



Morning Star

Fall 2024

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://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)

International Observe the Moon Night

Write-up By Terri Zitttrisch

The VAS is coordinated with the Montpelier Library in holding an International Observe the Moon at Night. Kellogg-Hubbard Library, 135 Main St, Montpelier, VT

According to Nikki from the Library, there were a total of 80 attendees at the event. I don't think that many looked through telescopes and we lost many in the first hour while it was cloudy, so likely many took advantage

of the internal exhibits and ended up leaving early.

But the die hards and highly enthusiastic, including one very precocious 4 year old, stayed outside with us and waited for things to clear off. And clear they did, around 7:30 PM, and everyone who wanted to look through a telescope or binoculars was able to do so for 30 minutes before it clouded up again. We did have some stop by after the clouds came back, and couldn't

show them anything but I assume they took advantage of the indoor exhibits. While waiting for things to clear off one of our members, Joel Greene, captivated and had great rapport with many of the youth in sharing his solar system knowledge while Jack, Jim and myself shared some telescope and equipment knowledge with many inquisitive adults. As always, views through the telescopes elicited many oohs and ahs from the attendees.



UVM Space Club Event



UVM Space Club field trip to Our Observatories Images by Ben Dubin

About 19 members of the UVM Space Club visited our observing site on October 3, 2024. (17 are in the above image)

8 VAS members (see below) answered questions, gave constellation tours, aimed telescopes, etc. Pictured are Joe Comeau, Dean Adams, Paul Walker, Peter Chapin, Dave Legrow, Jack St. Louis and Jim Bosek. Eben Gay is “in the picture” but behind us on the grass messing with his telescope.



Stargazing and other Events

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Scott and Jim on the Radio

Listen to Scott Turnbull's or Jim Bosek'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.

Gary's Astronomical Events for the Month

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

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

Note: If you would like to be a host, greeter/orienteer, would like to volunteer to help people use their telescopes or want some help operating your telescope, contact Paul Walker.

Typically 2nd date is a rain date only

Observing Comet Tsuchinchan-Atlas (C/2023 A4)

October 14, 15, 16, 17, 18, 19, 20 (1 or more of these dates depending on weather availability of members to open the gate)

Gate opens 6:15 PM. Get there early. No dilly-dallying on getting to the site for this event! This comet will not wait for you!! It will start disappearing below the tree tops in the west about 7:30 on the 14th. And only about 15 minutes later each following night (about 9 PM by the 20th).

November 1 or 2- Deep Sky. Gate opens 7:00 PM. Sunsets 5:40 PM.

November 22 or 23- Deep Sky. Gate opens 7:00 PM. Sun sets 4:20 PM. Probably need to dress warm! But we do have the Warming Hut.

If you are trained for gate/site access and are available as a backup (or primary) host for any of these events please let me know. Thanks, Paul

Contact Paul Walker via: info@vtastro.org or paulwaav@together.net

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

Public Star Gazing Event at Richmond Public Library

October 9, 7:00 – 9:00 PM,

Rain date - October 23.

Co-sponsored by the Richmond Public Library and the Vermont Astronomical Society

Viewing of the Moon, planets and deep sky objects starts at dusk (about 7PM but watch for updates to the starting time)

Contact Suzanne Krohn at the library or Terri of VAS at theresamarie11@gmail.com

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

New Members

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

Herb Sinkinson
Christopher Kline
Kenneth Brack

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 7

Delineation of a Marvelous New Blazing Star By Lawrence Garrett

Time travel back to the the days when Astronomy, Theology, and Astrology walked hand and hand together, with today's views of year's long past.

November 4

Astronomy "Travel Packs" By Several VAS Members

This subject was suggested by Eben Gay who has a couple astronomy backpacks that he uses. One for general observing with eyepieces, red lights, cables, etc. Another is a computer backpack for astro-imaging (imaging laptop, cables, power brick). In addition he has a camera bag, power source (12 V DC and 120 V AC), tripod, counterweights, scope, table and chair. He is interested in seeing what other members do in this regard.

We have a number of other members who have offered to share their "travel pack" ideas. Some may be short distance travel packs, as in backyard travel.

December 2

Observing the Bright Solar System Objects During the Winter – Spring of 2025 By Gary T. Nowak

Over the past few months there have not been many bright solar system objects that have been in a favorable position for observing. That all changes as we enter into the new year of 2025. During the first two seasons of 2025, there will be 4 bright solar system objects which will be favorably placed in our evening skies. These 4 objects will have a very high altitude in the sky which could yield some excellent views.

The presenter will do a brief review of the "Why's" of Lunar and Planetary observing. There will be a short segment on what size aperture works well for a good lunar and planetary telescope in our viewing area.

In the 2nd part of the presentation, the presenter will count down the bright solar system objects to the presenter's top pick of the seasons. Each object listed will have information on its observable features.

Articles

Travelin' Light! (for beginners especially) by Maura Kelley

Lightweight and portable, that's my gig! So I wanted to share simplicity and ease in mobility on what I've been most recently using.

I love to image - this is the reason I got into this beautiful hobby in the first place. Plus, I love wide-field astrophotography because it's interesting to me: the relationship of these deep sky objects to and with each other, and where they reside in our night skies. So for some time I've been using my older Olympus DSLR camera (modified, with the IR filter removed) for astro-imaging and a newer Olympus camera for dark nebulae and open star clusters (without modification).

In the images below, I'm using the 40-150mm f/2.8 Olympus camera lens. As far as my tracking mount? It's wonderfully accurate for shorter exposures with-

out auto-guiding apparatus, cables, laptop and other astro-paraphernalia. I'm using Explore Scientific's lightweight tripod mount, the iEXOS-100 with the PMC-Eight tracker system that I control from a handheld small Android tablet with the app. One can instead (if your eyesight is good) just use your cell phone with the app. The database is astounding with all the Messier, IC, and NGC objects, as well as entering your own coordinates to locate comets and others. Using the website <https://theskylive.com>, you can track in real-time any moving objects, such as comets, locate and image them by entering their coordinates! It's pretty cool and very simple. This tracking mount can be found on sale now for under \$350 (I paid a heck of a lot more than that several years ago!) And, it can easily hold my telescope.

We had some RARE clear dark-night skies recently with Canada's wildfire smoke subsided. It was beautiful to see the Milky Way so clearly! So I grabbed the following shots ~

Please excuse the focus on the annotated shots - I used them to help me find my targets and I've included them here for reference only.

All are located in the constellation Cygnus, the Swan.

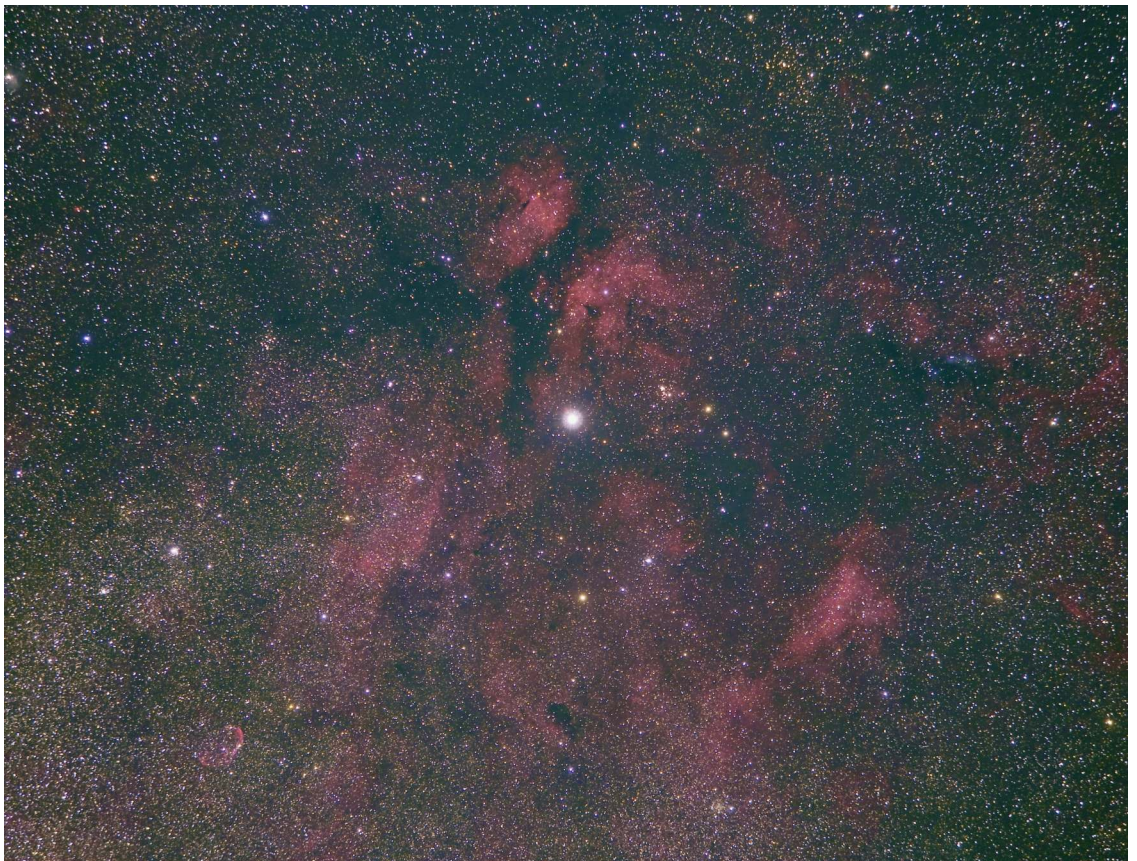
1) The Cygnus Loop (below) 150mm f/2.8, 1-minute sub exposures, ISO 800, using 15 darks and 7 flat-field frames, 5 hours integrated exposure time.

