

Morning Star

Fall 2023



Newsletter of the Vermont Astronomical Society

*** Club Info ***

Announcements

Check out our Member **Forum** on our website (vtastro.org), under Discussions.

Several **past meeting presentations and newsletter articles** on imaging, observing and equipment are posted on our website, check them out.

Past newsletters are posted on our website under What We Do.

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

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 be a member for 3 months. This provides access to the Warming Hut, 115v AC power, the port-a-potty and the Teaching Dome.

Full Members can request access to the gate lock, Green Mountain Observatory (18" Obsession) and the

Chmela Observatory (5" folded optics planetary scope) locks.

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

Contact the Secretary, Paul Walker or Jack St. Louis for more information at info@vtastro.org

Observing List for HOS

We have an email list for members 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

Are due the first of each year.

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

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

webmaster@vtastro.org

(Goes to Secretary and Webmaster)

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(My apologies if I missed anyone)

The Morning Star Newsletter from Yesteryear

1988-Winter Morning Star:

The art work on the cover page was done by Russel Chmela. The complete newsletter is on Paul's Google Drive, the link is here:

<https://drive.google.com/drive/folders/12zBSjZqEwKOsOd9a14LHdqMMH1NaaWNq?usp=sharing>, look for the file "1988 Winter Morning Star Newsletter.pdf".

Russell Chmela was VP of the club at this time. There is no record of other board members at the time in this newsletter.

Contents:

Deep Sky observing notes from Russell Chmela.

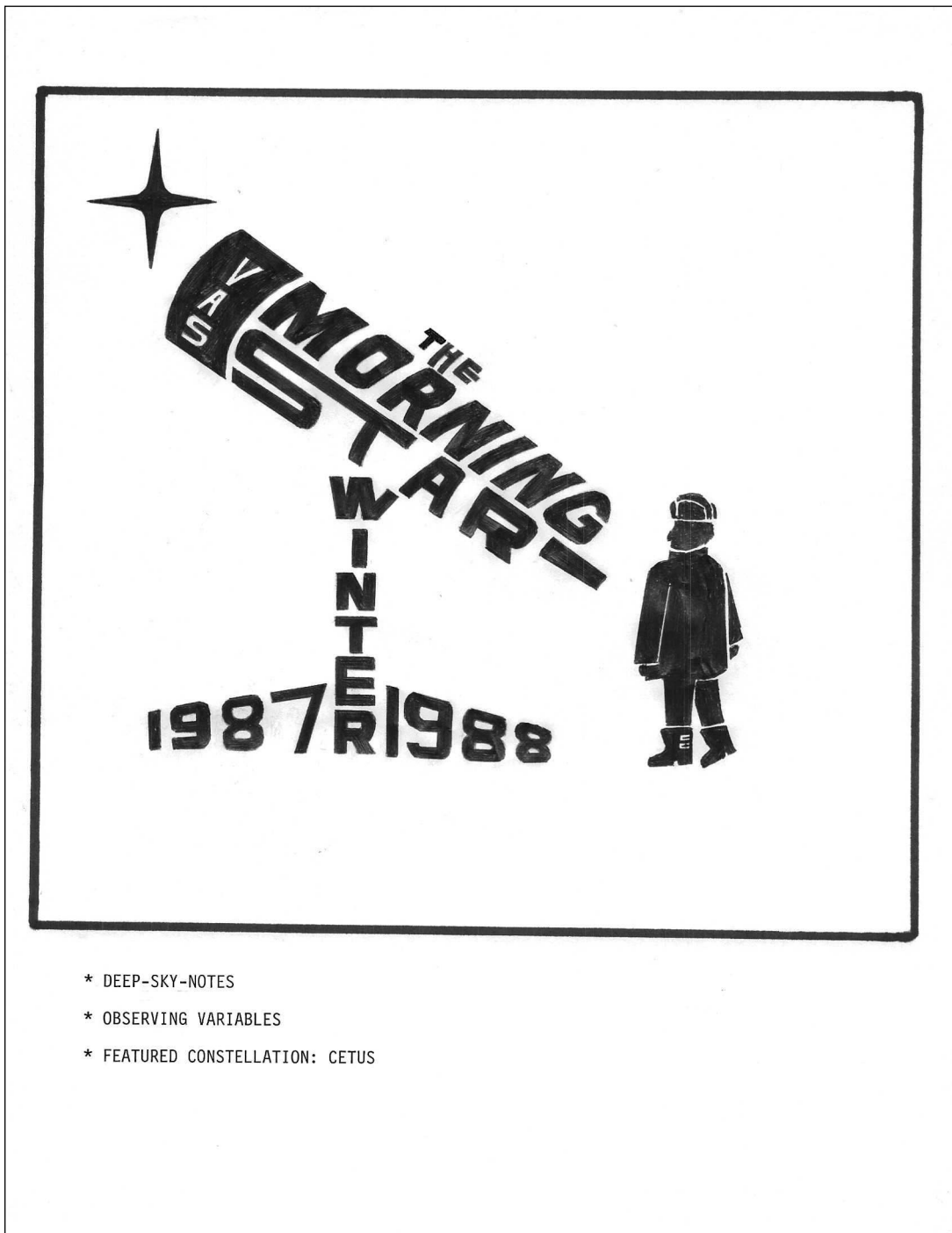
How to Observe Variable Stars by Paul Walker.

Featured Constellation: Cetus the Whale by Brad Vietji

I don't plan to do the 10, 25, 40 year type of thing. Nor necessarily do them sequentially. I don't have copies of all the back issues nor was the production necessarily consistent in the early 80's.

Most are multi-page publications so I won't be including the whole newsletter here each time but will provide a link to a PDF file of it.

We will get to see examples of the cover artwork that Russell Chmela produced starting in the Fall of 1985.



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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.

Gary's Astronomical Events for the Month

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

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 email list for members interested 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

Depending on the type, some events are listed on our website (vtastro.org) and Google Calendar- (<https://calendar.google.com/calendar?cid=Nzc5dnQ1bnZrN2ljcDA2NG9vbXFnczI1M2NAZ3JvdXAuY2FsZW5kYXluZ29vZ2xlLmNvbQ>)

Member & Invited Guest Star Gazing at HOS & other events

Keep watch for emails announcing scheduled or impromptu observing at the Hinesburg site.

10/07/2023 (Saturday)- VAS & Guests

Hinesburg Observing Site (HOS) - Gate opens 7:00. Moon interference ~11:00, rises ~1:00 AM

10/13/2023 (Friday), rain date 10/14 - VAS & Guests

Hinesburg Observing Site (HOS) - Gate opens 7:00. No Moon interference

11/3/2023 (Friday), rain date 11/4 - VAS & Guests

Hinesburg Observing Site (HOS) - Gate opens 6:30. On the 3rd - Moon interference ~9:00, rises ~10:45. On the 4th -Moon interference ~10:00, rises ~12:00

11/10/2023 (Friday), rain date 11/11 - VAS & Guests

Hinesburg Observing Site (HOS) - Gate opens 6:30. No Moon interference.

12/8/2023 (Friday), rain date 12/9 - VAS & Guests

Hinesburg Observing Site (HOS) - Gate opens 6:30. No Moon interference.

Note: If you would like to be a host, greeter/orienteer or want some training on operating the scopes, let Paul Walker know.

Can be contacted via:
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

11/01/2023, 6:30 to 8:30 PM at Milton Public Library, 39 Bombardier Rd. General sky viewing, Saturn and Jupiter. Moonrise ~8:30

New Members

VAS welcomes the following members who joined us since the last newsletter:

Nat Lewis
Emily Kelly
Dylan Kelly

Meetings/Presentations

Meetings can be attended in-person or remotely. We are back to holding meetings in-person at Brownell Library. They can also be attended via Zoom. The Zoom link will be emailed to members with the meeting reminders. Non-members can request the link via info@vtastro.org.

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). 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.**

October 2

"Favorite and/or Recommended Observing Equipment and Tools"

Several Vermont Astronomical Members will share ideas on the equipment and tools they use and/or would recommend using.

November 6

2 mini-talks

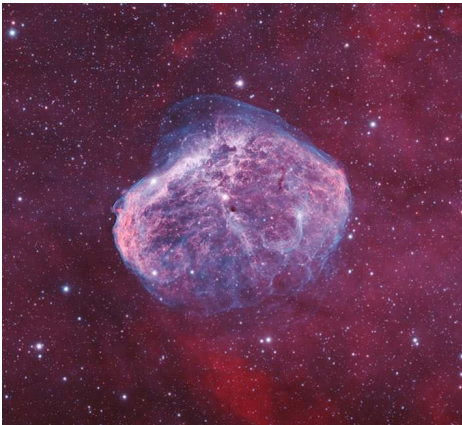
It Came From Beyond the Earth: A Review of Sample Return Missions

By Scott Turnbull

We have a long history of examining materials that have come to Earth in the form of meteorites. The process by which those come to us irreversibly alters some of the characteristics of those samples. More recently we have endeavored to directly collect samples and return them to Earth in their original condition for scientific study. This presentation will review our efforts to gather samples from celestial bodies and bring them back to Earth.

HOO Narrowband Imaging - Making the Most of Vermont's Limited Clear Nights

By Richard Whitehead



NGC 6888 (Crescent Neb. in Cygnus)

A short presentation on maximizing effectiveness using narrowband to produce realistic deep sky color images using only two filters and some math.

With Vermont's limited opportunities for clear skies and being able to image when the moon is out makes

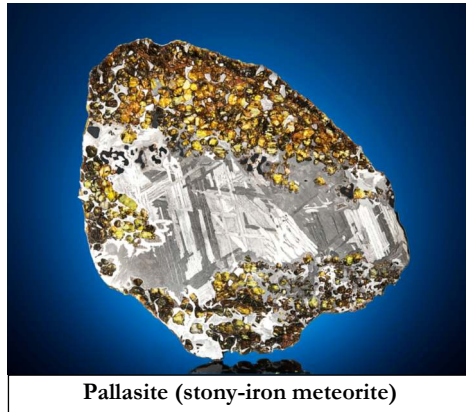
modified HOO imaging an attractive option.

I'll show some examples using Pixinsight processing but also talk about the principles so you can use any software .

December 4

Maine Mineral and Gem Museum: The Stifler Collection of Meteorites and the AllSky7 Camera Network in Maine

By Patrick Leverone



Pallasite (stony-iron meteorite)

The Stifler Collection of Meteorites belongs to Dr. Larry Stifler, co-founder and current Board President of the Museum. It includes the largest displays of rare pallasite and Martian meteorites in the world, as well as the majority of known lunar meteorite material on Earth. This presentation will discuss the origins of meteorites in our Solar System, some of what can be learned from study-



Mars Meteorite

ing Murchison and other meteorites, and how they are relevant to astronomy. As a tool for meteor astronomy, the net-

work of AllSky Cameras the Museum is helping to build and maintain in Maine with possible extensions into New Hampshire and Vermont, will be explained. At the end of the presentation, some time will be allotted for questions, and in-person attendees can hold pieces of the Moon and Mars as well as touch a Murchison meteorite, which contains the oldest solids ever dated. Meteorites of a few other types will also be shown in person. These are very rare specimens, so you may not get another chance to do this!



Murchison Meteorite (contains some particles that are 7 billion years old, predating the Earth by 2.5 billion years)

I spent about three years volunteering at the Museum almost weekly from Feb 2020 to April 2023. I was brought on as a full-time employee this April to manage the All-Sky Camera network and to continue to guide visitors through the Stifler Collection of Meteorites. I have also been helping with educational outreach, internships, and exhibit development, and I hope to learn to use our incoming Laser Ablation- Inductively Coupled Plasma- Mass Spectrometer (LA-ICP-MS) in early 2024 to help the research lab which operates onsite at the Museum.

Articles

None

Sky Lore and Stories

Long ago, storytellers invented magical stories of the stars, the Moon, the Sun, and other mysteries of the sky. The stories helped people pay attention to our world—in the sky and right here on the Earth. Today, astronomers help us pay attention to the mysteries of the universe. By observing, measuring and predict-

ing, they explain how things work and, like the storytellers, they help us notice and care for our world. Storytellers and astronomers are both sky tellers. Though each tells a different kind of story, both help us to open our minds and grow.

In this series of articles, I will be a sky-teller of the first kind, bringing you tales from different cultures as we look at the stars through the eyes of historical imaginations.

~Carrie Cruz

Draco The Dragon--the 8th largest constellation in the sky

By Carrie Cruz

The dragon is a mythical creature that exists across many cultures, and the constellation Draco plays a celestial role in many of these stories. Perhaps it is because Draco is a large constellation, but more likely, it's because Draco's star Thuban was the pole star approximately 4000-5000 years ago. It would have seemed to ancient sky watchers that Earth revolved around Draco. That would make the constellation quite important.

In the Babylonian creation story, Tiamat, the personification of saltwater, is depicted as a dragon. Tiamat created the first gods out of her union with Apsu, the personification of freshwater. She was eventually destroyed by the god Marduk, who split her body in two; the top half of her body became the sky and the bottom became the earth.

In a Norse creation myth, a dragon gnaws at the roots of Yggdrasil, a huge ash tree that covers the world and binds earth, hell and heaven together.

In Chinese mythology, the Draco constellation represents the orbit of a dragon called the "Great Tail." Dragons are considered symbols of power, wealth and good luck in Chinese culture.

In Persian mythology, the Draco constellation is associated with the story of Aži Dahaka, a wicked dragon created to devour humans. Aži Dahaka was defeated by two heroes named Zal and Rostam.

In Mayan mythology, the Draco constellation represents the Path of the Creator, which is the path of a serpent. Snakes hold an important place in Mayan culture as symbols of continuity, creation, and power.

A Chinese tale sees the stars as the dragon who eats the Sun or Moon in an eclipse. During a real eclipse, ancient Chinese would make as much noise as possible, banging on pots and pans to try and scare away the dragon that was eating the Sun or Moon.

Around 800 BC, the prehistoric Adena people, who lived in the Ohio area, created Serpent Mound which is believed to mirror the constellation Draco. This huge mound is nearly a quarter mile long.

Greek mythology has many legends about dragons, but two are especially connected with Draco. One story is about Zeus's battle against his father, the Titan Cronus. It had been prophesied that one of his own sons would dethrone him, so each time his wife Rhea gave birth to a child, Cronus swallowed it. Rhea hid the infant Zeus and tricked Cronus into swallowing a stone. He uncovered the trick and went after Zeus who escaped by turning himself into a serpent and his nurses into bears. The constellations Draco and Ursa Major and Minor commemorate his escape.

More often, though, the story of Draco is connected to the 12 labors of Hercules, a neighboring constellation. In the myth, Draco represents Ladon, the dragon that protected the golden apples in the garden of the Hesperides. The golden apple tree was a wedding present to Hera when she married Zeus. Hera planted the tree in her garden on Mount Atlas and appointed Atlas' daughters, the Hesperides, to guard it. She also placed the dragon Ladon around the tree so that the Hesperides would not think to pick any apples for themselves. As part of his 12 labors, Hercules was asked to steal three golden apples from the tree. He defeated Ladon with his poisoned arrows and took the apples. Saddened by the dragon's passing, Hera placed its image in the sky where Draco is usually depicted coiled around the North Pole, with one of Hercules' feet on its head.

