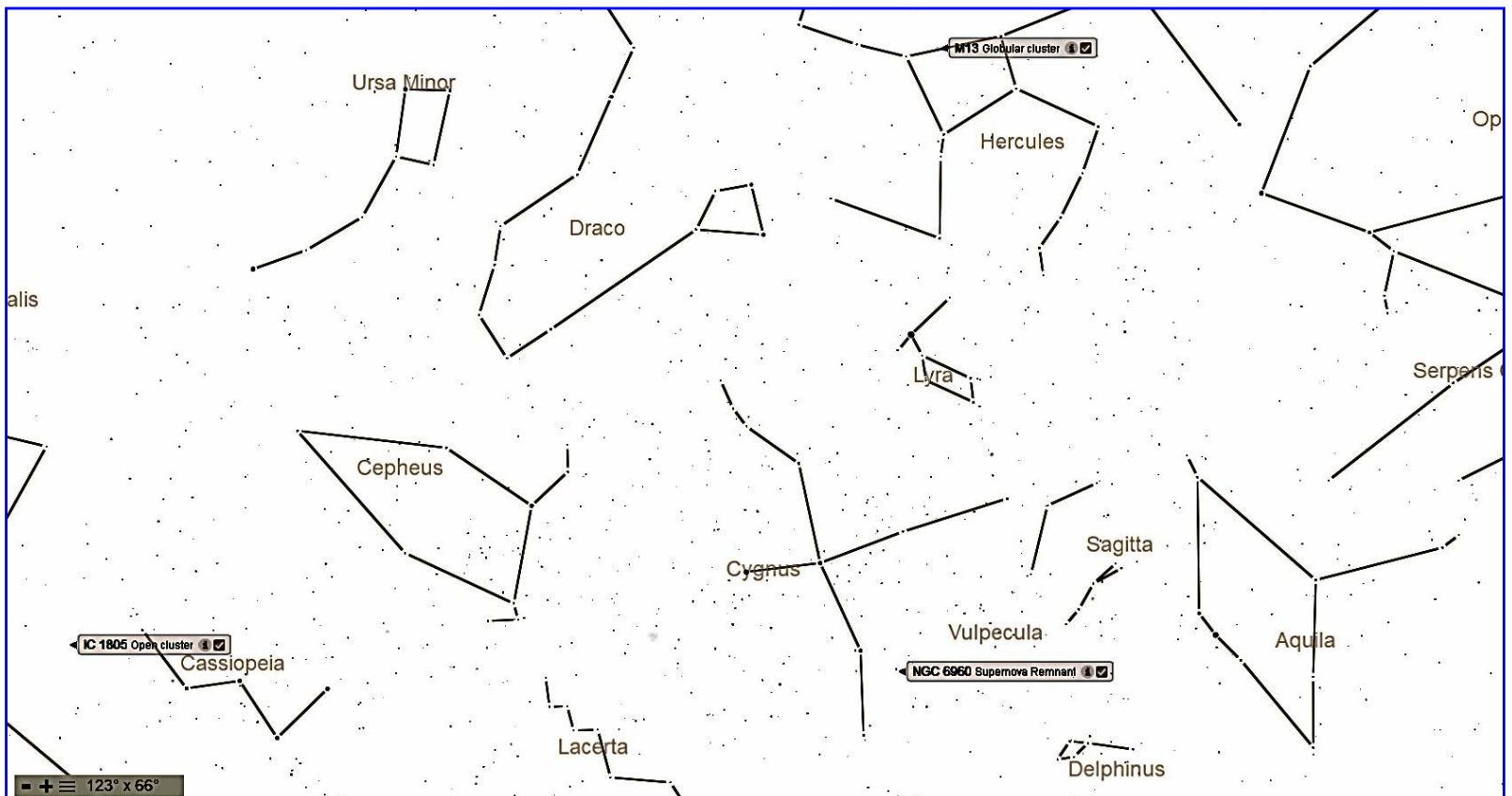
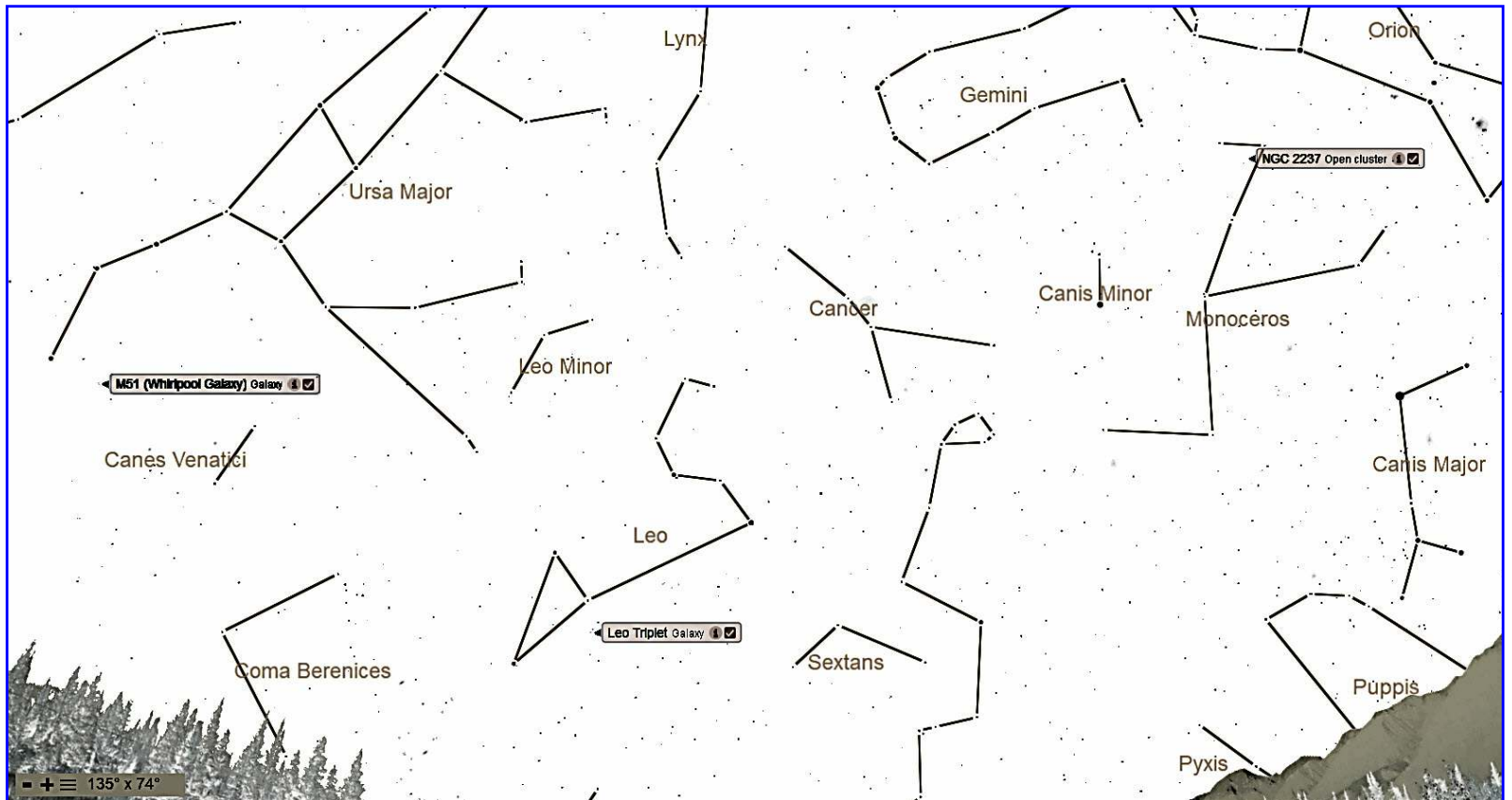