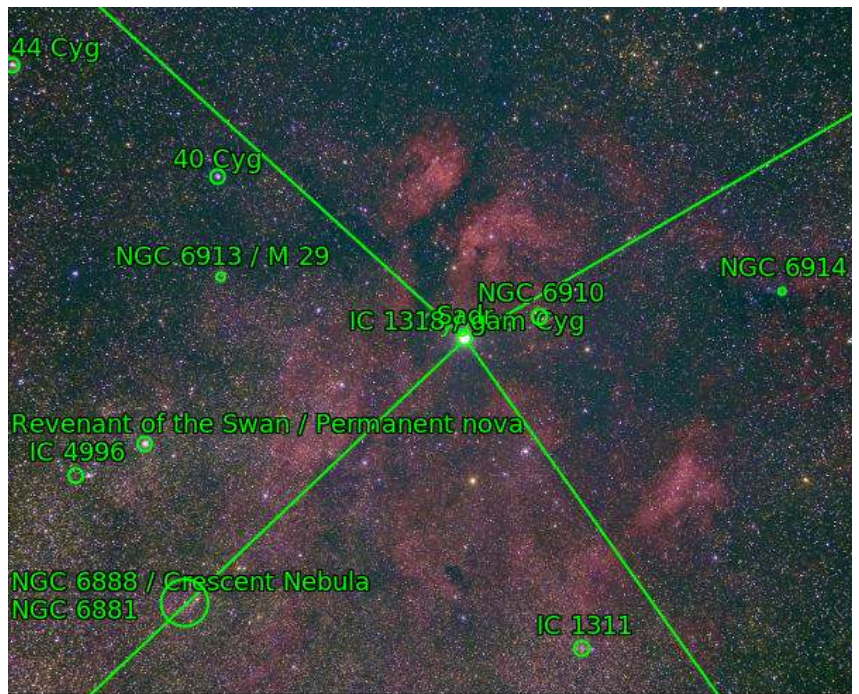
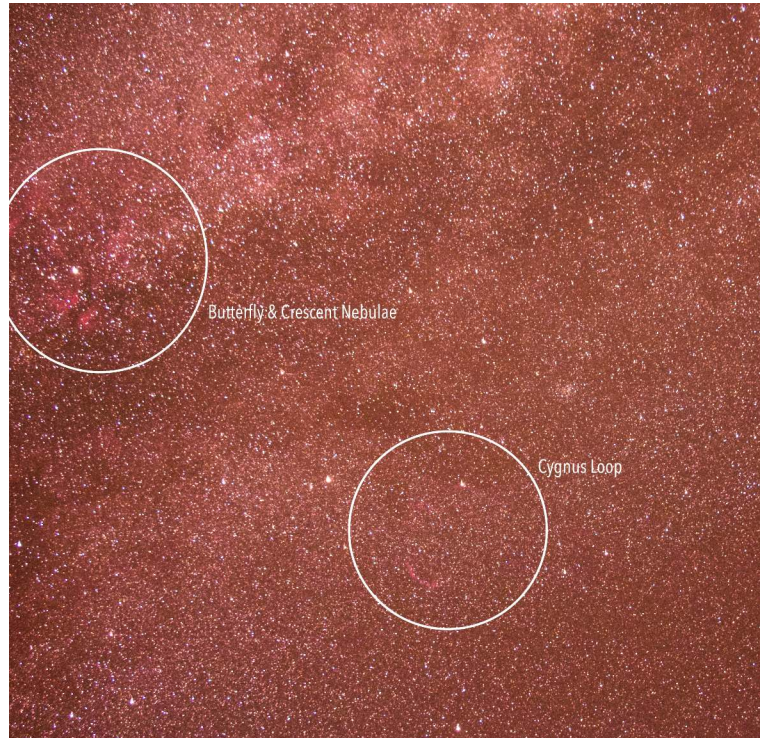
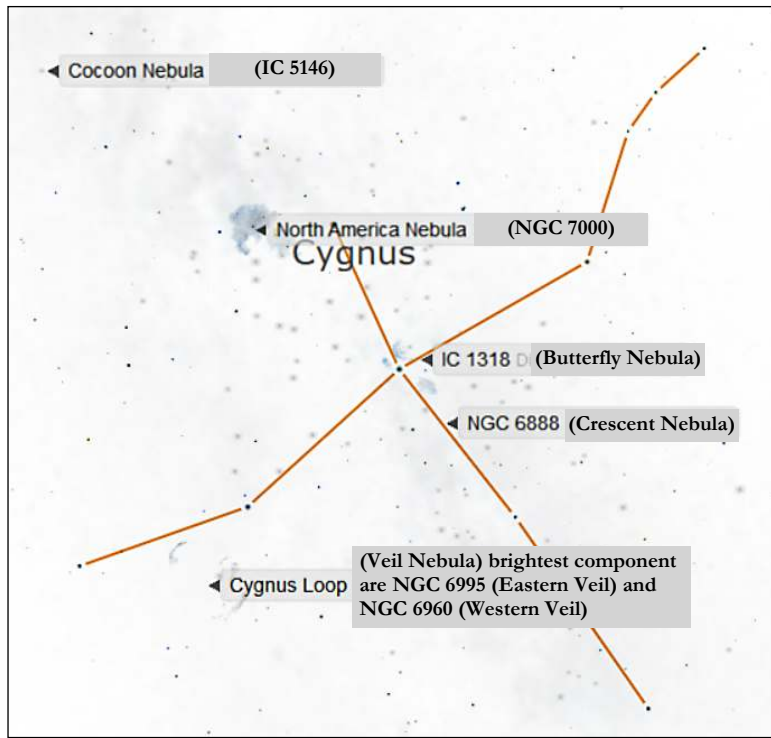


2) The Cocoon Nebula (IC 5146) with ribbon-like streams of dark nebula, same camera and lens settings as above - 1.56 hours.



3) The Butterfly Nebula (IC 1318) and The Crescent Nebula (NGC 6888) in the Sadr Region, same camera and lens settings as above - 34 minutes.





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 predicting, 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

While little goblins and ghouls will be looking down into their trick-or-treat bags for Milky Way bars and Starburst candy, looking up at the stars this Halloween season can certainly spur some spooky fun, too!

Our Halloween sky story starts with the royal pair of circumpolar constella-

tions of Cassiopeia and her husband Cephus, then continues with the constellations of Andromeda, Cetus and Perseus (our hero!) and ends with Algol, the Demon Star.

Cassiopeia, queen of Aethiopia and wife of King Cepheus, was known for her arrogance and vanity. Cassiopeia boasted of her own beauty often and then dared to profess that her daughter, Andromeda, was even more beautiful than the Nereids, the sea nymph entourages of Poseidon. When the nymphs objected loudly to this impious

claim, Poseidon punished Cassiopeia by sending Cetus, the sea monster, to destroy her kingdom. Cetus terrorized the coastal waters of Aethiopia until the desperate ruler, King Cepheus, consulted with an oracle over this terrible situation. Cepheus was instructed that in order to save the country, he should sacrifice his daughter Andromeda to the monster, and she was quickly chained to an ocean cliff for Cetus to devour by her “loving” parents.

Meanwhile, Perseus, a son of Zeus’ and banished by his grandfather, was living on the island of Serifos with his mother. The king of Serifos, wanted to marry his mother and seeing Perseus as an obstacle, dared Perseus a difficult task: to kill the fearsome Gorgon Medusa and bring back her head. Gorgon Medousa was a terrible monster with snakes for hair and she could turn into stone anyone that looked at her face. While killing Medousa would prove Perseus’ bravery, the king was sure that Perseus would not survive this dangerous task. But what the king had not known was that Perseus was beloved by the gods and with help, the brave and intelligent Perseus managed to complete this difficult task!

As he was flying to return home in his winged shoes, Perseus passed the kingdom of Aethiopia, and came upon the beautiful and helpless maiden Andromeda, chained to the rocks waiting to be devoured by Cetus, the sea monster. Perseus immediately fell in love and promptly killed Cetus, who had been licking his lips at the prospect of having a delicious meal, by turning it into stone with Medusa’s head. Now if the image of Medusa’s snake-haired head turning the sea monster to stone isn’t enough for you, let’s consider Medusa’s winking evil eye, the star Algol.

Known as the Demon Star, Algol brightens and dims with clockwork regularity. It completes one cycle in 2 days, 20 hours and 49 minutes. (Plus, you can view its entire cycle with your eye alone.)

Astronomy has unlocked the secret of Algol’s “blinking:” it is an eclipsing binary star. This kind of binary star is composed of two stars, with each star revolving around the other. From Earth, we see the orbital plane of this binary star almost exactly edge-on. Therefore,

when the dimmer of the two stars swings in front of the brighter star, we see Algol at minimum brightness and when the more brilliant star is in front, we see Algol as blinking brighter. It’s quite eerie to imagine Medusa’s disembodied head winking at us from above, in a celestial taunt.

And...if all of this isn’t enough to spook fellow stargazers on Halloween, be sure to use your telescope to look for the planet Uranus floating about Cetus’ head—it’s the only object that glows a ghoulish green in the night sky. (Of course, you can also indulge in a Mars bar while you’re out there stargazing!)

Board & Committee Meetings

July Board Meeting

Agenda:

1. Minutes from last meeting review/amend/approve - Paul/All
2. Financial status and budget, discussion. T/all
3. Status on past actions: purchase coma corrector (Paracorr) - T, Google One pricing - T, Laptop cost - Scott
4. Perspectives on why VAS Associate Members aren’t converting to ‘full’ members. - An outside (the board) perspective - JG
5. Website updates - a discussion on what we think should be on the website and easily available - T will bring some suggested updates
6. Discussion on board officers emails (a good suggestion on having official communication come from VAS emails versus personal emails).
7. Stellafane dinner/potluck planning. - all

1) Terri made the motion that we accept the minutes from the last meeting. Jim 2nd it. All approved.

2) Budget- Annual income from dues has averaged ~\$1900 over the last 3 years, annual yearly recurring cost has averaged \$1750 (includes some estimate of recurring but non-yearly site maintenance and some “padding” of expenses) over the last 3 years, annual gifts has averaged ~\$700.

Ideally we should limit the recurring annual expenses to the annual income from dues.

3) Terri has ordered the Paracorr.

As a not-for-profit we can get 100TB of free storage on Google. No update on pricing a laptop

Paul purchased pavers (to replace the 2x8 lumber at 3 locations for members to put scopes on). He has installed the pavers in 2 of the 3 locations.

Paul has not ordered the 2nd 8x50 finder or the Quickfinder unity finder for Chmela Scope.

Bob will look into the digital setting circles for the 18” Obsession

4) Joel Green related to the board his initial hesitation in joining the club. (Note that this is not directly related to the issue of members not requesting full membership but is a concern). Joel almost did not join the club due to feeling intimidated by the knowledge of the more experienced members and not being able to understand or follow some of the conversations. Going to an outreach event with Joe Comeau convinced him to join

One suggestion to help address this issue was to use less jargon at meetings. Or if jargon is used, define what it means. Ask for more presentations at a more basic level. It was recommended that the board members read the 2016 VAS Survey for additional insight.

5) Keith suggested posting items in the Recycled Optic Program on the website.

6) Discussion about board officers emails (a good suggestion on having official communication come from VAS emails versus personal emails).

We can have up to 100 email for officers and such. These are different than and separate from the email lists we have (VAS News, Observing-VAS and vasfullmembers).

7) Paul will send out a notice to the members.

ACTION ITEMS

Paul will look into more of the details about setting up emails for the club directors on our website server and how they work.

Next meeting- How do we go about making people at meetings more comfortable and more comfortable with ask-

ing for help (particularly newcomers and beginners).

Bob will look into the digital setting circles for the 18" Obsession.

MOTIONS:

Terri moved that we accept the minutes from the last meeting. Jim 2nd it. All approved.

Terri moved that we recommend Kate Yantz for full membership. Keith 2nd it. All approved.

August Board Meeting

Review and accept minutes from July meeting:

July meeting minutes reviewed and approved with amendments.