Draco, Latin for "dragon," is a circumpolar constellation, lying near the north celestial pole, and at most latitudes of the Northern Hemisphere, it never sets. Draco is an ancient constellation which represents nearly every dragon mentioned in history. About 5,000 years

ago, the pole star was Thuban in Draco. The effect of precession, the long-term 'wobble' in our planet's orbit and rotation, means that in the far future (>20,000 years) Thuban will once again be the pole star, bringing dragon lore back on top!

Board & Committee Meetings

July Board Meeting

Jack checked into a report of possible issues with the Library Loaner Scope at Jericho Library. He found that it was fine.

All are in favor of taking up Al Boudreau's offer to give the club his observatory building and help pay for moving it from Bridport to the Hinesburg observing site.

Terri has arranged with Rokeby Museum in Ferrisburg to have a star gazing event on September 16 with a rain date of the 23rd.

Scott is organizing a star gazing event at the Deborah Rawson Memorial Library in Jericho.

Keith has ordered 2 scopes for the Library Loaner Scope Program and is working on sourcing stickers for the library scopes.

Worked some more on changes to the by-laws.

August Board Meeting

Work is progressing on the solar power array the town is having installed on the cap of the old landfill next to our observing site.

Joe thanks all who helped at the "Spontaneous Night Under the Stars" event at his home in Alburg. He is working on scheduling an astronomy talk at Wake Robin retirement facility.

Keith is looking into sourcing the labels, operating manual, etc. for the Library Loaner Scope Program is finding it will be most cost effective to purchase a lamination machine and print and laminate the materials ourselves and purchase printable label sheets and print the labels ourselves. The estimated cost of the equipment and materials is \$325.

The board approved these purchases on 2023-07-31 via an email vote.

He Suggest we have a telescope tune-up clinic like we have had before. He will check in with the Membership Committee on that thought.

Terri will scope out setup locations for the Rokeby star gazing event.

Jim has sent out emails and mailing to several entities about the 2024 total solar eclipse. So far he has not heard back from any of them. He will call another Eclipse Committee meeting to work on distributing resources (VAS info about it and solar viewers).

We sent out a draft of the proposed by-laws changes to Full Members for feedback and discussion. The main feedback was on the 12 year minimum age for Full Members. We discussed the issues of there currently being no limitations on what a 12 to 18 year old can do regarding using equipment and being on the board.

September Board Meeting

Joe had an astro-imaging event with some Burlington HS students. Most were already knowledgeable and had their own equipment.

Several members attended the observing event organized by the UVM Space Club. There were about 400 UVM students in attendance.

Terri reported that in spite of the sky conditions, the Rokeby star gazing event was well attended, with people being shown several objects and asking many questions. She is working on scheduling a late Fall or early Winter observing event with the Dorothy Alling Memorial Library in Williston.

Bob did some public outreach in New York, bringing along Irene, our 14" Dobsonian.

Keith has 2 Library Loaner Scopes on order. There are 2 libraries waiting for them. He asked for permission to order 2 additional scopes. There is a library which has an interest in one of them. There is a long lead-time in getting the scopes. He also researched pricing on zoom eyepieces and found a source that has a good price. He ordered 4 for the Library Loaner Scope Program.

Jim reported that interest in the 2024 total solar eclipse is creeping up. We have received a number of requests for presentations about the eclipse which Jack and Jim will be doing.

Scott is working with Brownell Library and the town of Essex Junction to organize a 2024 eclipse viewing event somewhere in town.

We went over the latest changes to the by-laws. No further changes were made.

MOTIONS:

Paul moved that we pay 1/2 of the Patrick Leverone's, the December presenter, lodging expenses (assuming he comes in person) up to a maximum payment of \$150. Seconded by Joe. 6 yeas, 1 nay. (Patrick asked if we would be willing to do this.)

Terri moved that we approve up to \$500 for Keith to order 2 more Library Loaner Scope. Seconded by Joe. All voted in favor.

Paul moved that we approve the by-laws as-is in the draft copy dated 2023-09-24, contenance on there are not being additional changes precipitated by additional feedback or concerns from the Full Membership. Seconded by Scott. All voted in favor.

VAS Membership Committee

No meetings this quarter.

Observatory Site Committee

No meetings this quarter.

Under the Stars & Planets

OBSERVER'S CORNER

Observing Tips

If you have tips to share whether for beginners or experienced observers send them our way at info@vtastro.org

► **Zoom Eyepiece** - Consider getting a zoom eyepiece. You may find a zoom eyepiece is all you need for the type of observing you do. Depending on your telescope, I might also recommend a low power wide field 2" eyepiece for some of the deep sky targets and for the planets and Moon a 2X Bar-

low to pump the power up for those nights of good seeing.

One zoom eyepiece takes the place of multiple eyepieces. They can be used for any type of observing but are really nice for planet and lunar viewing as it allows you to dial in the best magnification for planet and the seeing conditions without changing out eyepieces. With standard eyepieces, one may not give you enough magnification and the next one up in power may be too much for the conditions. A drawback is they have a relatively narrow apparent field of view, 40-50 degrees at low power. However, for planets that's not a big deal.

They have focal length ranges at or near 8-24mm. In an 8" f/6 Dobsonian this provides magnifications of 50-150x. Adding a 2x Barlow gets it up to 300x. A 3x Barlow gets it up to 450x. Though 450x is pushing beyond what is practical with an 8" Dob it does ensure you will have all the magnification you could ever use without any gaps form 50-450x.

The less expensive zooms have apparent fields of views (AFOV) of 40 deg. at low power and 60 deg. at high power. For some but not all of the most expensive ones it is 50 and 68 degrees respectively. Though they may have other features and/or optics that are better. If you wear eyeglasses when observing you will need to note the eye relief as it varies with brand and the magnification used. They have more lenses in them than the typical moderately priced standard eyepieces and therefore will reduce the light throughput and contrast but only the most experienced observers will be able to detect this.

Equipment Tips & Recommendations

If you have equipment tips and suggestions to share whether for beginners or experienced observers send them our way at info@vtastro.org

► (repeat) **Tips for dealing with humidity** (whether dew or frost).

One common way to address humidity problems is with a dew heater and/or fans. But here are a couple more ideas. The key is to keep the lenses warmer than the air.

A common place for humidity problems is the finder scope. A dew shield there helps a lot. You can buy scope-specific shields, you can buy generic shields, or you can make your own. People have used a roll of cardboard (e.g. a toilet paper roll or paper towel roll can work nicely when blackened with paint or felt pen), sheets of foam, or very thin plywood. Some that provides more insulation like foam plastic sheets fashioned into a tub or can be wrapped around the finder to keep it warmer longer. A rule of thumb is to make the shield 1.5 times as long as your aperture is wide. Longer is better for reducing dew but but make it too long and you will reduce the effective aperture by restricting the field of view (remember finder scopes have a field of view of about 5 degrees which means there's a cone of light coming into the objective lens on the front).

If you don't have a dew shield putting the lens cap back on (and the eyepiece cap) whenever you aren't using the finder will help. No caps? Cover the finder with a cloth or small towel. Insulation tubes for water pipes come in several sizes and can be used around eyepieces or cut to fit various unity finders and taped, tied or rubber banded in place.

A very effective though technically more challenging approach is to make your own dew heater with a string several electronic resistors soldered together and attaching each end of the string to a 12v power source (a standard 9v battery also works but may only last a night or two. Make one string for the objective end and a shorter string for the eyepiece (or wrap a longer one a couple times around). The resistors or at least any bare wires should be inside some heat shrink tubing to prevent shorting out the power source. The drawbacks are that you need a power source and you have wires hanging off the scope. Many observers with motorized GoTo scopes have a suitable 12vdc power source and some mounts have "pass-through" power management cables allowing accessories to be plugged into auxiliary power connectors right on the mount.

You only need about 1 to 2 watts of power to provide enough heat for eyepieces and finder scope objectives. Here's more technical info for those

who may have a soldering iron but don't know how to calculate what you need to use for resistors. $2 \text{ watts} / 12\text{v} = 0.17 \text{ amps}$. $12\text{v} / 0.17 \text{ amps} = 72 \Omega$ (ohms) (value of the total resistance needed) (1 watt of power calculates to 144 Ω). Any amount of resistance in about the 50 to 150 Ω (ohm) range will work. This resistance will be distributed between 5 or 6 resistors in series (daisy chained). So the reasonable range of values for the resistors is: $50 / 5 = 10 \Omega$ each (this will produce more heat) to $150 / 6 = 25 \Omega$ each (will produce less heat, a better choice when using a 9v battery).

Radio Shack has a 5 pack of 33 Ω (ohm), 1/2 watt resistors. Using all 5 would add up to 165 Ω and produce 0.87 watts, using 4 of them would give you 132 Ω and 1.1 watts, using 3 would give 99 Ω and 1.5 watts.

Note that these resistors have wattage rating of 1/2 watt. This means each resistor is rated to handle up to 1/2 watts heat. So you have to divide the total calculated watts by the number of resistors and get a result of no more than 0.5 watts. Otherwise they will get hot enough to burn you. They get very hot when dissipating 1/2 watt.

Radio Shack has a 5 pack of 15 Ω , 1/2 watt resistors. 5 of these will produce 2 watts.

Radio Shack has a 5 pack of 10 Ω , 1/2 watt resistors (currently sold out). 5 of these will produce 2.9 watts in case you need more heat, but would get very hot and damage the resistors over time. 6 would produce 2.4 watts and handle the heat.

Amazon.com has resistors as well, only they come in large assortment packs. There is a 600 pcs. pack of 1/2 watt resistors for \$14 with resistor values in the proper range (10 Ω and 22 Ω). It has 20 pcs. of each value so you could make several dew heaters. There are other sets with 33 Ω and/or 47 Ω resistors that will work as well.

Almost forgot the heat shrink tubing. Radio Shack and Amazon carry it. Mostly in kits with short pieces but you can use multiple pieces placing one at a time over part of the string of resistors, shrinking it (you can use the soldering iron to heat the the shrink tubing, use the body not the tip). Letting it cool

down some before placing the next piece overlapping the first piece a little.

Contact info@vtaastro.org if you need help or have questions. Paul Walker has a bunch of 9v battery clips and what seems to be a standard connector (5.5mm O.D. with 2.1mm center pins) for DC power supplies, both male and female types, if you need them.

On-line Resources

► From the Royal Astronomical Society of Canada. Observing tips: <https://rasc.ca/observing/tips>

► Here's a really nice, printable Star Atlas. It shows how to go about printing, laminating and binding the atlas. And, even more, with supplements! <http://www.deepskywatch.com/deep-sky-hunter-atlas.html>

► Discussion of the best star atlases- <https://astronomy.com/observing/get-to-know-the-night-sky/2014/04/choose-a-star-atlas-thats-right-for-you?page=1>

► ALPO <https://alpo-astronomy.org/>

No, not the dog food, the Association of Lunar and Planetary Observers. They are a good place to check out for those interested in learning more about the Moon, Sun, planets, asteroids, meteor showers and observing them or submitting your images or drawings of them.

The Moon is a good place to start as it is often visible, requires no specialized accessories and is close enough to see lots of different geological features.

The Lunar Section produces a monthly newsletter containing observations and images of the Moon.

It is a little tricky finding the link to the newsletter. From the link above, under Observing Section (top left side), select "Lunar Section". Look for "[here](#)" about halfway down the info for each month, that's the link to each newsletter.

► **The Astronomical League** (AL) <https://www.astroleague.org/>

Whether or not you are a member of the Astronomical League, you can access their Observing Programs for lists and ideas for your personal use. Look for the "Observe" pull down near the top. It is recommended to select "Observing Program Selector Grid" to start.

At the top of the grid you will find "Difficulty", below which you will find programs aligned with your experience level. Also along the top of the grid you will find the "Equipment" (the equipment options needed or allowed), "Needs" (any special needs) and "Style" (what methods you can use, where "Manual" means with your eyes).

To find more detailed information go back to the top to the "Observe" pull down and select "Observing Programs (listed alphabetically)". Note that the listing goes left to right (I ignored the right side for a while and could find a particular program). If you are an AL member you can get an observing pin specific to each program that you finish.

VAS is a member of the AL so going through our club your AL dues are only \$7.50/yr (compared to \$40 for a "member at large". Contact info@vtastro.org if you are interested in taking advantage of this.

Member's Observations (mostly from the vtastro@list)

(August 13) Venus today anyone?

With the Venus inferior conjunction today, and lots of clouds, any luck out there?



I did indeed observe this in a hole in the clouds for just 15 minutes at 16h 30-45m UT (12:30-12:45 PM EDT), with my Celestron 8" SCT, seen above. But once again no luck at the camera with little time to dial this into view. I

had low wind and good seeing at observing time but Venus was fainter than I expected at 50x. This follows my January 9, 22' conjunction seen from here too. Next inferior conjunction March 23, 2025, an easier northerly pass.

Lawrence Garrett

(September 5) What a night last night.

At least after the clouds, that came in to bug me, went away after 11:00-11:30 or so. The best seeing though wasn't until after about 2 AM.

I viewed and imaged Saturn "early on" (about 1 AM). 2 AM I switched over to Jupiter, then the gibbous Moon. By then the seeing was the best I have ever seen! I was able to spot a tiny crater on the Moon, Posidonius Y (2 Km or ~1 mi), for the first time. I also took a 5 minute video which includes this crater, which I can see on the video! It will be interesting what stacking some of the frames show.

By the time I was done with all that it was after 4 AM and was think I would call it a night. But then I remembered that Uranus was somewhere in the vicinity. Earlier in the night I had fired up the digital setting circles on my big 10" (10" f/5.6 Newtonian). I hadn't used them for years but am thinking of doing stuff that will be much easier if I use them to locate some objects. So I pulled up Uranus on the display and pushed the scope to it. Good thing I used the digital setting circles because, though I could see it the 3 degree field of the 80mm finder scope, it was only 2 1/3 degrees from the waning gibbous Moon and I would never have been able to find it otherwise. I got the best view of Uranus ever! As with Saturn, Jupiter and the Moon, I used my binoviewers in the 10" and cranked up the power. All the way up to ~450x. The view was actually a little better at 360x and 300x. Below 300x the views got worse, in that, I couldn't see the smallest details available. Not that with Uranus I could actually see detail, though imagined I could.

Now I have to work on converting the video clips into detailed images.

An unusual night of circumstances, where, if not for a few clouds in the evening delaying my evening plans, I would

have missed the best planetary and lunar observing I have experienced so far.

My final views this morning were of Jupiter and the Great Red Spot. Which I would have missed had I not thought of observing Uranus an hour before the Red Spot was to rotate into view, delaying my plans to retire for the night. The brightening sky (and slightly diminished seeing) finally convinced me to call it a night. Though by that time one could say it was no long night. Finally hit the sack about 6:15 AM.

Paul Walker

Excerpts from emails between Paul Walker and Gary Nowak - (September 6)

Hi Paul,

Thanks for sending me the Uranus pictures and the lunar shots. A bit of information on Uranus.

Uranus is an interesting planet to observe visually. Richard Berry calls it "The Elusive Planet". One may think that they can easily see details in the clouds of Uranus but it's a challenge.