magnification of 490x. Close-ups are stacks of 500 frames and arranged from South to North on the context image and oriented with North to the right.



Location Charts for the deep sky object images in this issue.

Created using Starry Night Pro 7 & Picture Window Pro 7.



For Sale

Books

The Night Sky Observer's Guide, Volumes 1-3, like new, **\$100**

Burnham's Celestial Handbook, Volumes 1-3, used but very good condition, **\$50**

Abell's Exploration of the Universe seventh edition, textbook in used condition, **\$10**

Celestial Objects for Common Telescopes, Volumes 1-2, used but good condition, **\$10**

Cheryl Rayner

cheryll.rayner@gmail.com

Telescope mirrors and a couple mounting cells

3.5" f/10 with 3/4" diagonal.

6", probably f/8.

8", probably f/8, in nice cast aluminum cell.

10" f/9, 1/10 wave (measured by Bob several years ago), Beral coating that is in good condition though the edge has several chips (edge not beveled) and a note from the coater says there are a few scratches and it is not fully polished (may be saying that because of the scratches). From St. Michael's College.

12", probably f/8, plate glass mirror in nice 18 point mirror cell. The cell is worth more than the mirror. If I remember correctly this came from St. Michael's College, from the old scope they had in their observatory.

Other than the 10" f/9 I cannot vouch for the figure of the mirrors.

The only one that may be Pyrex is the 8" mirror, I'd have to pull it out of the cell and look again. The rest have a slight greenish-yellow tint.

Make an offer on any of the items.

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

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, 802-876-7535 or bdhinv@yahoo.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 anstey@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**

Celtstron 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, paulmarino@gmavt.net or call (802) 482-5128

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

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, 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 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 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

CONTINUED IN NEXT COLUMN

CONTINUED FROM PREVIOUS COLUMN

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
bigwingboyatverizondotnet

Wanted

For selling & buying also check out:
www.marketplace.skyandtelescope.com