Review outstanding actions:

- Club Swag interest and is Bosek and Banke interested in doing the foot work and is there interest enough? Who will do the logo and design?
16 people responded in the affirmative to email inquiry about interest in the availability of club swag. No board members volunteered to head up this activity.
- Digital Setting Circles and drive for 18" observatory Dobsonian - Bob
Bob went over the details of the half dozen or so options he found. Some were wifi only and required an app on a laptop or smart phone to control them and therefore not practical for our site. Some units run on rechargeable batteries, which is also not practical, as we can't leave the inverter on our solar power system on to keep them charged. The Nexus DSC Pro (\$350 w/out encoders) was suggested (downside- it uses internal rechargeable batteries). Also suggested was the Argo Navis (~\$1000 for the 18" Obsession kit which includes 10K step 2.16 arc minute encoders) (has an easier and faster to use rotary dial for selecting and only 2 buttons, Enter & Exit) (a plus, it uses 4, AA batteries). In most cases encoders are interchangeable so we may get encoders for now and attach them to the mount. 32K

or 40K step encoders were recommended as being more than enough step resolution. (note- the Argo Navis site says the 32 & 40K encoders need to be powered continuously, the 10K do not, which will drain the batteries faster, also the set up needs to be configured, one time, for this).

- Purchasing a better scope for the teaching dome - consider \$2000 152 ES scope? Keith
Ron Anstey had an Explore Scientific ED152, 6" APO refractor, that he put up for sale. The club considered purchasing it at the time but declined. Keith purchased it with the idea of holding onto it in case the club might decide to purchase it later. It was asked whether the Teaching Dome with its 8" SCT gets much use. Answer - some, but not much. It was also asked if it would be used more with a better scope. Answer- We don't know. We decided to purchase the 6" APO 152 ES scope from Keith for \$2,000 (see motions).

- Club computer purchase options - come up with some windows laptop options (Scott)
Recap- For monthly meetings and presentations we need one that has a plug for wired network connection and HDMI (video). There was one for \$367 that fit the bill. (See motions for purchase decision)

- Filling open positions (Treasurer and Outreach coordinator) - Terri
A previous candidate for treasurer dropped out. Currently no candidates for either position.
- Putting some of our funds into a CD or other investment. Terri
No action.

Continuing Discussions

- More Full members and/or participation: Should we flatten membership, which will require opening bylaws?
Not discussed.

- What else should we touch - Add gifting language per prior discussion, other?
Not discussed.

- Discuss what content we could/should add to the website.
Scott has added a few items.

- Run a new member education session such as introduction to astronomy? Keith
Not discussed.

- Discuss meeting content and level of presentation and how this is applicable to new members.

(Related to the concern that new and potential new members are being scared away by the technical level of some of the presentations and discussions) It was suggested that presenters be requested to consider that our audience typically includes people with very little astronomical knowledge (but a desire to learn) along with people with a lot of astronomical and science knowledge. And, as best they can, define terms and explain things in a way that most can understand or at least get the gist.

ACTION ITEMS

Paul will contact the web host (TDK Hosting) about our email issues.

MOTIONS:

Terri made a motion to purchase the 6" APO 152 ES telescope (Explore Scientific ED152) from Keith for \$2,000. Seconded by Scott. 5 voted for, 2 abstained (Keith abstained).

Keith made a motion to purchase the \$367 laptop. Seconded by Paul. All approved.

September Board Meeting

1) Review and accept minutes

Jim moved we accept the August board meeting minutes as written. Seconded by Joe. All approved

2) Review outstanding action items:

- Club Swag logo design - Scott to look into doing a design or modifying the current design to use. Did we confirm Marcia would be able to help with mechanics of making some merchandise?

Scott has up sampled the club logo for use on club swag. Most likely we would use it on baseball caps and for patches. Scott reminded us about the online site, Zazzle, where one can create customized cups, coasters, etc. with their own logo and where members could order this swag. Jim will ask his wife, Marcia, about looking into having patches and baseball caps made with our logo.

- Further discussion and vote on digital setting circles - Bob to lead

We plan to get the encoder kit with 40K step encoders for the 18" Obsession from Nexus for ~\$350.

- Purchase 150mm ES from Keith - Terri completed purchase.

The purchase has been completed. Keith and Terri will try to get the scope installed in Atlas mount in the Teach before the weekend. We will change the code on the lock so it's code is different than the other locks. Paul will create some "quick" instructions for operating the Atlas Mount and opening the dome so after some training members will have this to refresh themselves as needed.

- Filling open positions - Comments accepted on using Sonya to help with outreach coordination

No current candidates for the treasurer position. We have 1 candidate for Outreach Coordinator, Sonya Rectenwald.

- Putting some of our fund balance into a CD or other investment - Terri

All agree this is a good idea. We settled putting \$12,000 in a 6 or 9 month CD, with Terri on the 6 or 9 month when she goes to the bank.

- Looking at using GMAIL or our service provider email addresses for offi-

cer emails - Paul We need to make a decision here.

What does it take to get multiple email addresses on gmail tied to one account for use by club officers. Scott will look into it. He thinks that it will be difficult and maybe even possible with gmail's account requirements and restrictions. Scott will see if he can pull in the VAS main email accounts into his gmail account. This may be a way to access VAS emails without using the forwarders or having to log into the cPanel interface.

- Follow-up on Web site enrichment:

Terri listed off several suggestions for enhancing the website.

3) Seeking more full members and more participation from current members.

- Should we flatten membership which will require opening bylaws?

We are generally in agreement with this idea. There are a number of items in the by-laws that will need to be discussed and changed such as how long one has to be a member before they get training for and have personal access to some of the more expensive club equipment and what constitutes a quorum for voting.

- What else should we touch - update gifting language per prior discussion, other?

Not discussed.

- Run a new member education session such as introduction to astronomy? Keith

Some ideas that were shared: We could do a better job describing the presentation topics. Need a process for people to come in at whatever level they are at and work their way up. Maybe have a way, separate from the monthly meetings, for "educating" members.

Have a page we send out to presenters mentioning the wide range of our audience and ask them to keep this in mind when producing their presentations. Mix up the technical level of the presentations. It

was mentioned that we want everyone to get something out of their time at the meetings. A way to do that, is to do things like the Constellation of the Month that Terri does.

Keith and Jack did a series of adult astronomy classes at CVU High School. That was initiated by, and done for, the High School as part of there adult education program. We have done workshops in the past, some fairly well attended, some not. Typically, these have been one-time events. The only workshop that has been done multiple times is a telescope making class. Terri made the suggestion we do a 3-month beginner series on a different day from the monthly meetings. Of course as with everything we do, we need people willing and able to do them. It was suggested there is probably stuff on-line that could be used or incorporated in this.

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

The Royal Astronomical Society of Canada - observing tips- suggest by Lou Vicchario:

<https://rasc.ca/observing/tips>

It has basic as well as more advanced information some of which is found by following links.

Equipment Tips & Recommendations

Telescope Making Class? Maybe.

Ken Brack, who recently joined the club has made several telescope mirrors, some years ago and some recently. For the recent ones he purchased kits from "Firsthand Discovery" at firsthanddiscovery.com.

They offer a 6 inch mirror making kit including glass blank, grits, polish and pitch for \$110. One will also need to buy a 2nd blank or dental plaster and a sheet of small ceramic tiles as the "tool" for grinding and polishing the mirror. They also have 3 sizes of secondary mirrors.

They have 4.25", 6", 8", 10" and 12.5" mirror kits and blanks. The glass is Schott borosilicate glass.

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

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

Spica Occultation---show of hands

7/14/2024

Wow, that occultation of Spica last night was to die for! How much success do we have from our club? Report your success and comments for our readers!!! This was one event not to miss.

This adds to the big ticket items for the last few months, such as the solar eclipse, the daylight Occultation of Venus (April 7). The look of the moon itself was far from plain as well, and I hope our scope at the observatory put on a great show too.

A screen shot just before occultation from video, using a vintage Celestron 8 at 2000mm,

Sony Nex5r. I observed visually with 20x80mm binoculars while this was recorded, for a 3h19m05 UT second disappearance. The lunar details in binoculars was even better with the low moon muted in brightness just right to allow glare reduction and more details visually.



Clear Skies
Lawrence Garrett
Fairfax VT

7/14/2024

Hi Larry,

We had 6 people at the Hinesburg Observing Site last night (5 members and one spouse) observing the Moon with the Chmela scope and some with the club's 6" f/5 Dob that Keith refurbished.

While most left before the occultation, Terri and I stayed for it. Terri viewed it through the Chmela scope with a 55mm eyepiece (80x) and I used my 20x90 binos (used to be Gary's). Terri was almost thwarted by trees but saw it through holes. I moved my binos short before when I saw a tree encroaching in my view. I would say it's the best and brightest occultation of a star I have seen. Had I been home I would not have been able to see it in my backyard. I would have had to go 400 feet or more out into field north of our house.

Again, thanks for giving the heads up.

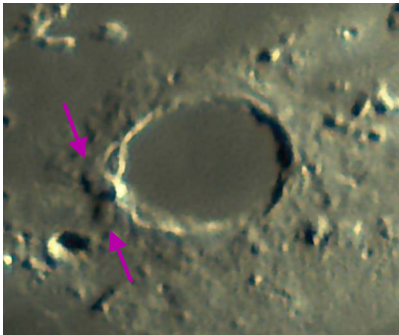
Paul Walker

Lunar Fun

9/13/2024

Hi there, and Lawrence, in particular,

Observing the moon last night, thru the smoke and clouds, I was amused to see that Plato had sprouted a very obvious "whale tale"! Sharp shadow feature, my image of it is not as prominent, but its definitely there, on the west outer edge. I think it had shrunk, some, by the time I got set up to take a photo of it. Has this been noticed before?



ASI 678mc thru a 12"SCT f/10, captured in SharpCap, processed in AstroSurface

Peter Gillette

Good shot Peter!

I have heard of a whale tail, but not for a long time, good catch! I see a face in silhouette quite a bit in the crater floor, but have never heard a posting on that, (?). When shadows are just right of course.

Tomorrow night is International observe the moon night, as Terri has posted, in your front yard if not traveling. But watch those mosquitoes', cooler temps will help, but warmer when we don't need it.

Check out this link for home observing. Overview | About – Moon:

NASA Science-

<https://moon.nasa.gov/observe-the-moon-night/about/overview/>

Clear Skies

Lawrence Garrett

I haven't heard of your "whale tail" feature. Looks nice. Makes Plato look like a pumpkin fish. I must confess I was disoriented for a while seeing Mare Imbrium (which is South of Plato) appearing above Plato but seeing Vallis Alpes to the right (East of Plato). So, though I know Vallis Alpes is east of Plato I was orienting myself based on Mare Imbrium and looking for your whale tail to the right of Plato. Eventually I realized the image was upside down but correct left to right.

For those less familiar with the Moon, Plato is the large crater near the bottom of the image with a flat smooth floor. The whale tail appears on the left side of Plato. [a blow up of Plato with arrows is added here for clarity]

Paul

Interesting Twilight Clouds



~10 minutes after the end of Nautical Twilight and after the start of Astronomical Twilight

I haven't heard that anyone else saw these clouds last night, but they were almost spectacular, coming out a fair while after sundown. Made me think they were almost Noctilucent Clouds. I guess, actually by name, they were, but by origin, I don't think so. Taken around 19:40, 28mm, 30sec. ISO 1000, Canon Powershot SX50HS, looking West, from Hinesburg.