Uranus comes to opposition on 13 Nov 2023 in Aries at Magnitude +5.6 and its size is 3.78". Sometimes faint cloud belts can be seen in telescopes. Some observers have claimed to see a few faint belts in a 6" (150 mm) telescope at 300X. Other observers claim to have seen some faint belts in a 8" (200 mm) telescope at 300X-400X. Usually a 10" (250 mm) or larger telescope is needed to see the faint belts and moons. Light colored filters such as Watten (W) #8 Light Yellow or W #82a Light Blue are used in larger scopes such as a 10" (250 mm) to help see the faint belts and zones.

Uranus North Pole is facing Earth and is tipped up +62° relative to us. This angle means we "looking down" on its North Polar Region. Thus any faint belts or zones should be seen as elliptical not straight lines. If you are seeing what appear to be straight belts or zones; your eyes and/or mind are playing tricks on you.

Uranus has two relative bright moons out of its five. Titania at +13.5 Magnitude and Oberon at +13.7 Magnitude. These magnitude values are for opposition time. Both these moons should be visible around opposition in a

10" (250 mm). Uranus two brightest moons are best seen within 6 weeks of opposition (before and after). After that, their brightness will diminish as Earth pulls away from Uranus.

With your 10" (250 mm) and your 12.5" (315 mm) telescope you should try to see some of Uranus faint belts and moons visually. Your binoviewer may be helpful in seeing these faint features and moons. The best I've been able to do (so far) with my 4.7" (120 mm) F/7.5 APO refractor is Uranus' greenish colored disk. Also you might want to try using the light colored filters to see if that helps with seeing the faint belts.

Gary Nowak

(September 8)

Hi Paul,

That was an interesting image of Uranus and its moons. Titania and Oberon should gain just a tad bit more brightness as Uranus approaches opposition (13 Nov 2023). A 10" under good conditions should just barely get +14.0 magnitude; while a 12.5" can reach down to +14.4. So your best chance of seeing these moons is with your 12.5". Your Baader 470 nm Bright Blue and Baader 495 nm Yellow filter might be a tad dark while trying to observe Uranus in your 10". It would be interesting to see the results with your binoviewer. Uranus belts are notoriously faint and elusive so I'm not surprised that these belts are hard to see at all. (if visible).

Another moon which may be easier to see is Triton around Neptune. Neptune comes to opposition on 19 Sep 2023. The planet is near the star 20 Pisces which should help in locating it. Triton will be at +13.4 at opposition while Neptune will be at +7.8 and at 2.36" in size. Because Neptune is a dimmer planet than Uranus and Triton is a bit brighter than Titania, I would think your 12.5" should be able to pick that moon up, especially with the binoviewers. There are claims by a few observers that they have seen Triton in a 6" telescope. Considering the average limiting magnitude of a 6" is about +12.9, that's quite a claim.

Using a filter with a color that is opposite (complimentary to) or close to opposite of the feature's color will enhance the feature. Thus, if you are look-

ing at a reddish colored feature on Jupiter, a blue filter will block much of the red light making the object look darker. Darkening an object which is next to a lighter colored area will increase its contrast or enhance it. This same principal works on the moon. Since the Mare are slightly bluish, a red filter will enhance the Mare area. A good example of this is to take a look at the crater Aristarchus with a red filter. The red filter will darken the Mare around Aristarchus thus increasing the contrast helping Aristarchus to stand out a bit more.

The problem with blue filters is that it's one of the easiest colors to be refracted by the atmosphere. As you pointed out, you need good seeing to take full advantage of it. I've ordered an Orion "Jupiter" filter which is blue. It should be here in a day or so. I'm interested in trying out this filter to see how well it works.

Some sources claim that a green filter is the best for Jupiter. (Wattten [W] #56 Light Green, W #58 Green, Baader 500 nm Green). They claim this color helps to bring out details in the belts and GRS (Great Red Spot). I've never had that good of a gain in details by using a green filter. As far as I'm concerned, a yellow filter will bring out more details in the belts and GRS than a green filter. However, I do have an Baader 500 nm Green filter which I will try on Jupiter with my 4.7" F/7.5 APO refractor. I will try other colors as well. That's one neat thing about having a set of colored filters, you can experiment with them to see which one(s) give you the best visual images. Another factor to consider is the color of the feature you are trying to enhance. Features on Jupiter do change color over time and that change may require a different colored filter.

Gary Nowak

(September 20) A good imaging and viewing night.

Visual Limiting was 6.5 near Polaris. The Sky Quality Meter (sky darkness) reading at 11:25 PM EDT was 20.63 (mag/sq arc sec) at the zenith and 20.72 at Polaris. At 12:17 AM they were 20.70 and 20.76. I didn't record the seeing but I can say it was better than average.

For this evening I decided to do some deep sky imaging. As it turns out something I haven't done for more than a year. I've only been imaging the Moon and planets! After finding my deep sky target, IC 1848 (the Soul Neb) and setting up the autoguider I switched over to observing. Every 20 minutes I had to interrupt my viewing to interrupt the autoguiding and manually dither the image (move the aim of the telescope slightly). This is a great way to eliminate hot pixels in the stacked images.

Saturn's moon Iapetus was relatively close to Saturn this night. With the 10" f/5.6 Newt. and binoviewers at 305x I watched Iapetus off and on as it approached and started to pass a star of similar magnitude as itself.

I also watched Tethy and Dione on the other side of Saturn pass by each other. With Tethy moving slowly away from Saturn and Dione at a faster pace toward Saturn. Kind of neat watching these moons move quite noticeably over an hour or two from 8.85 AU (823 million mi), almost 1 billion miles distance.

Saw the Double Cluster (NGC 869 and 884) in Perseus. For these I used the 12.5" f/6 Dob with a 2", 38mm (40x), 70 degree AFOV (field of view) eyepiece. Even in this large of a telescope I was able to fit both open clusters comfortably in the eyepiece. There are some faint stars in the center of each cluster that seem sharper than the brighter star and sharper than other similarly faint stars in the cluster. This gives a 3-D impression I haven't noticed in open clusters. I have seen this impression in my 10" scope but not my 8".

Still using the 12.5" at 40x, I moved over to M33 the Pinwheel Galaxy. It was easy to see, though it has a low surface brightness and presented a clearly oval shape. The core is moderately concentrated with a slight mottling visible.

Next up was M31 (Andromeda Galaxy) and its 2 companion galaxies, M32 and NGC 110. All 3 fit nicely in the 40x view. Tried an Orion Broadband Nebula filter (also known as a light pollution filter). To me it improved the view a little. Not because it increased the contrast, it didn't, but just because it darkened the sky slightly.

At this point Jupiter was getting to a nice height so I switched back to 10".

Starting at ~152x with the binoviewers I was just in time to watch Io slowly emerge from behind Jupiter. On Starry Night Pro planetarium software I had seen that this was going to happen but had forgotten about it so I lucked out. By this time the Great Red Spot was visible but was past Jupiter's meridian. Going slightly higher in magnification to ~183x, more detail in the Equatorial Belts was visible and showed the Red Spot Hollow in the South Equatorial Belt (SEB) better. Both the Baader Bright Blue and Yellow filters improved the contrast of the SEB and NEB and Red Spot. To me the Blue filter gave the most improvement.

Switching back to the 12.5" I experimented with the Orion Broad Band nebula filter on a couple more non-nebula objects. I liked the results on the Pleiades star cluster and the Andromeda Galaxy. I used the 40x eyepiece.

On to Uranus. In the 10" f/5.6 at ~457x Uranus presented a nice blue disk. It also tricked me. I saw what I thought was Triton nearby, forgetting this was not Neptune. Trying the Baader Bright Blue filter I was surprised to see the disk dim considerably. While the yellow filter had very little effect on its brightness and may have helped the view a little.

Once I realized my error about "Triton" I tried spotting some of Uranus' moon. I had gotten images about a week prior to this showing them. What I mistook for Triton was a 10.7 mag. star. The brightest moons of Uranus are bright enough to see with a 12.5" scope provided the seeing is good enough. They range from 13.9 to 15.0. I used the binoviewers at ~328x and ~496x. Though I could see a 14.25 mag. star beyond the 10.7 star, at 69" distance from Uranus, I was not able to definitely see any of them, not even 13.9 mag. Titania. I may have glimpsed 14.1 mag. Oberon a few times. Titania and Oberon were on opposite sides but were a comfortable distance from Uranus (28" and 38" respectively). Maybe I'll get a better view later this Fall.

Paul Walker

(September 27) In the middle of transcribing the above observations last night, I went out to check on the sky conditions.

I viewed Saturn with the 10" f/5.6. The seeing was OK, but no better than average. I was using the binoviewers at ~152x, ~183x and ~229x. 229x was more than the seeing could really handle but I could see Rhea and of course Titan. I could only occasionally glimpse a hint of Cassini's division in the rings.

I checked to see if the Sun angle was good for viewing Mons Rumker. This is a complex but low profile volcanic dome with multiple smaller domes on it. It could have used a lower Sun angle but I could see some of the bumpiness and a 4 Km (2.5 mi) crater on the north edge.

Mons Rumker is on the northeast edge of the Moon in Oceanus Procellarum with only about a day out of the Moon 27 day month to view it.

I put my Canon T7i DSLR on the 10" along with a 2", 2X Barlow and took a 5 minute video of Mons Rumker that included the Vallis Schotori / Aristarchus region which is South of Rumker.

By another stroke of luck (hope I don't use it all up) when I switched back to the binoviewer on the 10" and viewed the Moon again, noticed a fairly bright star hanging off the East side of the Moon. Not knowing when it was going to disappear behind the invisible dark edge of the Moon, I didn't dare take the time to put the camera back on. Besides, it had been quite a while since I had watched the Moon occult a star other than on the screen on the camera. I had to wait probably 3 or 4 minutes. I didn't dare take my eyes away from the eyepiece. Finally in an instant, it disappeared behind the Moon. The time was 10:42:40 PM EDT. I consulted Starry Night Pro to see which star it was. It was the 4.1 mag. double star Psi-1 Aquarii. Also known as Flamsteed 91.

The lesson is, even if I'm only going out for casual viewing, check my planetarium software for any interesting events involving visible solar system objects. And write them down.

Observing Planetary Nebula (post from the VAS Forum)

Planetary nebula can be very difficult, or very easy objects to locate visually and the right tools can be key to your success. The easy ones I'll not talk about, such as the ring nebula or the

blue snowball. Those should be easily found in smaller scopes as they are big and bright objects.

This year's Stellafane convention held an Observing Olympics that was dedicated to planetary nebula, many of which were listed with sizes of 20-30 arc-seconds and magnitudes from 9 to almost 15!! Initially, before trying my first object, there seemed to be enough nebulae on the list of 25, to capture 15 of them in my 7" refractor.

My experience in the end was good, but after an hour in the beginning I didn't think I'd be successful. Here is what I found.

First what I was using. I had a 7" refractor with a focal length of 1260 mm on a manual alt-az mount with setting circles. Probably not the best scope for this kind of tiny object but the digital setting circles helped this. Initially I went with a 10 mm ocular which gave a 126X magnification (not much) and a field just over 0.56 degrees. This meant that most of these objects, in the 20-30" range, would be 1/60 my field of view (FOV)!!!

The other fact, not initially obvious to me is that while we had the stated size of each object, the objects can appear vastly smaller, as the brightness of these objects doesn't always go out to the full stated diameter, some of them are brighter in a central portion which can be much smaller than the size reported in an atlas. My early attempts at some objects were failures because the nebula, while visible in my FOV, was not identified as a nebula and looked like a star. If I had gotten full star maps out, and compared fields, I would have identified them earlier. So I skipped around the list, and as I did so, I found some objects that looked bigger than other objects of the same size, that had appeared much smaller. The ones that helped me identify this discrepancy were those that were flattened, not circular, like the Saturn nebula which is a full 70", but appeared much smaller in the FOV than I expected, but was easily identified due to it being oblate. This led me to go back and look for some of the earlier objects, like the very first on the list, IC 4593, with a different expectation, and there it was, close to the center of the field! I put in a 3.5 mm ocular and there it was,

OBJECTS TO OBSERVE

Cygnus and The Summer Triangle

(From Terri Zittritsch's Constellation of the Month Presentations)

larger than life (not really big, just clearly not a star). I also changed my wide field eyepiece to use an 8 mm instead of the 10 mm for searching. This helped give me some size to the smaller objects in the 20-30" range and helped bring out a bit of color in some of them. That said, there were many I thought I should be able to find, but could not. I am going to continue looking for the ones within the light grasp of my telescope from home to see if I can locate them. I'm also going to try from a driven mount, as using high magnification helps the process. With an un-driven mount, it's difficult to keep your object in the field at 300X as you're changing eyepieces in the dark!!

Fast forward and I'm back at home and using an 8" SCT (Schmidt-Cassegrain Telescope) on a driven fork mount to search for some of the objects. Now the 8" or even larger SCT seems an ideal tool for finding these small objects. Having the mount stay on the object while changing eyepieces was very nice and made the job much easier. The base magnification with a 20 mm eyepiece is 100X and going to 8 mm gives you 250X, which is enough to see most of the objects on the Stellafane list that are within the magnitude limits of an 8". I was successful in identifying the majority of the objects I thought I should have found, but did not at Stellafane. Another member, Mark Moyer, one of our premier visual observers has suggested using an OIII filter on the toughest objects. His experience is that the OIII filter will dim the stars but leave the planetary nebula bright, allowing them to stand out from the background. Next time I'm out doing a visual session and trying to find the last of the Stellafane planetary nebula list, I'm going to try Mark's suggestion.

So you really do need a couple of processes to surely identify these small fascinating objects: One is having the right expectation for size of the object in the eyepiece. Two is having the right tools (aperture and eyepiece to achieve the right FOV) and a good star chart or setting circles/go to capability. Having a driven scope is also a great benefit when changing eyepieces to higher magnification. Good hunting!

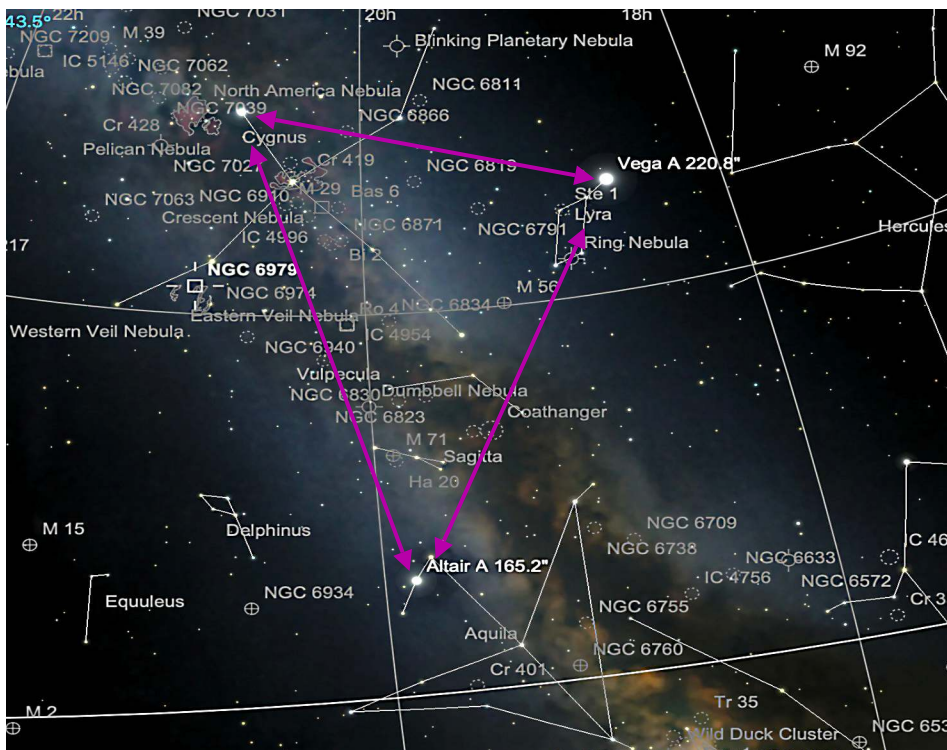
Terri Zittritsch



Plate No. 14 in Urania's Mirror

Cygnus

- Pronounced – SIG - nus
- Cygnus is Swan in Latin
- 16th largest constellation at 804 sq degrees
- Bordered by Cepheus, Lacerta, Lyra, Draco, Pegasus and Vulpecula
- The Constellation is associated with Greek Zeus legend
- Zeus transformed into a Swan to seduce Leda, the Queen of Sparta
- Leda subsequently gave birth to two sets of twins (by Zeus and the King of Sparta)
- The immortal Pollux, and mortal Helen (of Troy) and the mortals Castor and Clytemnestra
- Chinese legend called the Magpie bridge where the constellation represents a bridge over a wide river (Milky way) made of the worlds magpies which allow two lovers to meet once a year



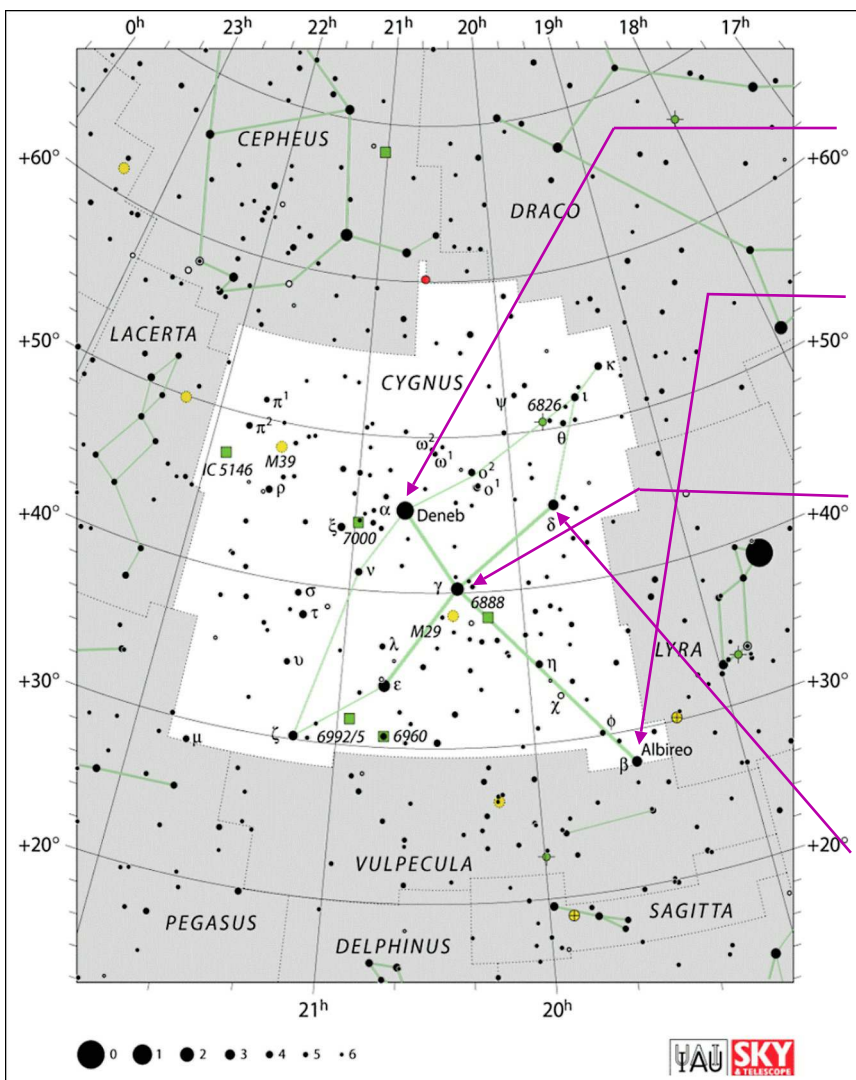
- Cygnus flies along the summer Milkyway
- Find Vega, almost straight up after dark
- Deneb is the brightest star just north-east.
- The cross will stand out.
- Connect Altair (farther south from Vega and Deneb)

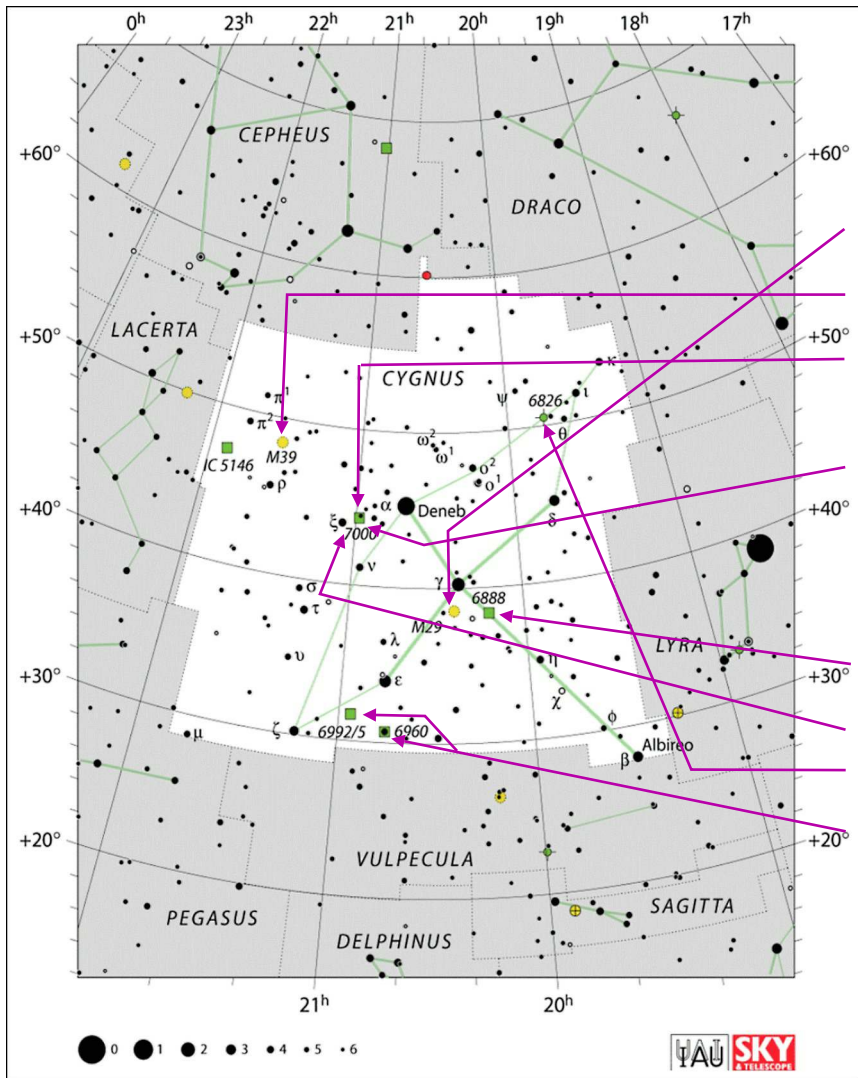
Observing in Cygnus

Bright stars and double stars

The Northern cross is represented by bright stars of Cygnus.

- Alpha Cygni – Deneb (Tail) Blue-white super giant of Mag 1.2, class A2 1a, 200,000 more luminous than our sun! Has already stopped fusing hydrogen and likely to be a supernova in 10-12m years
- Beta Cygni - Albireo or originally in Arabic Minqar Al Dajaja means Hens Beak. Mag 3.0 5th brightest star in Cygnus; A Double ‘gold - blue pair’ at 34” (B, T), Albireo A Mag 3.1 giant of class K3 and 4400K and Albireo B Mag 5.1 class B8 main sequence star at 11,000K. (T, B)
- Gamma Cygni – Sadr in Arabic meaning Hens breast. Marks the northern most point of The Great Rift, a dark lane that bisects the Milky Way all the way to Scorpius and Sagittarius. Gamma Cygni is a yellow-white super giant 65,000x as luminous as our Sun of class F8 and 6500K which makes it unusual as most super giant stars are either blue-white and hot or Red and cool while Sadr is in a middle temp range like our Sun. Sadr is surrounded by a diffuse emission nebula named IC1318 (T,A)
- Delta Cygni – Al Fawaris means The Riders in Arabic, a triple system with combined Mag 2.8. The main star is a mag 2.9 blue-white sub giant of class B9 at 9800K while its close companion is a mag 6.3 yellow-white main sequence star of class F1 and 2.4” distant. Delta Cygni will be the pole star for 4 centuries around 11,250 A.D.





Messier / NGC Objects – 28 open clusters, 11 planetaries, no globulars or galaxies due to the obscuration caused by Milky Way dust although the Fireworks galaxy (NGC6946) is on the northern border.

- M29 – Open cluster – 30 stars, Mag 7.1 in 7' area (B, T)
- M39 – Open cluster - ~30 stars, Mag 7 and dimmer over 32' (B,T)
- NGC 7000 – Nebula Mag 4 cloud of Ionized hydrogen > 2° in size (B, T, A)
- Discovered by Hershel in 1786
- IC5070 (pelican) – Mag 8 Nebula of Ionized Hydrogen 80' in size (T, A)
Part of same star forming region as NGC7000 and defined by Dark Dust areas which form a lane between them as well as the beak and head of the Pelican
- NGC6888 – Mag 7.4 Nebula of Ionized Hydrogen and Oxygen 10'x20' (T,A)
- NGC7027 – Mag 8.5 Planetary Nebula (T,A)
- NGC6826 – Mag 8.5, Blinking Planetary Nebula (T,A)
- NGC6960, 74, 79, 92, 95 - Mag 5 (B,T, A)
Collectively known as Veil Nebula or Cygnus Loop, a supernova remnant.

Information Sources

Space.com (Pronunciations)
Wikipedia.com
Sky Safari 6.0 Pro

ASTRO-IMAGER'S CORNER

All things astrophotography, for the beginner to the expert.

Imaging Tips

► (repeat) Shooting images in the Raw format of your camera will produce the best results when stacking images. However consider this, whether you "stretch" these images before or after you stack them will have little to no affect on the results. Therefore, it stands to reason that "stretching" the image in the camera by using a high ISO setting will have little affect on the results. This is true even if you save your images only in JPG format, especially if you save them at the highest quality setting (largest, least compressed, file size) available. This is true even if you only take a single image. For many older digital SLR cameras the true (versus apparent) amount of noise increased with the ISO setting. For almost all newer cameras this is not true, the noise and the signal/noise ratio does not increase at higher ISO setting.

If you have tips to share whether for beginners or experienced imagers send them our way at info@vtastro.org

Software/Online Info

► **Autostakkert3! (AS!) Stacking Software** – Lucky imaging with an edge for planet, the Moon and solar images. Works with still and video images. <https://www.autostakkert.com/> I have found it works better than Registax for stacking Moon and Sun images and as good or better for the planets. -- Paul Walker.

► **PIPP (Planetary Imaging PreProcessor)** <https://pipp.software.informer.com/> Among other things this can be used to convert an MP4 video from a DSLR camera of a planet or the surface of the Moon that can't be used in Registax or Autostakkert3! to an uncompressed AVI format video that can. It also can take many short videos and string them together into 1 long video. Very useful when your telescope doesn't have tracking, such as a Dobsonian. It can combine a sequence of time-lapse images and into a video. (see You Tube tutorial below)

Astrophotography How-To

- ▶ **How to Learn Astrophotography** <https://www.allaboutastro.com/how-to-learn-astrophotography.html>
- ▶ **Autostakkert3!** How to process The Planets (Tutorial part 1): <https://www.youtube.com/watch?v=g67DfADSWvA>
- ▶ How to image the Planets: Using **PIPP, Autostakkert, Registax and GIMP:**
<https://www.youtube.com/watch?v=zQYbtzsnQ3E>

If you have imaging software or a site with imaging info to share whether for beginners or experienced imagers send them our way at info@vtastro.org

Imaging Projects--

Making your own projects can add another dimension to your imaging experience. If you have an imaging project you would like to share, drop us a line at info@vtastro.org.

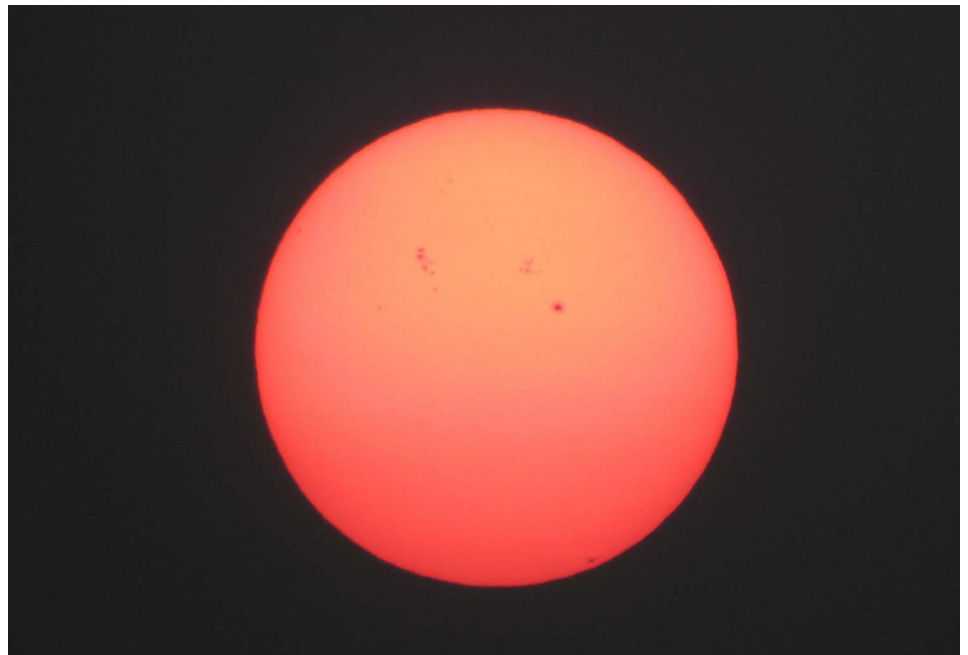
MEMBER'S IMAGES

"Red-Light" Solar Images

July 17 Pat Porch

Gives you an idea of how bad the smoke is today. Took this of the setting Sun @ 7:46 PM EDT, no filters, just a point and shoot shot with a DLSR.