Peter Gillette

Recording Asteroid Occultations

By Paul Walker

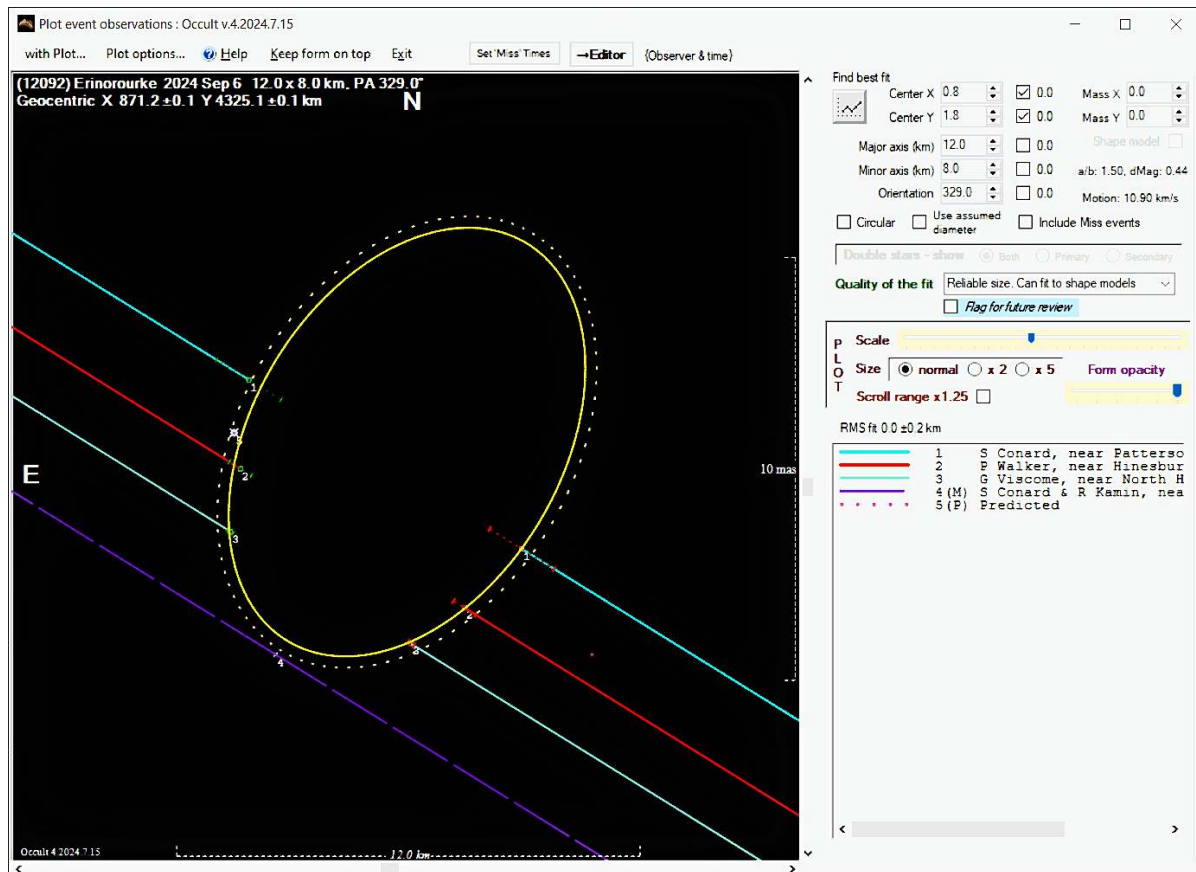
I have embarked on endeavor available to amateur astronomers that contributes to professional science (like I need more to do). I have started recording asteroid occultations and sending in the data and joined IOTA (International Occultation Timing Association). Some of you may remember George Viscome. He did a talk on this subject for us at the November 2020 monthly meeting. Lawrence Garrett and Gary Nowak myself and a few others have known him for many years, though I had not kept in touch. Well he's been encouraging me to get involved since then.

What is an occultation? It is where one object passes in front of another. I know that almost all you have in fact observed at least one occultation. "Really?" you say. Really. Most of you observed the total solar eclipse on April 8th this Spring did you not? That was an occultation, a rather impressive one! Several, no doubt, have also seen stars occulted by the Moon such as the one Lawrence brought to our attentions (see page 10).

So far I have recorded 7 "events", 5 "negatives" (didn't see the star dim) and 2 "positives" (saw the star dim). There were 2 more events that I attempted but was unable to acquire the target star.

My first positive, Sept. 9th, was only my 5th event (my 4th

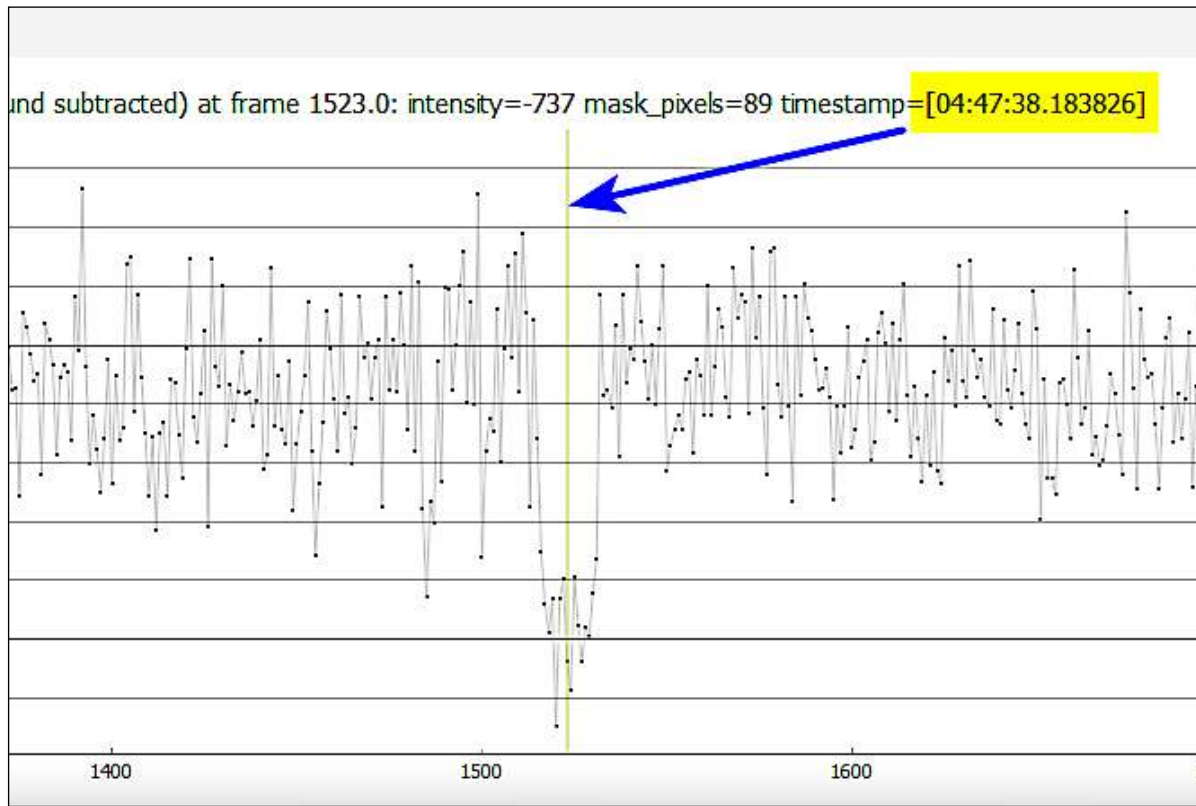
attempt was an event earlier the same evening in which I was unable to get on the target in time). Though for now I plan to mostly observe from my backyard, I am using the Hinesburg Observing Site (HOS) as a "remote site". The 2 positive events were both at the HOS. For the first I used the club's 8" f/10 Schmidt-Cassegrain telescope in the dome. For the 2nd I used my 8" f/6 Dobsonian telescope. Yes, you can use a non-tracking scope for this activity. In addition to being only my 5th attempt, my first positive was from a "re-



mote site”, and my first collaborative observing event! George Vicome (in NY), Steve Conard (in PA) and myself, recorded the same event.

Below is a graph of the star’s light from my data with the center time marked (4:47:38.18 UT, +/- ~0.03sec). On the following page is an analysis

done by Steve Conard fitting all of our observations to a best fit model of the shape of the asteroid.



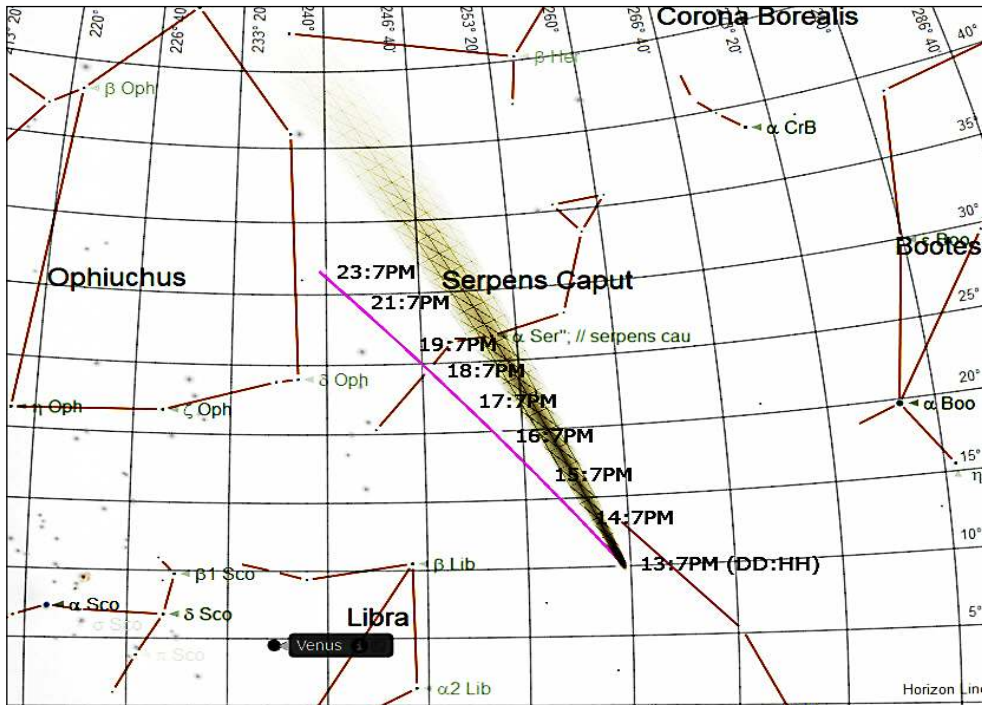
OBJECTS TO OBSERVE

Observing Comet Tsuchinchán-Atlas (C/2023 A4)

By Paul Walker

As of this writing I don't know of any members who have observed Comet Tsuchinchán-Atlas but I know all of

be able to spot it with the unaided eye. You will need binoculars and can use the chart below to locate it. The chart identifies the position of the comet relative to the western horizon from October 13th to the 23 at 7:00 PM. The constellations and stars won't be much use during twilight and when the Moon is in the sky but you can use Venus as a bit of a guide. At least before Venus



you or at least most of you know about it as I sent an email announcing several possible nights for observing it in October from the Hinesburg Observing Site (HOS) in October (see page 2).