Focal length 181mm, f/6, exposure 1/1000 sec., ISO 100



July 17 - Peter Gillette

Handheld Canon Powershot SX50 on full auto, so didn't notice the settings, but the EXIF data says ISO 80, 1/1250 s, f/8, about 1000 mm

There are lots of sunspots on the Sun most days now. One can go to <https://www.spaceweather.com/> to see what there are for sunspots.



(July 8) Lawrence Garrett

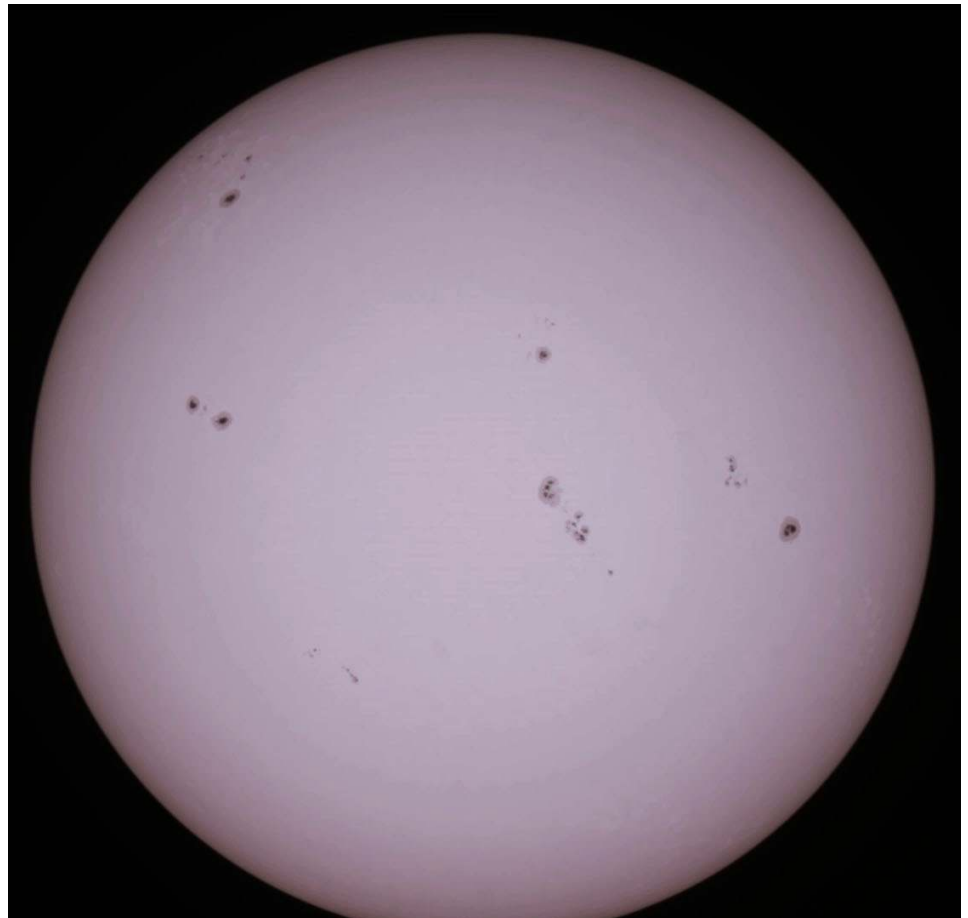
While far off the solar images seen by Paul here, this image is the result of working with Paul on imaging on my just passed vacation. Getting software working, my Meade 90mm, ETX EC tracking at last, gives success to a project I have long wanted to do. I think this first closeup is worth looking at. Subtract smoke and add much more experience can't but help future images.

AR 3363 is just in and out of protected naked eye visibility with solar glasses in a milky sky. Seen here in a crop of a full disk image from a 40 second video. May look dark, but I am sure I need to work on settings that will bring out details along with a better image. I can see a pier for this scope in the yard before long. Working on eyepiece projection too for Venus.

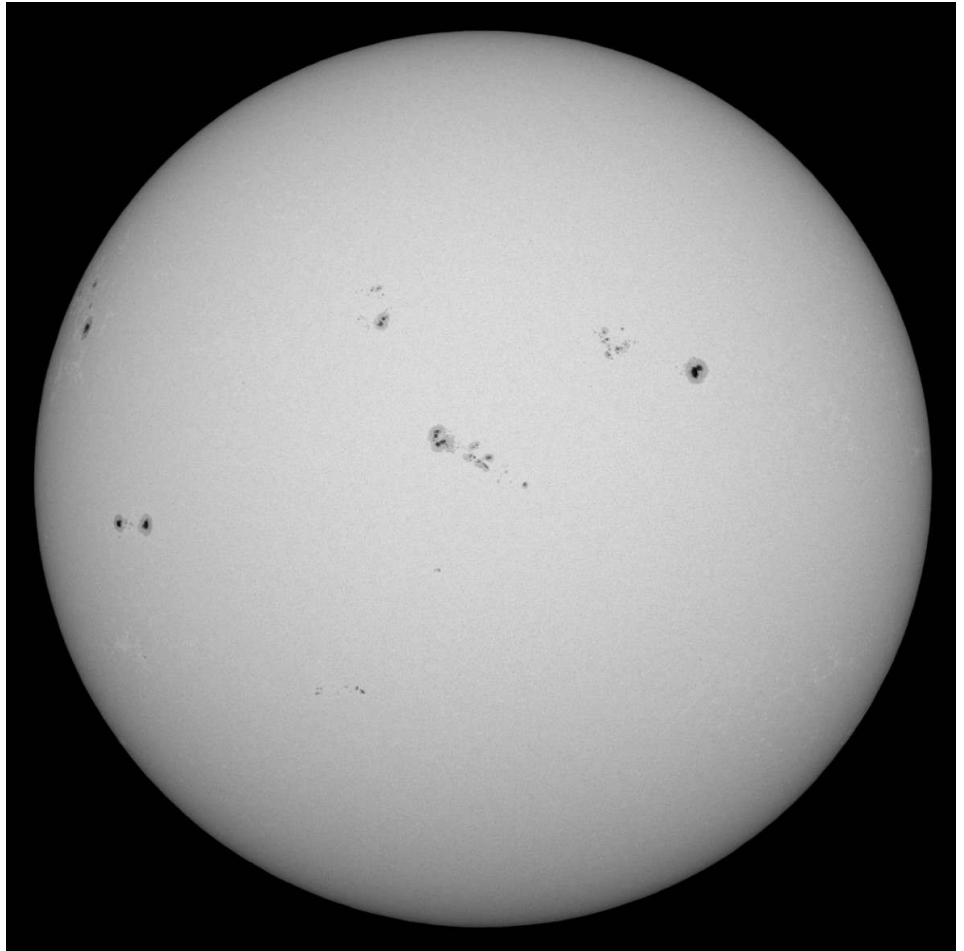
BTW, working like this with a small telescope brings back memories from back in the day, like 50 years ago. When one could not help but want to own a 3.5" Questar or the Unitron 3" photographic refractor with camera. But their \$900 and \$700 prices might have just well have been 1 million to most teens. Never gets old!

**(July 22) Lawrence Garrett**

With Paul's full disk posting of the Sun on July 19 (see next page), I managed to image the Sun with the ETX 90mm EC on the 20th here for comparison. As this telescope is much smaller than Paul's, a darker shorter exposure image produces better sunspot details. With a longer exposure that provides equal brightness as Paul's, the spots are not as nice. 1250mm $f/13.8$, stacked from 60 second video.



Paul's full disk image of the Sun from July 19. 10" f/5.6 stopped down to 8" f/7 with Baader ASTF solar film filter, black and white image (luminescence channel), prime focus, single image, 1/640 sec @ ISO 100

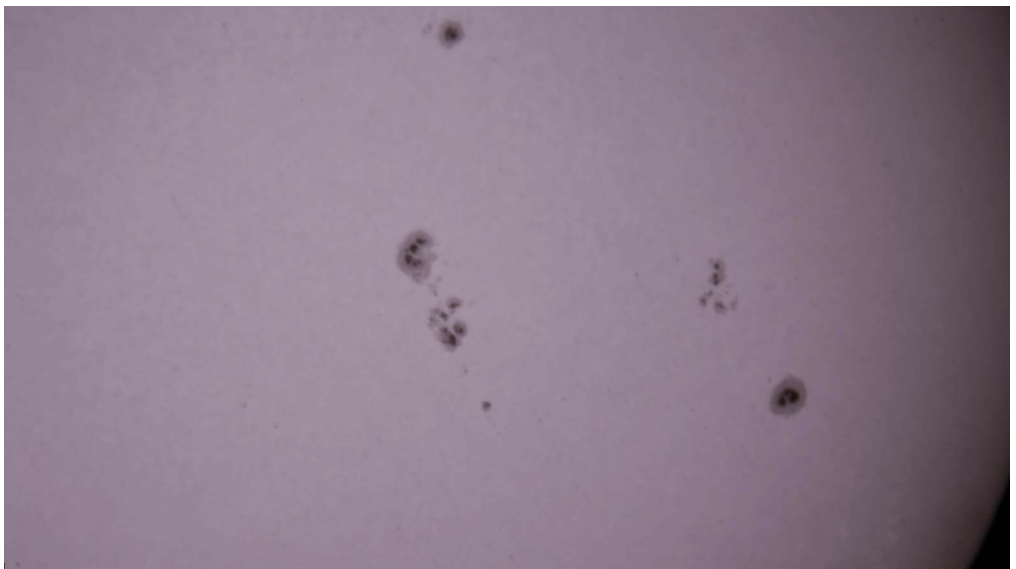


From the same day (July 22), a shot with a 2x Barlow, at 2500mm f/27.6. This format should work well the next time some showcase, naked eye, active region becomes visible.

Perhaps finding the right settings can produce a brighter background and still capture these details well. A work in progress.

But for all the high tech, the lowest tech held an equal share for success in these images. In the form of the umbrella that I had taken along to Kentucky for the total solar eclipse, held just right to allow the telescope to be still in local winds here.

I don't think Paul needs an umbrella!
Lawrence Garrett

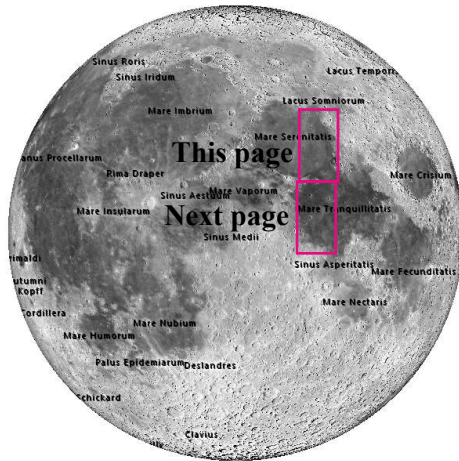




**Super Blue Moon
Composite by Allon Wildgust**

There was just a short opening of the clouds to get the photo. I shot the moon with my Canon R6 at 500 mm and the trees at 100mm (eight images hand stacked). Since the trees were so close using the 100 mm setting, I took a top and bottom shot and created a panoramic image. I then combined the Moon and tree images to look like a rising Moon.

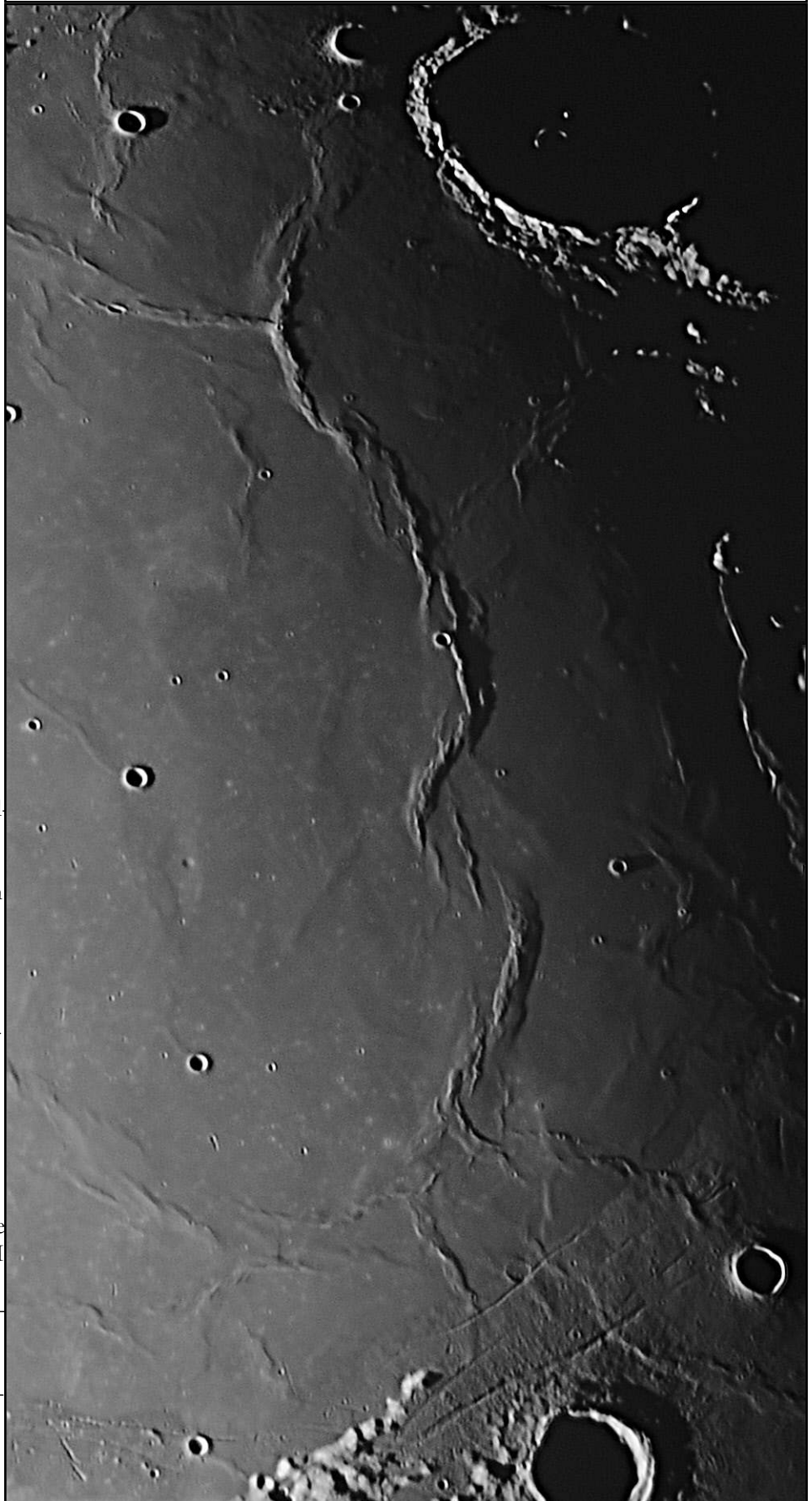
Locator Map



Adapted from the Virtual Moon Atlas

Eastern Mare Serenitatus and Dorsa Smirnov

10" f/5.6 Newt @ 5100mm efl (Meade 2", 2x Barlow), org scale 0.15"/px (image is resized 67%), Canon T7I, HD video @ 3x digital zoom, 1/125 sec @ ISO 3200, Stack- 6% of 9150 frames. 2023-09-05 07:02 UT (3:02 AM EDT)



Eastern Mare Serenitatus and Dorsa Smirnov

By Paul Walker

(I wrote this for the Association of Lunar and Planetary Observing's "The Lunar Observer" [TLO] newsletter and decided to get double duty out of it)

The main feature here is obviously Dorsa Smirnov, the long winding wrinkle ridge going down the middle of the image. The rim of the large crater Posidonus fills the upper right corner.