The best time to view this comet will be mid-month, from the 13th on (I may open the HOS on Sunday the 13th if it looks like that may be the best or only night we will get that week and or after the 19th. Moon will be in the sky interfering until about the 21st.

Even as bright as this comet will be, early in the evening you will likely not

sets.

The comet moves higher in the sky fairly quickly which would normally improve visibility but it will also be fading fairly quickly as well.

Note that the grid lines are alt-az with altitude marked on the right edge and azimuth on the top edge. Use these and Venus if needed to help in locating the comet. Use the chart below for measure angles on the sky. The top of the trees west of the Hinesburg site are between 5 and 10 degrees.

T Corona Borealis

T CrB is a recurring nova and is predicted to have its next outburst any time now. It has been seen in outburst at least 2 times in the past. Estimates for the time between outbursts range from about 78.4 to 80.5 years.

To see current visual estimates and photometric measurements of T CrB go to AAVSO.org, the website of the American Association of Variable Star Observers. Scroll down to Resources. There you will see "Pick a Star". Type in T CrB and select "Check recent observations". For the visual estimates, under the Filters column look for "vis".

To create printable charts with comparison stars, select "Create a finder chart". The default chart covers a field of view of only 1 degree. To create wider field charts select "Plot Another Chart". Under "Choose a Pre-defined Chart Scale" select a scale. On the right hand side, down a little, select "Plot Chart". Scale A is the largest, producing a 15 degree chart which shows T Corona Borealis and is good as a starting finder chart and provides comparison stars for when it brightens. You will likely want to print the AB, B, and C charts as well. **Note-** if you are using a Schmidt-Cassegrain or a refractor telescope with a star diagonal you will want to change the chart orientation to "Reversed".

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 by using a high ISO setting and the camera's automatic processing will have little affect on the results (most serious imagers will beg to differ, and yes, it will make some difference and it will limit how much additional process-

ing one can do). This is true even if you save your images only in JPG format. You will want to save them at the highest quality setting (largest, least compressed, file size). This can be true even if you take a single image. I have taken single images where I could not process the RAW image to where it looked anywhere near as good the JPG version out of the camera. 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 or less true which helps produce better JPG images.

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/>

► **PIPP** (Planetary Imaging PreProcessor) <https://pipp.software.informer.com/>
Can be used to convert most video formats to uncompressed AVI format for stacking in Registax or Autostakkert3! . It 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. (see YouTube tutorial below)

Astrophotography How-To

► **How to Learn Astrophotography** <https://www.allaboutastro.com/how-to-learn-astrophotography.html>

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.

Michele's New Observatory for Astro-Imaging

This summer Michele Hernandez-Bayliss replaced her domed observatory with 1 scope with a roll-off roof observatory big enough for 2. **A local builder, Steve Fifield: stevefifieldconstruction@gmail.com, is happy to build one for anyone.** She used a Dark Dragon Astro system for automating the opening of the roof!

Here's an interview with Michele and shots of her observatory by Nico Carver, a blogger over in New Hampshire:

https://www.youtube.com/watch?v=4hEa_zr1x2w&t=383s

The 2nd pier and mount installed. The 2nd scope, camera and other equipment will be installed soon – will be so awesome to run two rigs each night!

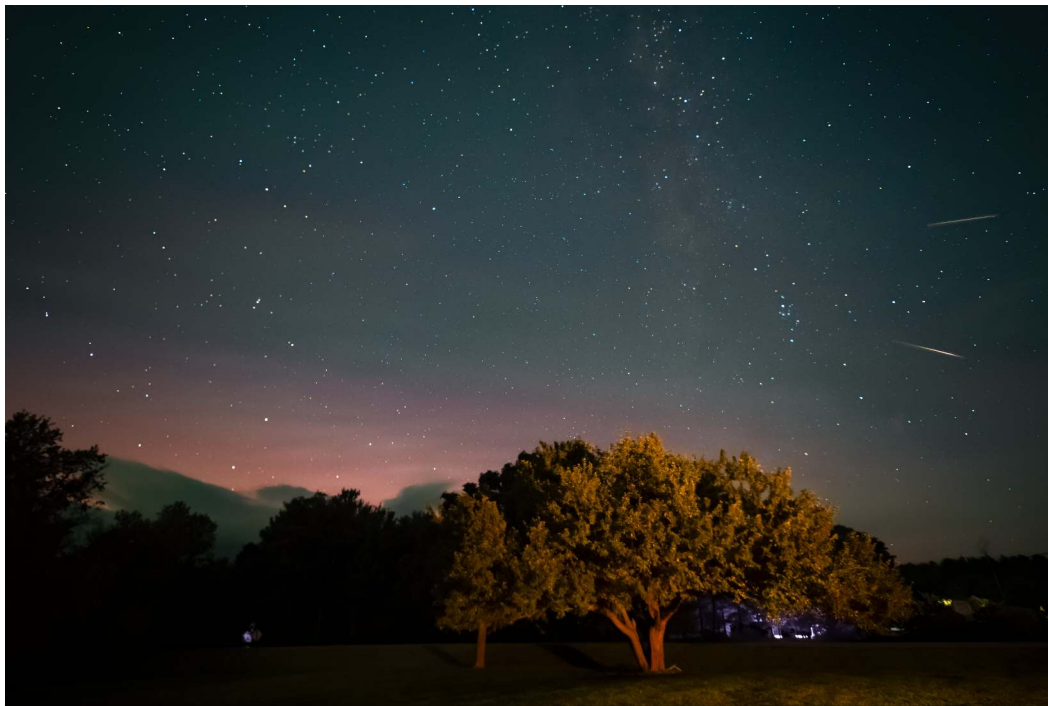


MEMBER'S IMAGES



Perseid Composite
By Allon Wildgust

I woke up at 3:30 AM on the August 13th and set up my camera (Canon R6 with a 14mm lens) in my backyard. This is a composite of the images with meteors. I think six of the eight are definitely Perseids.



Another Perseid Composite
By Blane J Nasveschuk

I gave the ole DSLR a try for Perseids in Rutland, Town. Used the Canon 5D MK IV (full mod by Spencer's, Utah), Irix 15mm f/2.4 lens, Spencer's Light Pollution filter.



Full Harvest Moon Partial Eclipse
By Scott Turnbull

Bella Luna was on display, complete with a wee nibble off the edge for the partial eclipse of the super moon.

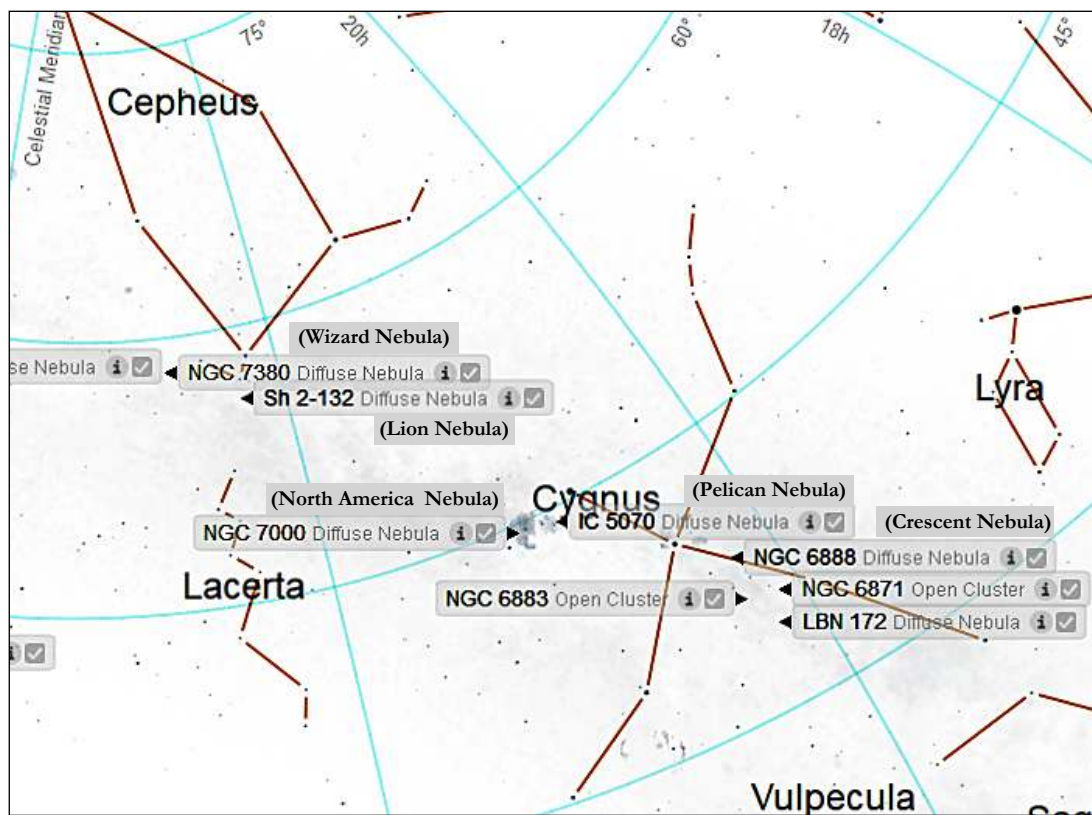
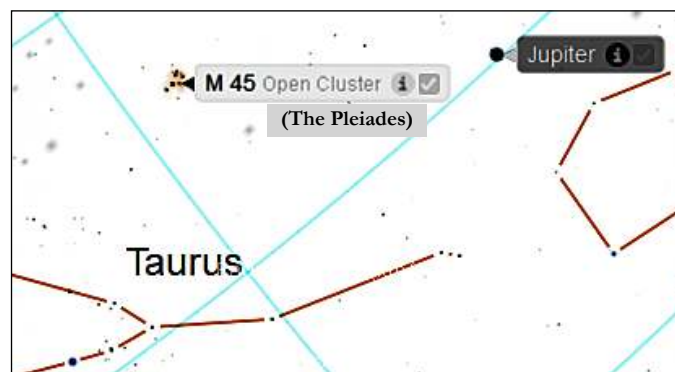
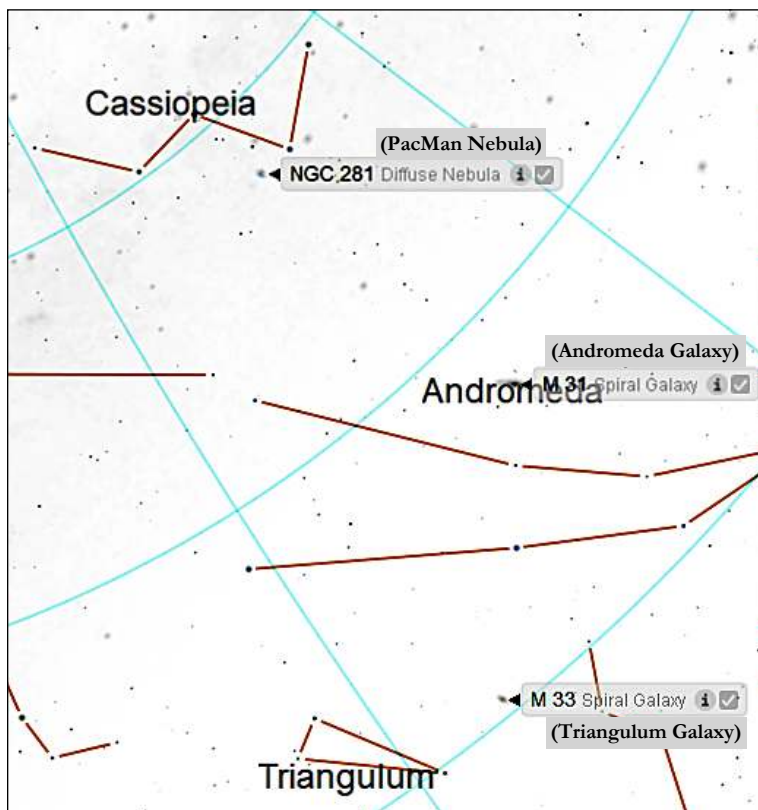
Here are a couple of quick snaps taken off my front porch. Celestron NexStar Evolution 6 with 40mm eyepiece. Moon filter. Nexyz phone mount with Pixel 3 single images.

Minimal in phone edit to crop, adjust contrast, and flip the horizontal. Darker image was done in Nightsite mode, which integrates a longer exposure.



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

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





NGC 281 (Pacman Nebula)

By Bill Kight

I was one of the unfortunate folks who missed the bulk of last month's Seestar presentation. I'm a big fan of the Seestar S50 and this is one of my early images with it of NGC 281 (Pacman) showing that a complete noob like myself can get some reasonable results with it. I used SIRIL to post process and obviously have much to learn.

Seestars need to come with a warning though. They are a gateway drug that can lead to unforeseen consequences. Not quite a year after getting mine, I slipped and fell on my credit card and now own a bundle from Highpoint Scientific with a ZWO setup including an ASIAIR, ASI533MC, AM3, and ASI120MM mini on a Apertura 60EDR. Never thought it would happen to me. I'm in dangerous territory now :-)



**NGC 6883, NGC 6871, Wolf Rayett 134, LBN 182, LBN 172, LBN 174, LBN 179
and a slew of LDN's (dark nebulae)**

By Terri Zittritsch

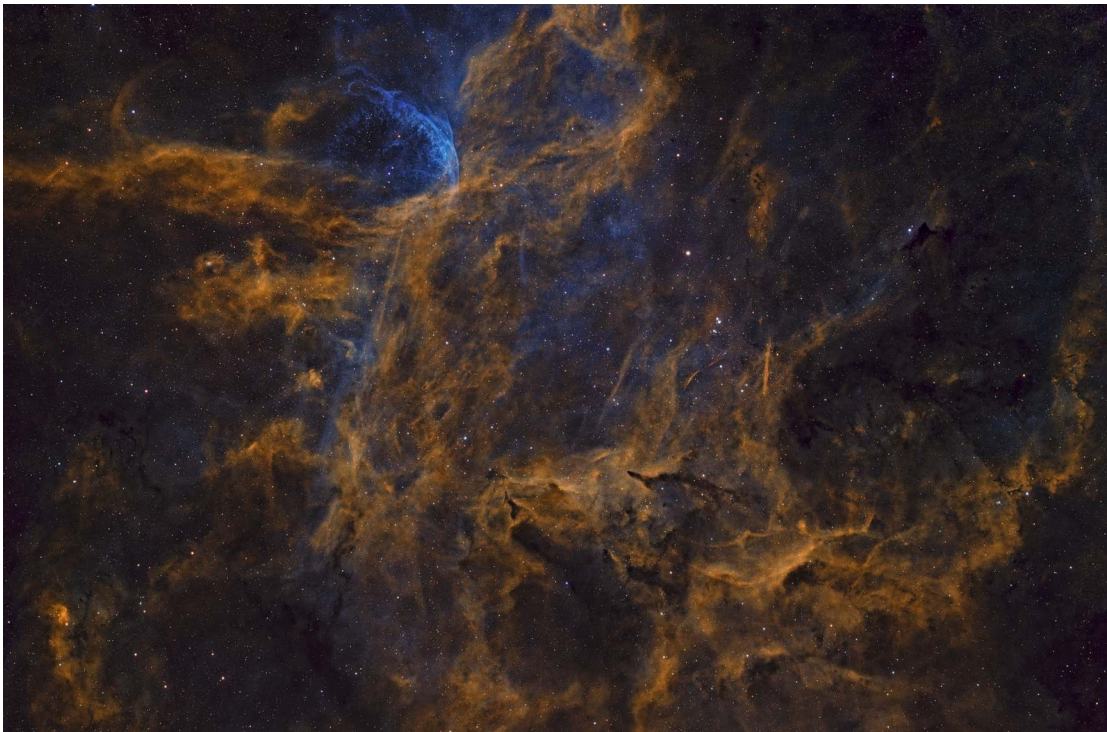
Here is a fairly rich field of stars, gas and dust and other gems such as Wolf Rayet star and it's surrounding shock wave of ionized OIII. I took this with a TEC140ED telescope, ASI6200mm camera with 3nm Chroma filters, an Astro-Physics reducer/corrector to bring me down to 700mm on an A-P 1100GTO mount. Total imaging time is 10.5 hours with 3 hours of 10 minute exposure each for the narrow band channels, and 30 minutes each for the R G and B colors used for the stars.

Besides the ionized gas and dust in the area, the most interesting thing is the aftermath of the Wolf Rayet 134 star showing the ionized OIII ring around it. Best seen without stars, and looks much like the filamentary structures seen around the Crescent Nebula, also the result of a Wolf Rayet star.

Shown on the next page without stars and in a different color palette.

For full sized version follow this link:

<https://vtastro.org/community/images/ngc6883-ngc6871-wolf-rayett-134-lbn182-lbn-172-lbn-174-lbn1-179-and-a-slew-of-ldns/#post-1031>





**M31 Andromeda Galaxy (Featured as Stellarvue's "Stellar Shot of the Week", 9/24/24
By Greg Erianne**

M31 (NGC 224, Andromeda Galaxy), which forms a local galaxy group together with M32 and M110, is the nearest large galaxy to our own Milky Way. M31 is a barred spiral galaxy that is approximately 2.5 million light-years (ly) from Earth and appears in the constellation Andromeda.

The Andromeda Galaxy is classified as a SA(s)b spiral galaxy (in the de Vaucouleurs–Sandage Extended Classification System), which is the designation for a large spiral galaxy with moderately well-defined spiral arms and a relatively prominent central bulge. Estimates put the number of stars it contains at about 1 trillion.

In the region of the outer blue spiral arms, the red 'islands' are hydrogen-alpha (H-Alpha or Ha) emission nebulae and are areas of active star formation. Captured in this image using an Ha 5nm narrowband filter.

Capture Dates: 9/2/2024 and 9/3/2024

Equipment

Stellarvue SVX90T Apochromatic refractor telescope @ native focal length (fl) of 540mm fl
Guidescope/Guide camera: SV106 / ASI120mm mini
ASIAir Plus computer, ASI2600MCMC, ZWO AM5 mount, ZWO 5-position filter wheel

Filters

Antlia Triband RGB Ultra: 281x120s [9h 22m]
Antlia Dual Narrowband 5nm Ha/OIII: 30x300s [2h 30m]
Total integration time: 11h 52m
Processed with PixInsight and Adobe Photoshop.

For full sized version follow this link:

<https://vtastro.org/community/images/m31-andromeda-galaxy-m32-and-m110-2024/#post-1025>



M45 (The Pleiades)

By Greg Erianne

One of the most beautiful, and conspicuous, objects in the fall/winter sky is M45 (Pleiades, Seven Sisters), an open star cluster in the constellation Taurus about 440 light years from Earth. It is the nearest Messier object to our planet. This open cluster contains hot, blue stars estimated to have formed within the last about 100 million years.

The dust cloud around M45 is believed to be unrelated to the cluster's formation and thought to be part of the interstellar medium through which the Seven Sisters just happen to be passing.

Capture date: 9/4/24

Equipment

William Optics RedCat 61 WIFD (f/4.9) telescope
ASI585 Pro OSC camera with a 5-position ZWO filter wheel
ZWO 30F4 guide scope with an ASI120MM mini guide cam
ASIAir computer, AM5 mount

Filters

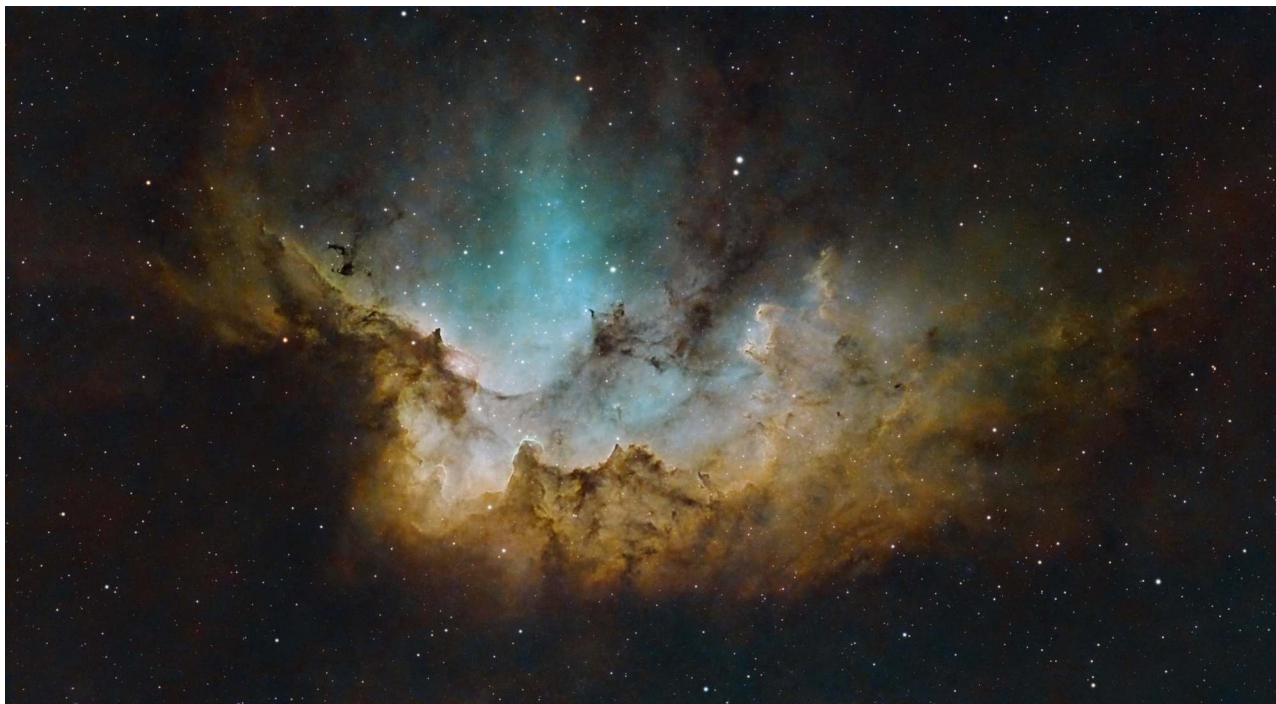
Antlia Triband RGB Ultra: 43 x 90s [1h 4m]
Antlia Triband RGB Ultra: 37 x 120s [1h 14m]

Total integration time: 2h 18m

Processed in PixInsight and Adobe Photoshop

For full sized version follow this link:

<https://vtastro.org/community/images/m45-pleiades-seven-sisters/#post-1024>



Sh2-142/NGC 7380; Wizard Nebula (revisited for 2024)

By Greg Erianne

Despite the smoke in VT, I was off to see...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.