A very difficult visual target in this image is the tiny crater Posidonus Y. Here it sticks out like a sore thumb. Well, maybe more like a small boo boo on a thumb. For those not familiar with Posidonus Y, it is to the lower left of Posidonus sitting right on top of the wrinkle ridge where the ridge splits into a wide "Y" with one going off to the left (west) at a right angle. There is also a long shadow being cast by the crater onto the floor of Mare Serenitatus. Due to an idiosyncrasy of our vision, I never saw that shadow! There is a smaller companion crater to the north touching it. I have tried many times to spot Posidonus Y visually. The night I took this image I finally had success, using the same 10" f/5.6 scope with binoculars and a pair of Hyperion zoom eyepieces. At ~360x and ~460x I was able to see it. At ~300x it was harder to see due to its small apparent size. The best view was at 366x. At times it seemed that I could hold the view of Posidonus Y for several moments at a time. In reality most of these moments were 1/2 sec or less.

Based on the Moon's distance and the pixel count, I come up with 2.1 Km (1.3 mi) for Posidonus Y, +/- 0.13Km (0.08mi) Its companion is 6 to 7 pixels, 1.6 Km (1mi) (0.9") to 1.85 Km (1.15mi) (1.0").

Western Mare Tranquillitatis

By Paul Walker

(I wrote this for the Association of Lunar and Planetary Observing's "The Lunar Observer" [TLO] newsletter and decided to get double duty out of it, with a few changes)

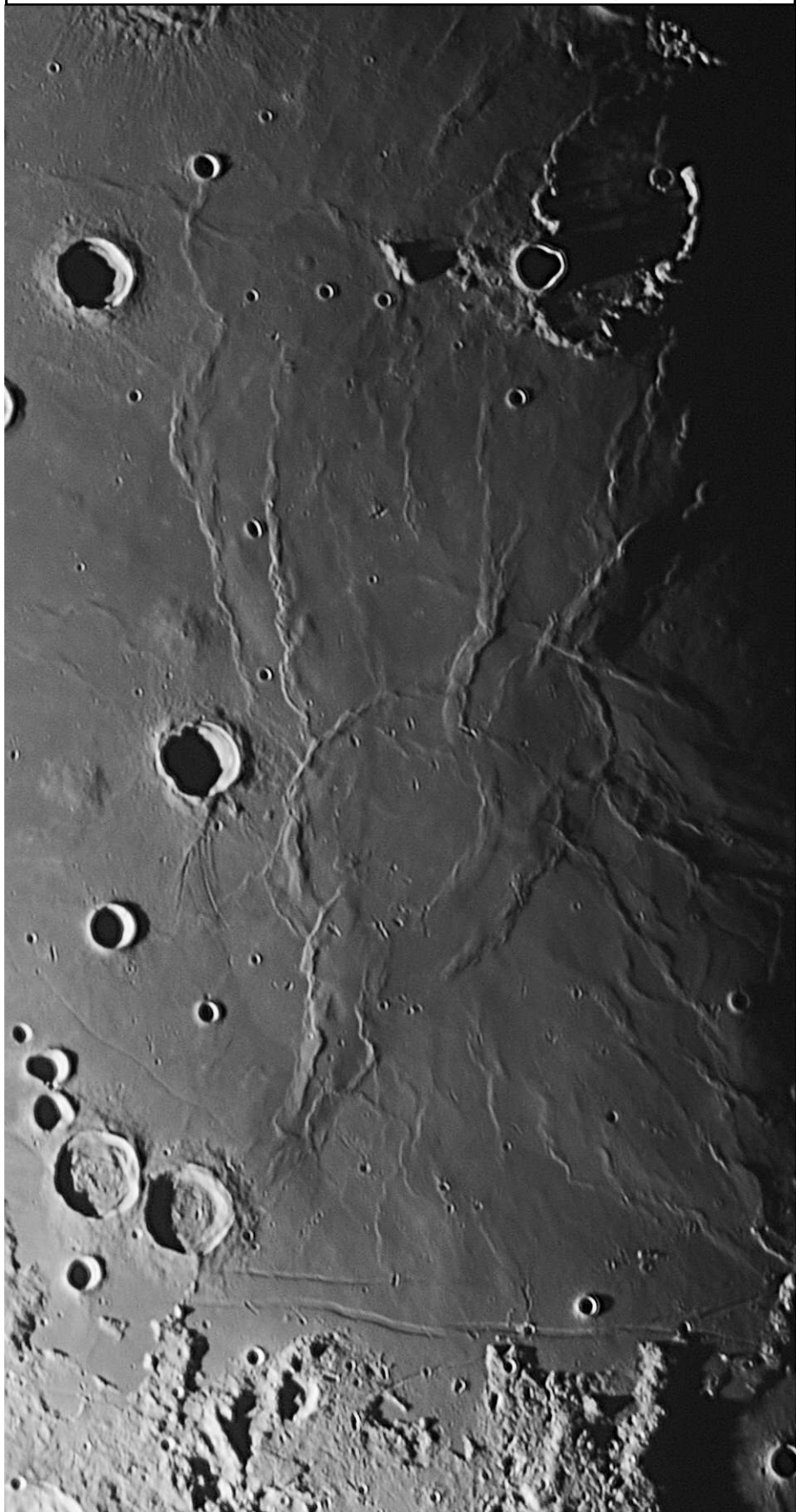
The first thing that struck me with this image is all the wrinkle ridges! I had no idea Mare Tranquillitatis had so many. But then, I am not usually out observing the Moon's gibbous waning phases at 3 AM local time. And I probably haven't viewed this area under good conditions during the waxing crescent. The 2nd thing was the circular wrinkle ridge in the center of the image. The Virtual Moon Atlas (VMA) labels it as Lamont crater and describes it as a "Remarkable ghost circular formation with double enclosure situated to the South-East of [the crater] Arago. Form of the wrinkle ridge, concentric and radial in Mare Tranquillitatis." I noticed that the inner wall forms an oval ring. I would expect a ghost crater of that size to be more circular. Only now after reading the description did I pay much attention to the larger irregular and incomplete outer ring (the "double enclosure"). The first impression of Lamont is that it is a buried crater. But on closer inspection the "rim" appears to be wrinkle ridges, not a buried crater wall. Doing some more reading I find on Wikipedia that it is believed to most likely be a buried crater and that there is also a mass concentration at its location bolstering that interpretation.

Even taking into account the curvature of the Moon, from this image I get the impression that lava flows filled this part of Mare Tranquillitatis more so on the left side than the far right. Especially where it forms a broad sideways "V" on the right side with its vertex pointing left. There is even a wrinkle ridge parallel to each side, accentuating the "V". Looking at the Kaguya Altimetric 2 overlay available on the Virtual Moon Atlas (VMA) this is not the case.

There are several domes visible here, with Arago Alpha (and Argo A 1) and Arago Beta (and Argo B 1) being the most prominent. Most of the time Alpha and Beta are invisible, sometimes they can be seen as subtle but fairly large bumps. I have seen them as subtle bumps before. During brief periods they show their true colors as lumpy bumps. I didn't know they were so bumpy until I processed this image. Here they remind me of Mons Rumker (see the July 2023 TLO or the 2023 Summer Morning Star Newsletter pg 17) on the northwest edge of the Moon.

Western Mare Tranquillitatis

10" f/5.6 Newt @ 5100mm efl (Meade 2", 2x Barlow), org scale 0.15"/px (image is resized 67%), Canon T7I, HD video @ 3x digital zoom, 1/125 sec @ ISO 3200, Stack- 6% of 9150 frames. 2023-09-05 07:02 UT (3:02 AM EDT)



They are much smaller at only about 1/3 the diameter. However, they have the advantage of location.

Many other smaller domes are visible. Just to the upper left of Arago Alpha and Beta, in a nice neat row, are Arago 9, 10 and 1. Just to the upper right of these are Arago 11 and 12. 11 is barely visible here. 12 looks like an elongated crater. The lander Ranger 6 sits between these two. More prominent is Ross F 1. To find it, in the upper part of the image look for a prominent mountain, just left and below that are 3 obvious craters (Ross E, F and G), just to the upper left of the middle one is obvious bump. That's Ross F 1. The description from the VMA states: "Volcanic shield, extrusive volcanism, hemispherical. mare dome, about size of crater Ross B". If you look carefully this image shows a slight but good sized (relative to the dome that is) depression on its top. There is also a depression on either side, maybe actually all the way around, giving the impression of a wide moat around it. Straight above that is Ross D 1 which looks more like part of the nearby wrinkle ridges. Again zooming in on the image, one can see an ever so slight depression offset slightly North of its center. VMA description "Volcanic shield, extrusive volcanism". Next, about 1/2 way from Ross E, F and G to the center of Lamont is a funky looking feature. Looks like 3 small craters in a row with 2 hills right on the north side of them. Domes Arago D 1 and Arago 8 are marked on the VMA as just above and just below this feature, respectively.

As I was looking at the VMA for features I saw a group of domes hiding in plain sight. On the East flank of Arago (the prominent crater to the left of Lamont) is a jumble of hills with 2 prominent hills below them. These are, starting from the bottom right, are Arago 2, 3 (the prominent hills), 4, 5, 6 and 7 (the jumble of hills). From the image I thought they were just some material thrown out when Arago was formed.

Below Arago is a set of parallel curved rilles, looking like a bird's tail. The narrowest detectable in the image being about 1.3Km (0.8mi) wide. The VMA doesn't show any name for this feature. It would be interesting to know just how they formed. I imagine by lava flows, especially given all the volcanic

domes in the vicinity but maybe they are faults.

Moving on to named rilles, there is a rille on the left, about 1/3 the way up and a little above a group of prominent craters. It looks like it may be part of Rimae Sosigenis (the name marker for Rimae Sosigen on the VMA is up by Sosigenis A crater). We have the Rimae Hypatia complex on south side of Mare Tranquillitatis. This rille is about 4Km (2mi) wide. In the image, in the middle part, there appears to be a much narrower 0.8-1.1Km (0.5-0.7mi) rille in the bottom similar to Vallis Alpes. But then, it may be fault between the main fault lines, but one that creates a drop not a rille or may be a trick of the lighting. The image doesn't have enough resolution to tell. The high resolution image in the VMA does not show anything there but it does not have a good Sun angle. Checking the Lunar Reconnaissance Orbiter 500MB Mosaic (not the version used in the VMA), I see nothing that could correspond to what I see on this image. So it is probably a processing artifact. One does have to be careful to not be too aggressive on the sharpening.

Notice the unusual number of small elongated craters, mostly in and near Lamont. Zooming in on the Virtual Moon Atlas (VMA) to the LRO WAC Mosaic these look like they are probably short sections where lava tubes have collapsed, certainly look volcanic in origin. Most are oriented in similar directions. By my pixel count, these are about 2Km X 4Km (1.3 X 2.5 mi) and due to their small size would only be visible under good lighting and seeing.

The Apollo 11 landing site is near the bottom of this image. Left of center, a little below the crater Collins. Surveyor 5 is a little to the left of Collins. Too bad I didn't remember this at the time, if I had I would have gotten my first look at Collins and Aldrin. I think I have spotted the larger Armstrong once. [Update- I spotted all 3 before and most of the mentioned features on 2023-10-04, ~4-5 AM EDT, 10" f/5.6 w/binoview @ 460x]

For reference (both images), the effective visual magnification of this image (vertically) is ~490X (5100mm efl X 3x zoom X 1.6 APS-C sensor form factor / 50mm). Visually you will need about 300X to see the smallest features and very good conditions.

Moon Close-up with an ETX 90 (2023-09-04)

By Lawrence Garrett



I have finally recorded the moon in the ETX as hoped for, with it a test in many ways for my first lunar 2500 mm ETX shots. For sure my image does not look like much, but tracked and stacked (355 images) and with the moon just 10 degrees high. I am quite pleased to pass the tests and look forward to sharp images when clouds and seeing allow (and a much higher moon too!)

Venus (2023-07-30)

By Lawrence Garrett



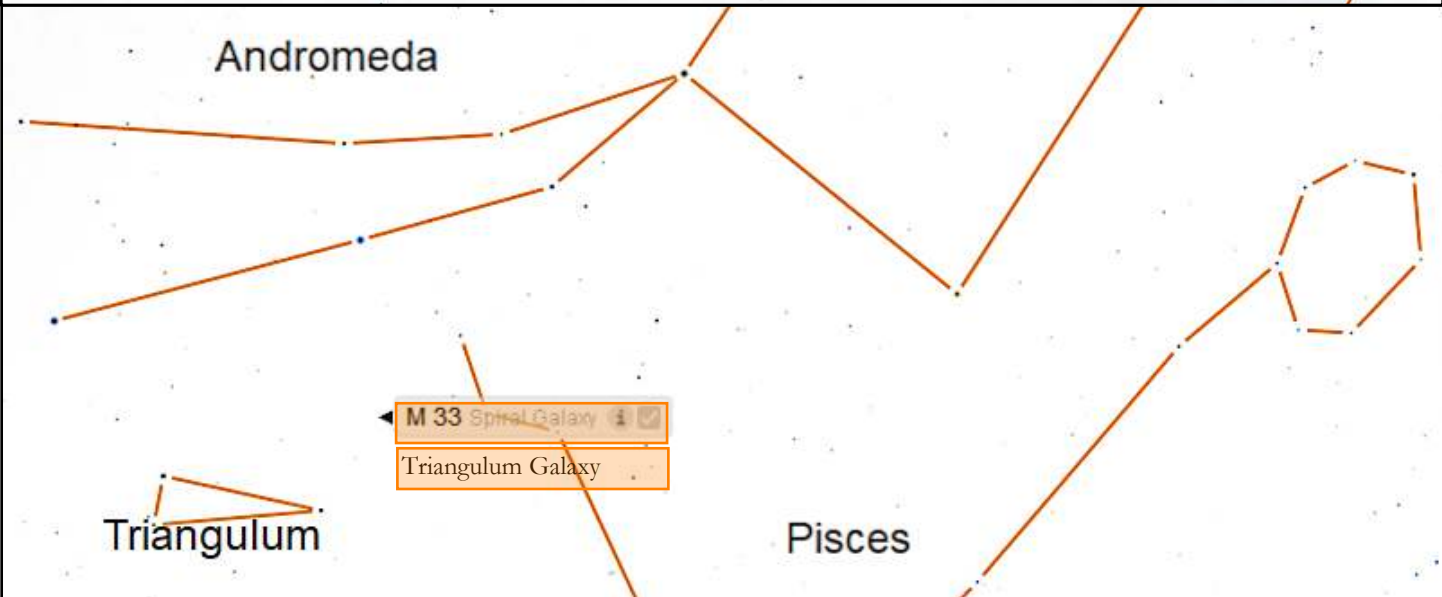
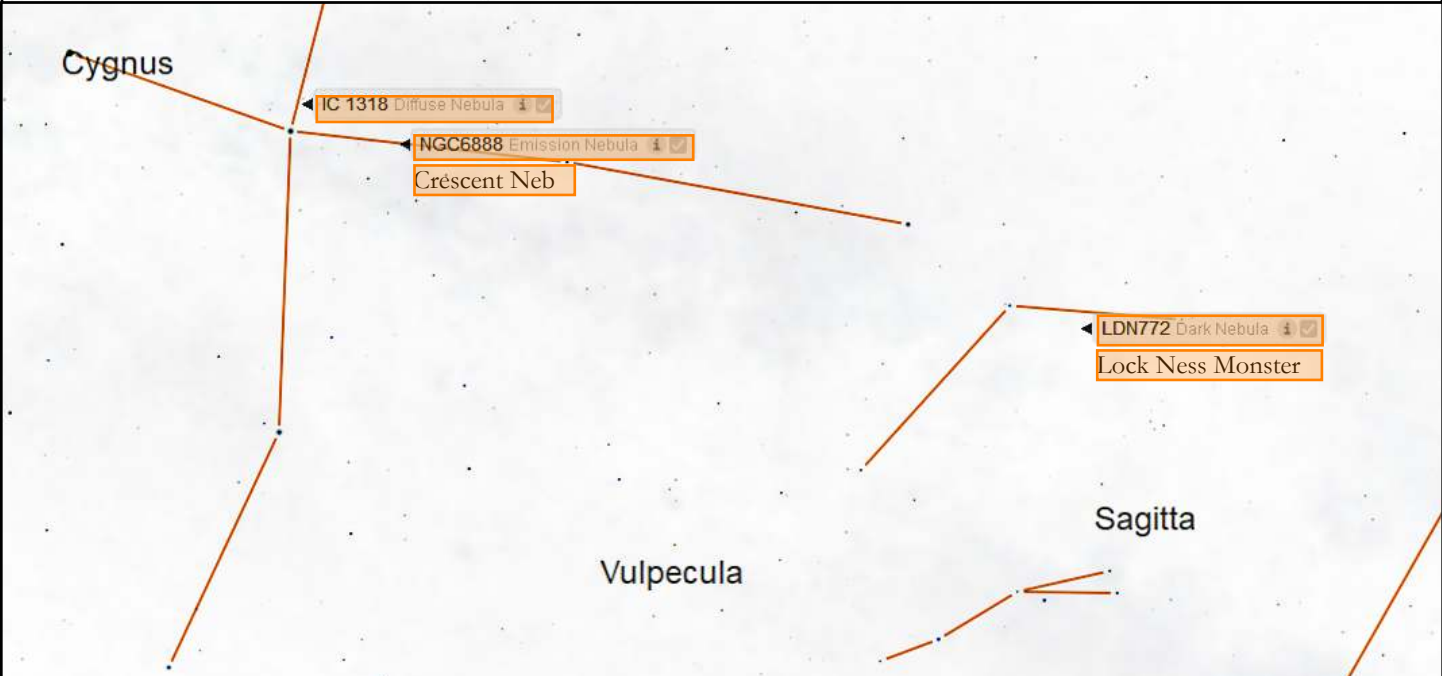
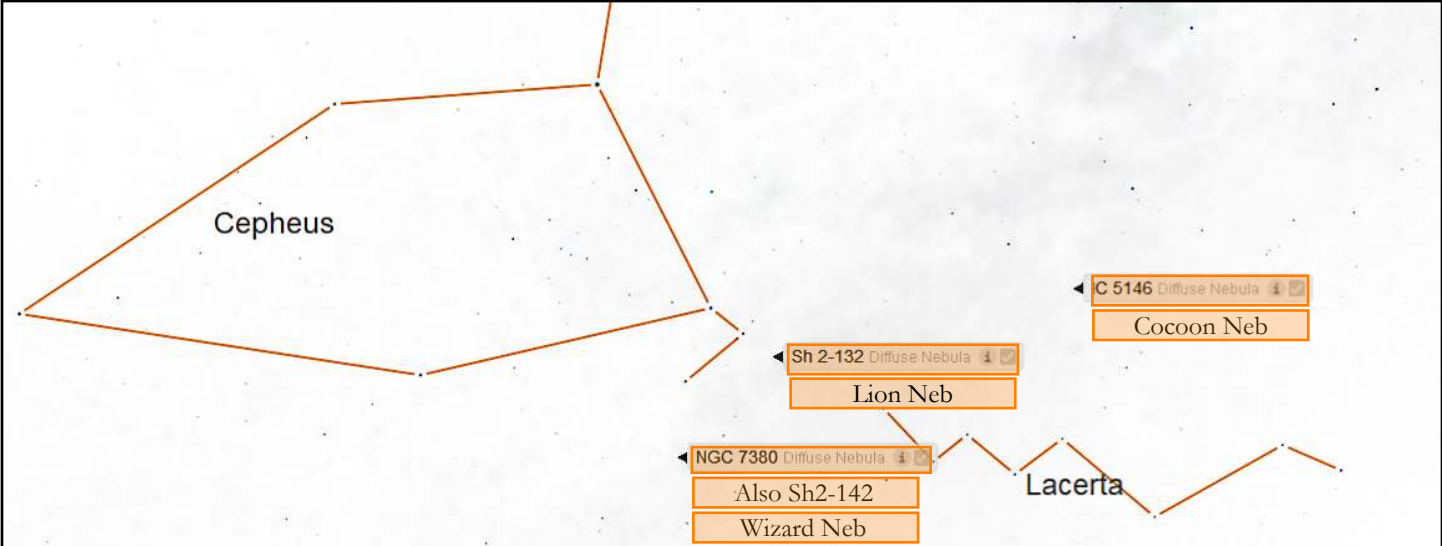
I was hoping to image Venus before it left the evening sky and today's clear skies did the trick. Found Venus in daylight using setting circles, offset from the sun this afternoon. I could not believe just how small it appeared on the camera screen, or that really anything came thru in the short video.

Shot at prime focus, 1250mm. Since this is a first in so many areas for me, it really does not pay to go into details, just keep working on this to see if better can be had in time. I have two videos.

I know that a plastic food cutting board from Walmart made a great adapter plate to connect my ETX 90 EC to my C-8 pier. And an electric focuser (first time used) really works.

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

Created using Starry Night Pro 8 & Picture Window Pro 7.



More on my Dark Nebulae search ~ even through a goof-up!

By Maura Kelley

(RARE CLEAR NIGHTS) So after 2 night's work, battling the cold dew, checking & rechecking focus (right on!) I gathered 3.26 hours of data on my dark nebulae project: the Loch Ness Monster LDN 772 (for me, it's Champ, our Lake Champlain Monster). I was very excited to discover that the Coathanger asterism (Brocchi's Cluster) was in the field of view! It is in the south of the constellation Vulpecula.

Inside Nessie's body are two small blue reflection nebulae, vDb 126 and LBN 134. The dark nebula just above the Loch Ness is 'The Cane' (can't seem to find the LDN catalogue # easily). Nevertheless, I made a serious mistake: I forgot to change my camera setting to RAW. It was still set to jpeg.

But, in working with the jpegs, I was surprised to at least come up with this image.. north to south: the Cane, the Loch Ness Monster, and the Coathanger upside down, in the constellation Vulpecula.

More notes:

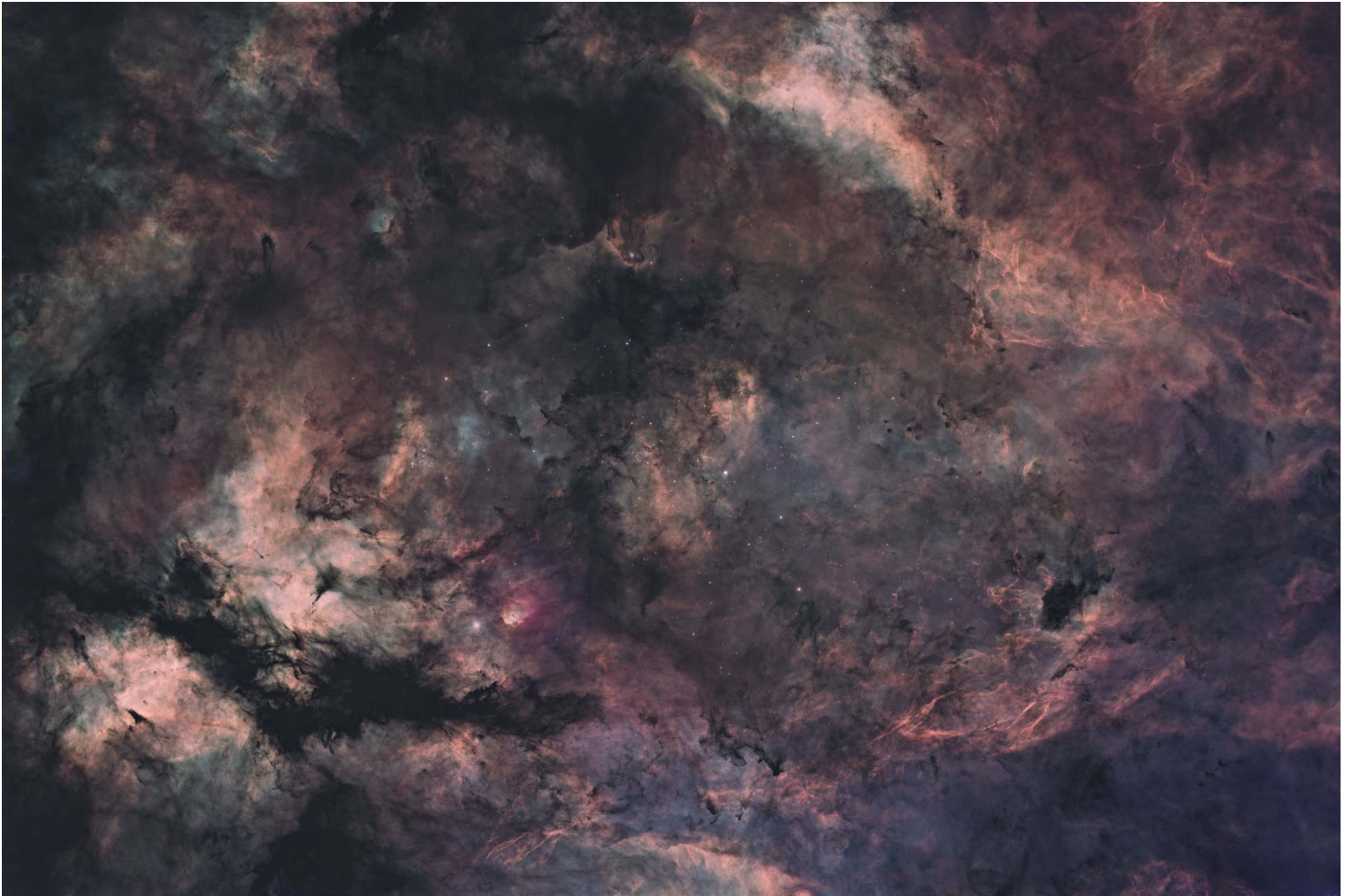
The Loch Ness Monster LDN 772 is a large complex of dark nebulae cataloged in the Lynds catalog. The head of the Monster at top right is comprised of LDN 773 and LDN 774. The neck is LDN 775. The body is LDN 769 and LDN 772. LDN 768 makes up the lower part of the body at lower left. The blue reflection nebula surrounding the 8.6 magnitude star HD 182918 in the Monster's hip area at lower left is LBN 134. The fainter patch of reflection nebulosity to its west (right in this image) is LBN 133.

Location: Hinesburg

Dates: 9/20 & 9/21, (196) 60-sec subs, 65 darks, 56 flats

Equipment: Olympus camera OM-D E-M1 Mark II, 150mm lens on tracking mount





**IC 1318 and the Area Around Sadr
By Terri Zittritsch**

I've wanted to take another crack at imaging around Sadr for a few years now. I think the first time I tried was at the winter star party in 2019, and I was using a camera that frosted over and the images weren't usable. This time I've taken both narrow and broadband images. Narrowband for the nebula and broadband for the stars. Although I'm not using much star data as my corner stars aren't good due to spacing of the focal reducer, which I need to improve. So I've greatly reduced star content to just the central area. IC1318 is fairly large, about 40x20 arc minutes in apparent size. The nebulous area is approximately 1500 ly distant from our solar system. As you can see it has Ha, OIII and SII nebula and dark nebula throughout the area. There are numerous objects besides IC 1318 in this image, including NGC 6910, CR 19, LDN 888, LDN 886, LDN 882, LDN 883, Barnard 344, P 91 and BDN 078. This last piece being the dark nebula that makes up the body of the butterfly in the bottom left corner of the image. I played around with the color schemes as so many of these narrowband images end up looking flat and I wanted to provide some 3D aspect. I believe I've given it some depth or 3D with this scheme.



Cocoon Nebula (IC 5146)

By Terri Zittritsch

I imaged the Cocoon nebula over a couple of clear nights in September. The Cocoon nebula and the dark nebula area around it is have numerous catalog designations; IC 5146, Sh2-125, Bdn 96-6, Barnard 168 and Caldwell 19. It's another object in the constellation of Cygnus. IC 5146 is described as an emission nebula being involved in a cluster of 9.5 magnitude stars also known as Collinder 470. The star cluster is visible near the naked eye star Pi Cygni. The cocoon is a stellar nursery and as with many such areas has both an emission nebula (red) component and reflection nebula (blue) component and in the case of the Cocoon, has dark nebula stringing through it. The Cocoon is approximately 2500 ly from our solar system. The Cocoon emission/reflection nebula has a diameter of 12' which represents 15 ly.

I shot this unguided with a TEC140 scope at 1000 mm focal length at F/7 on an Astro Physics 1100 GTO mount. I used Chroma LRGB filters. Besides 4 hours of luminance, I have 1.5 hours each of R G and B images. I also have 3 hours of Ha to add to this image but have not processed it in yet.