Capture Date: 7/27/24

Equipment

Askar 107PHQ telescope at native focal length (fl) of 749mm, f/7.0

ASI585MC Pro, one shot color (OSC) camera

ZWO 5-position 2" Electronic Filter Wheel (EFW)

ZWO ASIAir computer with ZWO AM5 mount -- guiding via SV106 telescope and ASI178MM camera

Filters

Antlia Dual Narrowband 5nm Ha/OIII: 30x300s [2h 30m]

Antlia Dual Narrowband 5nm SII/Hb: 15x300s [1h 15m]

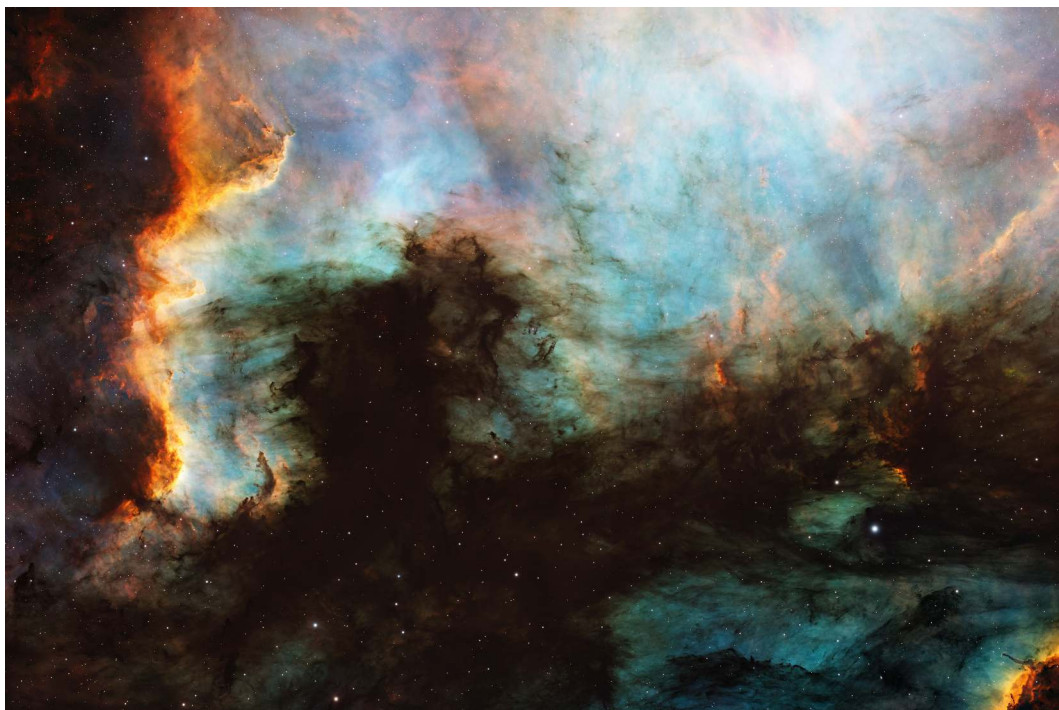
ZWO UV/IR cut Luminance filter (for RGB stars) 20x60s [20m]

Total integration time: 4h 5m

Processed in PixInsight and Adobe Photoshop

For full sized version follow this link:

<https://vtastro.org/community/images/sh2-142-ngc-7380-wizard-nebula-revisited-for-2024/#post-981>



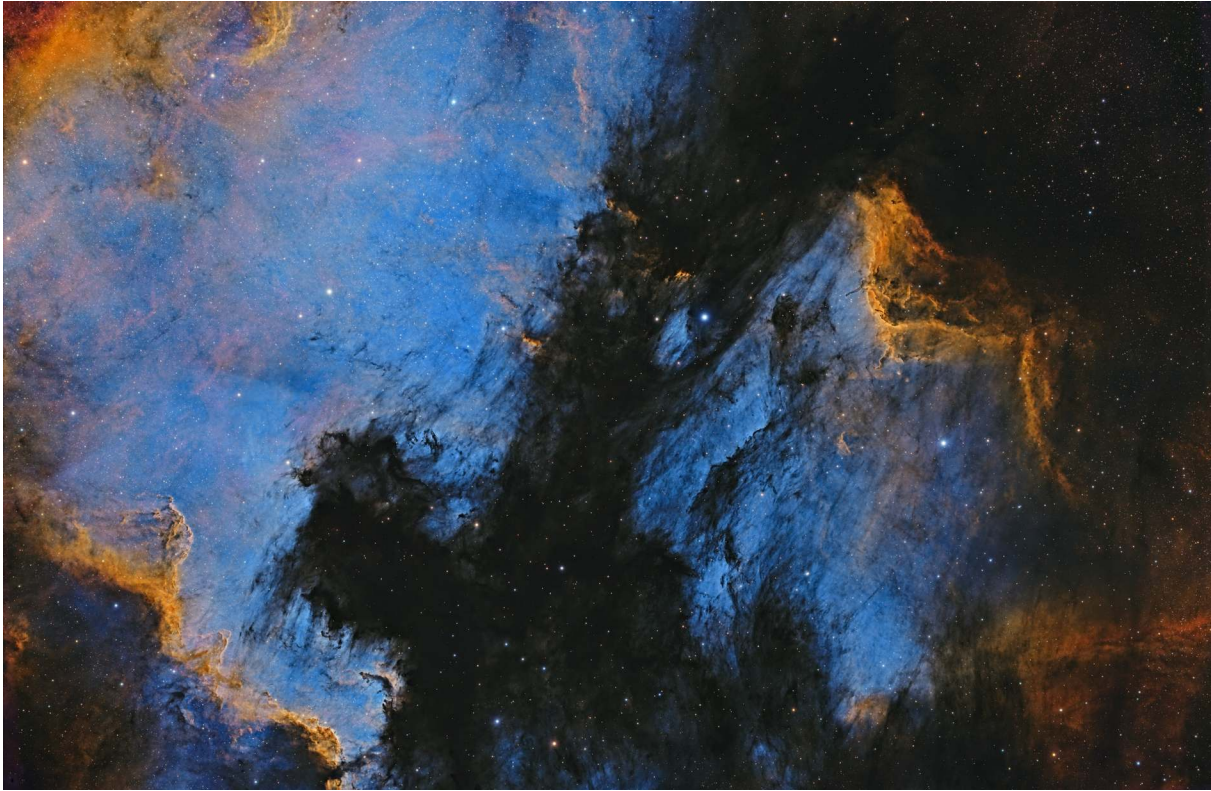
The Cygnus Wall (part of the North American Nebula)
By Michelle Hernandez-Bayliss

Here is 12 hours of the Cygnus Wall - I probably could have framed it better but this is the full uncropped version - not sure exactly how it's supposed to look but tried not to overdo it!

The Cygnus Wall is on the left side and represents the western coast of Mexico on the North American Nebula (NGC 7000). This encompasses only part of the NGC 7000, Mexico, the Gulf Coast, Florida (maybe as it looked during the last ice age and East Coast. Also visible is the beak of the Pelican Nebula (bottom, right corner).

See Terri's image on the next page for an image of wider field of the North American Nebula and the Pelican Nebula.

Takahashi 5" 130 TOA-130NFB telescope
Astrophysics AP 1100 goto mount
ZWO ASI2600MC Pro camera
ZWO ASI220MM guide camera with large OAG (off axis guider)
ZWO ASIAir Plus (computer)
ZWO EAF (electronic automatic focuser)



IC 5070 and NGC 7000 The Pelican and North America Nebulae
By Terri Zittritsch

Hi all, I've imaged IC 5070 and a portion of the North American Nebula in SHO (SII, H-alpha and OIII). My original intent was to just capture the Pelican but I'd be wasting field so I thought I'd grab the interesting part of the North America Nebula as well.

This is an H II region associated with the North America Nebula in the constellation Cygnus. The gaseous contortions of this emission nebula bear a resemblance to a pelican, giving rise to its name. The Pelican Nebula is located near first magnitude star Deneb and is divided from its more prominent neighbor, the North America Nebula by a foreground molecular cloud filled with dark dust (LDN935). Both are part of the larger H II region of Westerhout 40.

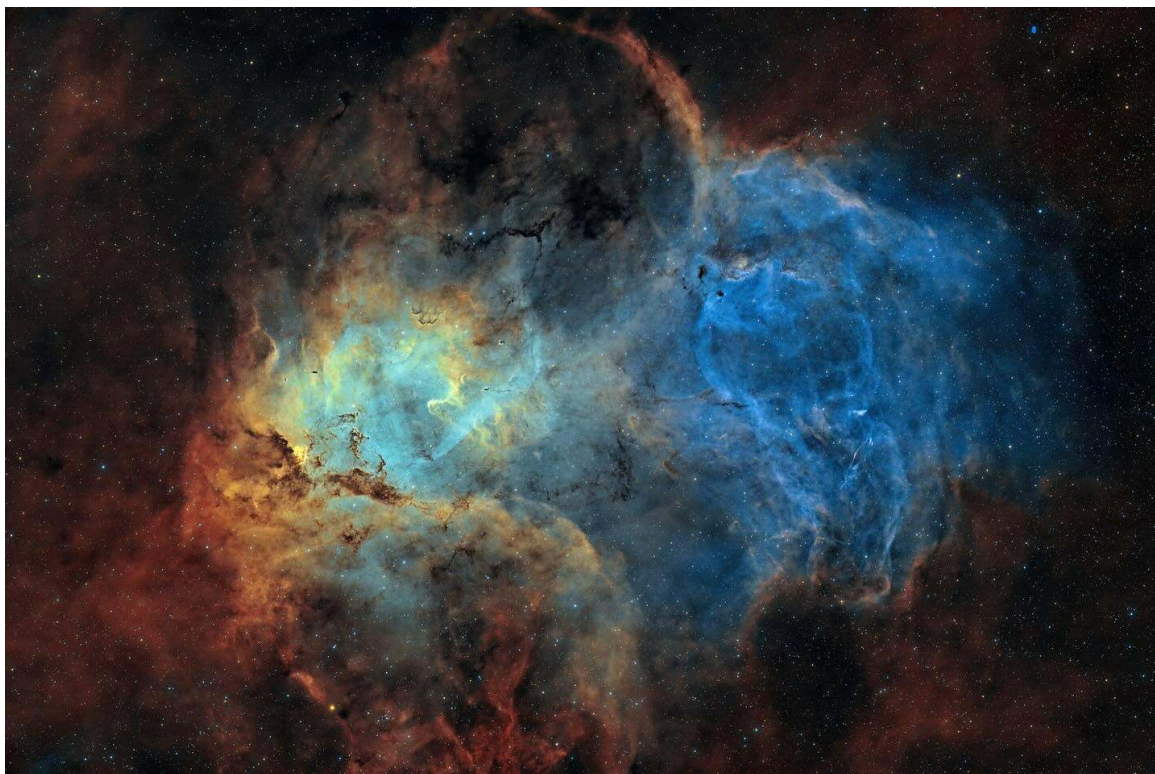
The Pelican is much studied because it has a particularly active mix of star formation and evolving gas clouds. The light from young energetic stars is slowly transforming cold gas to hot and causing an ionization front gradually to advance outward. Particularly dense filaments of cold gas are seen to still remain, and among these are found two jets emitted from the Herbig-Haro object 555. Millions of years from now this nebula might no longer be known as the Pelican, as the balance and placement of stars and gas will leave something that appears completely different. (Wikipedia)