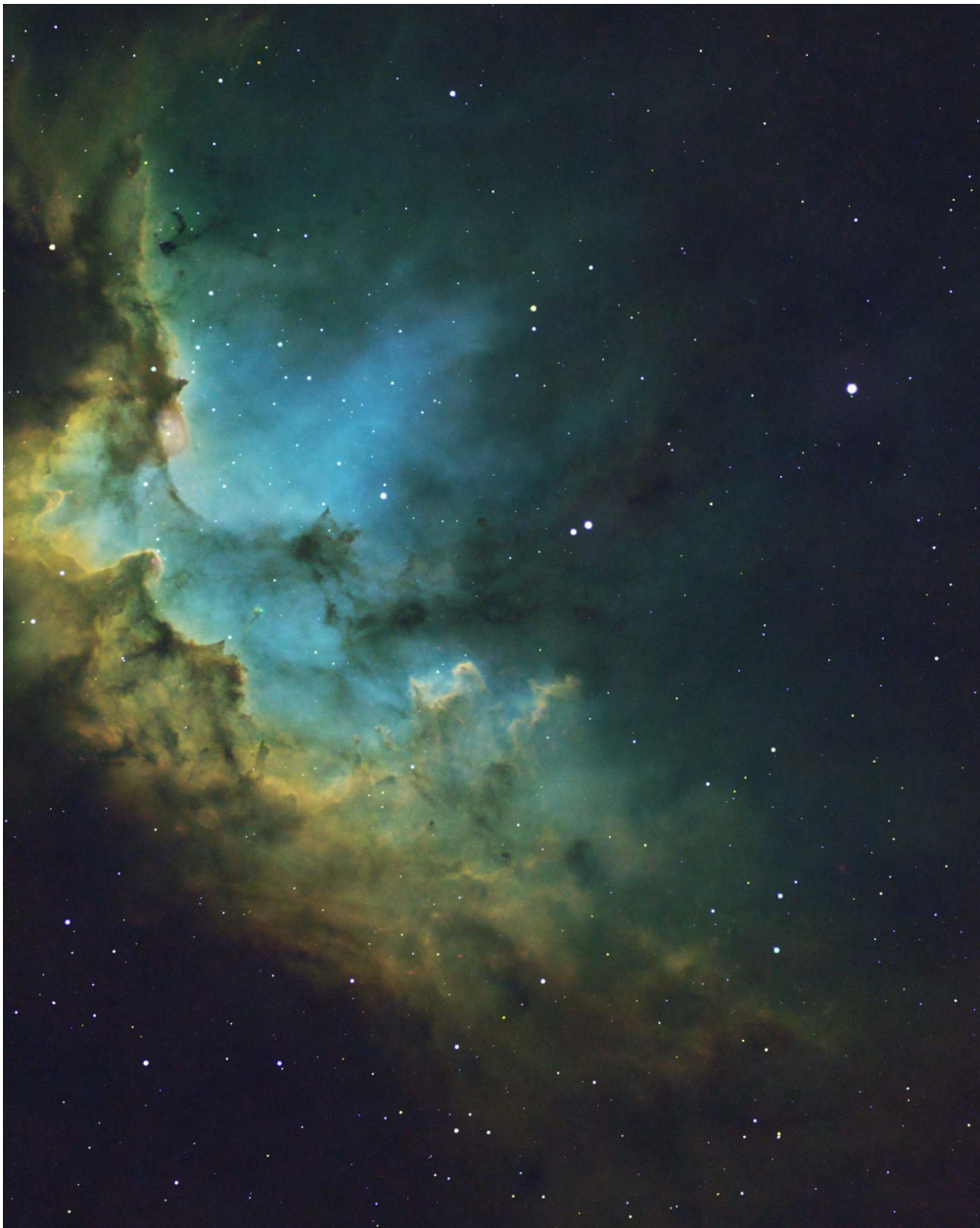


Lion Nebula (Sh2-132)
By Richard Whitehead



By Richard Whitehead

The Crescent nebula and the Soap Bubble nebula (, bottom center only discovered in 2008). This is a starless version which shows the Soap Bubble more clearly. These are HOO (modified) images.



Wizard Nebula (Sh2-142)
By Greg Erainne

The Wizard Nebula, Sh2-142, is an elongated HII/OIII emission nebula in the constellation of Cepheus, about 7,200 light-years (ly) from Earth, and approximately 110 ly across. NGC 7380, an associated open cluster of young stars (5 million years old), was discovered in 1787 by Caroline Herschel. At the center of the star cluster is DH Cephei (DH Cep), a rotating variable double star, that is believed to be the force driving the expansion of the gas and dust in the nebula, as well as triggering new star formation.

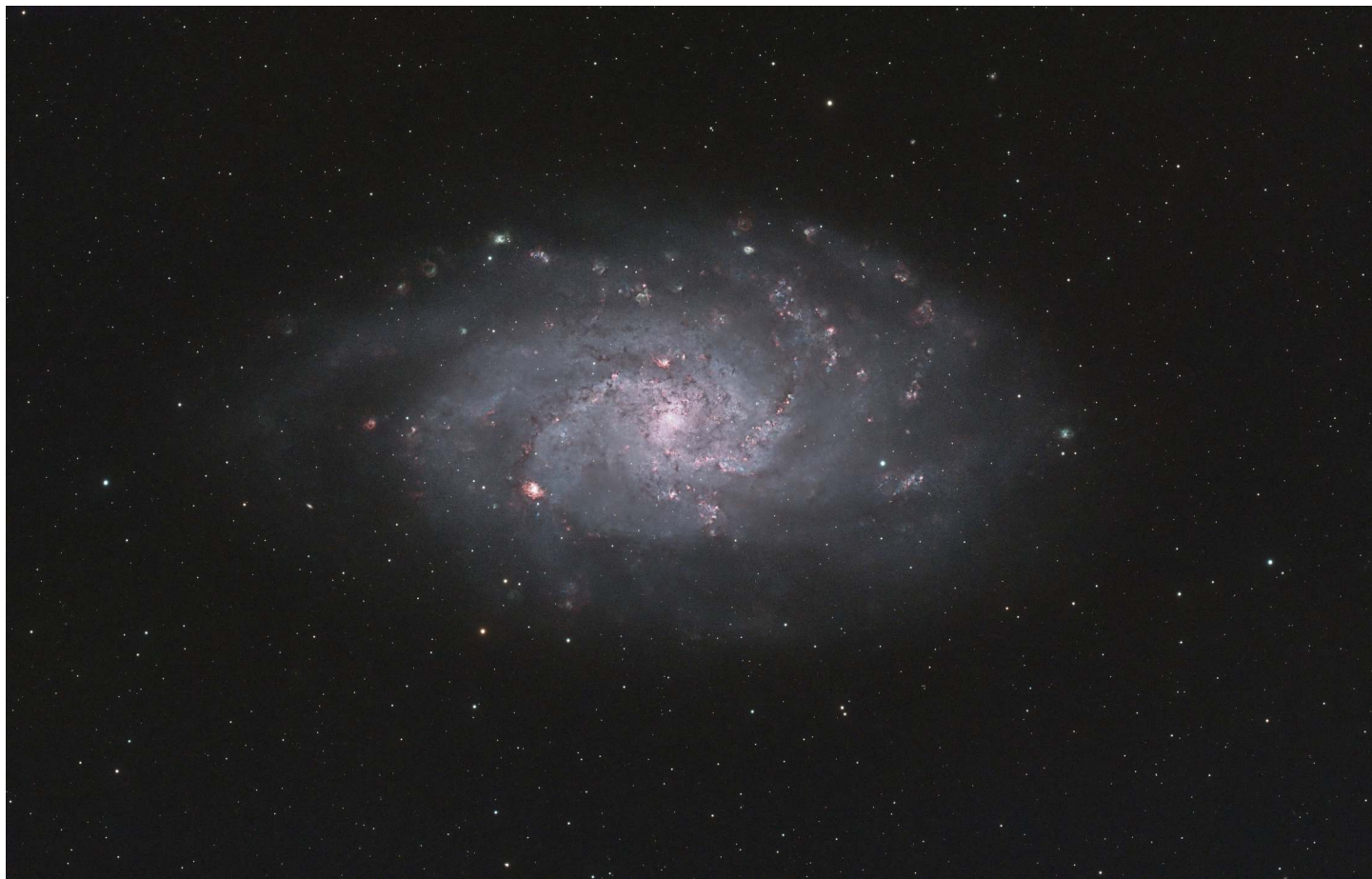
The image is rendered in a Hubble-like palette, which I think brings out some of the features that are not seen in the usual H-alpha renderings. The basic Hubble palette colors were generated using PixInsight's Generalized Hyperbolic Stretch on the individual color channels.

Capture date: 9/25/23 (Moon ~ 84% illuminated)
 Celestron EdgeHD 8 with 0.7x Reducer (fL = 1422mm)
 ASI2600MM Pro (Monochrome camera)
 ZWO AM5 mount with guiding via OAG and ASI174MM Mini
 Light Frames [Total Exposure 4:40]
 -- Ha; 300 sec x 18 = 1:30
 -- OIII; 300 sec x 17 = 1:25
 -- SII; 300 sec x 21 = 1:45

All light frames calibrated with dark, flat, and bias frames

Pre- and post-processed in PixInsight

Additional post-processing in Photoshop for exposure adjustments and generation of reduced size jpeg



Triangulum Galaxy (M33, NGC 598)

By Greg Erainne

The Triangulum Galaxy (M33, NGC 598) is a large, spiral galaxy in the constellation Triangulum and it is about 2.73 million light years (ly) from Earth. It has an apparent size of about 1 degree x 42 minutes, and an actual diameter of approximately 61,000 ly.

There are a large number of active star-forming HII (H alpha) regions in this galaxy, one of which can be seen left of center in the photo (NGC 603), and the other can be seen in the upper right (NGC 595). There are many other star forming regions within and around the Triangulum Galaxy.

I think the number of objects I can see in the photo that are part M33 is just incredible! Some are very strange looking (to me, anyway) and I hope to follow up and do a bit more research on some of these amazing objects. If I do, I'll post here!

Capture Dates: 9/16/23 (1:45 total) and 9/20/23 (2:30 total) [Avg Moon illumination ~ 14%]

Telescope: Askar 107PHQ

Camera: ASI2600MC Pro (OSC camera)

Mount/Guiding: ZWO AM5 mount; guiding ASIAir Plus and ASI178mm mini and a 60mm F4 guide scope

Light Frames [Total Exposure 4:15]

- Antlia Triband Ultra RGB filter -- 300s x 45 frames (3:45 on 9/16 and 9/20)

- Antlia ALP-T Dual Narrowband (Ha, OIII) filter – 300s x 6 (0:30 on 9/16)

All light frames calibrated with dark, flat, and bias frames

Pre- and post-processed in PixInsight

Additional post-processing in Photoshop for generation of reduced size jpeg

Services

Planetarium Shows

There's a planetarium in Williston! The Planetarium Lady's immersive Digitarium planetarium dome is a great introduction to sky viewing. This immersive experience builds familiarity with sky objects and the stories and science that surround them.

Learn more about this experience at www.theplanetariumlady.com.

Light-duty Machining

Custom machining of brackets / adapters and modifications to existing hardware for astronomy purposes.

Nominal fee (~\$10 - \$50 depending on size and complexity).

I have a mini milling machine and a mini lathe.

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

Wanted

For Sale

REDUCED PRICE

Selling for a friend – **Celestron Nexstar Evolution 9.25" F/10 SCT Bundle** as originally purchased from Highpoint Scientific. Includes OTA, mount with wifi so it can be controlled with a smart phone or tablet, heavy duty tripod, Astrozap dew shield, red dot finder, 15 piece eyepiece and filter set. Has had very little use due to current owners health issues. This bundle currently sells for \$3100. at Highpoint.

Asking \$2100.

Also available is a heavy duty (home-made) tripod dolly – \$175.00

Pick up near Rutland, VT

Patrick Porch 802-236-2463 or pcwizard2600@gmail.com

VAS Surplus Items

All items stored in Bob's Hut at the Hinesburg Observing Site



6" F/8 Newtonian Reflector, Dobsonian mount not included, tube separates into two pieces.
Your's for a donation of \$25.



6" F/8 Criterion Dynascope Newtonian Reflector, no mount
Your's for a donation of \$40.

Jack St. Louis 802-857-5049 or jack.st.louis@comcast.net

**2023-08-01 Venus
By Paul Walker**



Though the seeing was pretty bad, I got decent results from a 5 minute long video. It was getting tougher to image each day because the Sun and Venus are so close together that sunlight is shining down into the telescope tube and shining farther down the tube with each passing day.

10in f/5.6, 2.8 X prime focus, Canon T7i, 80 of 9252 frames (>1%).

VAS Surplus Items

All items stored in Bob's Hut at the Hinesburg Observing Site



TraQ Model 545 F/15 Refractor Telescope with equatorial mount
Your's for a donation of \$20.



4.5" F/8 Meade 4504 Newtonian Reflector with rings, no mount.
Your's for a donation of \$40.

Jack St. Louis 802-857-5049 or jack.st.louis@comcast.net

The thicker parts of the crescent came out well but the "horns" are pretty soft looking.

To give an idea of the range of seeing I took 24 still shots at 24Mb . Below are crops from the one of the best and one of the worst images.



VAS Surplus Items

All items stored in Bob's Hut at the Hinesburg Observing Site

GO TO altazimuth mount - Celestron Nexstar GT
120 volt AC power adapter, has a printed operators manual.
Your's for a donation of \$25.00.



Galileo telescopes with tripods
Your's for a donation of \$20.00 each.

Jack St. Louis 802-857-5049 or
jack.st.louis@comcast.net

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.

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 the slight greenish-yellow tint of plate glass.

Make an offer on any of the items.

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

Celestron NexGuide Autoguider

I purchased used at the Stellafane Swap Tables as a backup to the one I am using, however, I forgot had already purchased a backup at the Swap Tables the previous year. I don't really need 2 spares.

\$140 OBO. (\$300 new)

It is a stand alone autoguider, does not use a computer, connects directly to your mount's autoguider port. Has an screen for displaying stars and menu.

Note: to use this you will likely need an 80-90mm guide scope to find a star to guide on (I use a 90mm and get down to mag 7). You will also likely need a way to aim the guide scope at a suitable star. There is now a commercially available guide scope aligner, Google Lftscop.

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

Heavy Duty Equatorial Wedge For Schmidt-Cass Telescope

Used with a 14" SCT.
Paid \$360 for them some years ago.
Asking \$155 or best offer.

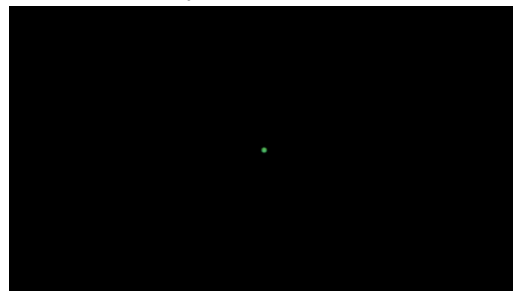
Al Boudreau at
boudreaualbert651@gmail.com



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.

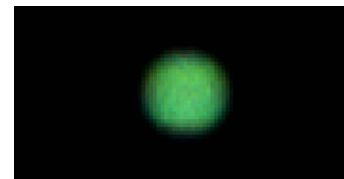
Contact Mark at
markp508@gmail.com or see Jack St. Louis at any monthly meeting.

Uranus From Morning of 2023-09-05
By Paul Waker



This is the uncropped result. 1/50 sec @ ISO 6400. The effective visual magnification of the image [1407mm fl X 3.63 (optical magnification) X 3 (digital zoom of video) X 1.6 (form factor for camera with APS-C sized sensor) / 50mm (stand lens for 35mm SLR camera)] = 490X. So this is about the size that it appeared in my binoviewers on the same 10" scope at 460x. Uranus is only 3.6 arc sec in diameter.

Below I have blown it up enough so you can see the individual pixels that make up the image of the planet.



Composite - Uranus and brightest moons. Image of moons- stack of 8 still shots, 4 sec. @ ISO 3200.