Numerous designations for the two nebulae can be seen in the annotated image (can be found at the link below) with the major designations being NGC7000 for the North America Nebula and IC 5070 for the Pelican. But you can see the back of the Pelican has another designation of LBN350, LBN338 and LBN343 while the North America Nebula has designations of LBN354 and the large dust lane between the two being LDN 935. LDN and LBN are Lynds Dark and Bright nebulae.

I used a TEC140ED telescope to image the area through an Astro-Physics reducer/corrector to get providing 700mm of focal length. The Camera is a cooled ASI6200MM with a Chroma 3nm narrowband and RGB filters(for stars). I captured 3 hours each for SII (singly ionized sulfur), Ha and OIII (doubly ionized oxygen) and just 30 minutes each of R, G and B for stars for a total integration of 10.5 hours. I think this is another object that could take double this exposure. Next year I may just add to it.

For full sized version follow this link:

Link: <https://vtastro.org/community/images/ic5070-and-ngc7000-the-pelican-and-north-american-nebulas/#post-1013>

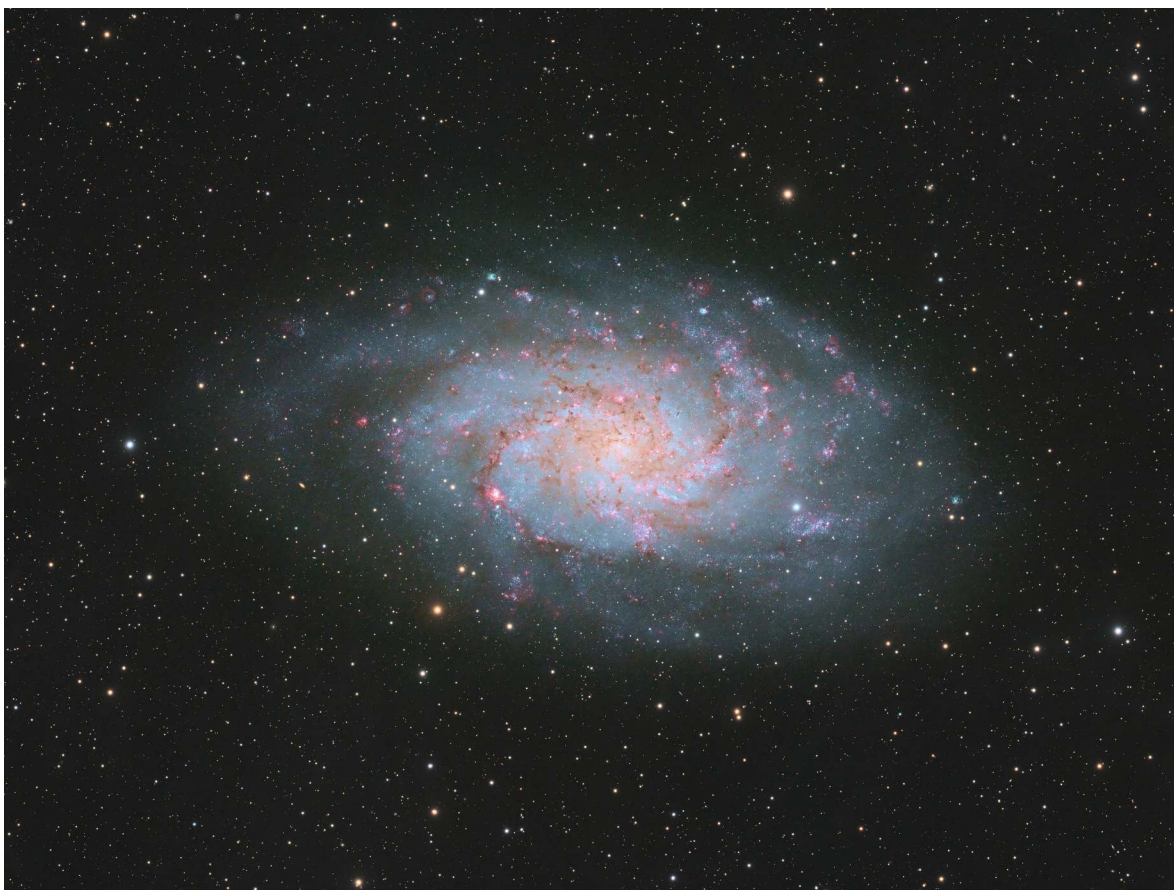


The Lion Nebula (Sh2-132)
By Michelle Hernandez-Bayliss

Sh2-132 is a large emission nebula visible in the constellation Cepheus. It is located on the southern edge of the constellation, a short distance from the boundary with the Lizard, along the plane of the Milky Way; the best period for its observation in the evening sky falls between the months of July and December and is greatly facilitated for observers located in the northern hemisphere regions of Earth.

Sh2-132 is located at a distance of nearly 3200 parsecs (almost 10,400 light-years), thus placing it within the Perseus Arm, in the region of Cepheus OB1, a large and bright OB association. The stars responsible for the ionization of its gas are very hot and massive; in particular, two Wolf-Rayet stars have been identified, known as HD 211564 and HD 211853 (the latter also having the abbreviation WR 153), as well as a spectral class O8.5V star and about ten B-class stars. Around the O-class star and one of the Wolf-Rayet stars extends a bubble clearly visible in the radio wave band, identified as Shell B, probably originating from the stellar wind of the two massive stars. A similar but smaller structure, Shell A, hosts a K-class star near its center. Chain star formation processes are believed to have taken place in the nebula in the past; currently these processes appear to be suspended, since there is no evidence of recent activity. Nine sources of infrared radiation and a maser with H₂O emissions have been detected in the direction of the nebula. (Sky & Telescope)

Takahashi 5" 130 TOA-130NFB telescope
 Astrophysics AP 1100 goto mount
 ZWO ASI2600MC Pro camera
 ZWO ASI220MM guide camera with large OAG (off axis guider)
 ZWO ASIAir Plus (computer)
 ZWO EAF (electronic automatic focuser)

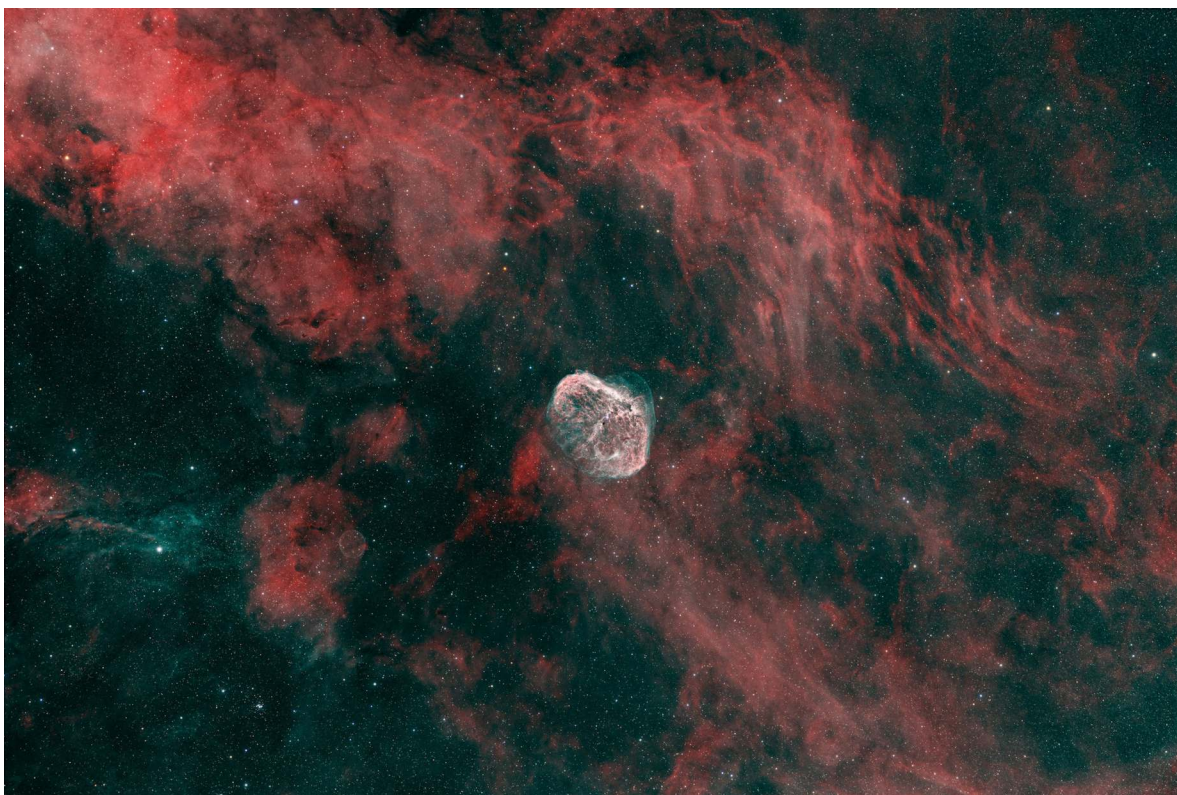


M33 (The Triangulum Galaxy)
By Michelle Hernandez-Bayliss

M33 is 2.73 Mly (million light-years) from us compared to M31's 2.5 Mly from and is believed to be a satellite of M31 (The Andromeda Galaxy). Because of this it appears fairly close to M31 in the sky at ~15 degrees southeast of it. Sometimes M33 is called the Triangulum Galaxy as it is the constellation Triangulum. Though also called the Pinwheel Galaxy at times, that is the popular name for the galaxy M101 in Ursa Major.

Mass-wise, M33 at 40 billion stars is much smaller than either the Milky Way at 100-400 billion or Andromeda at ~1 Trillion stars. Size-wise, the 3 are ~61,000, 103,000 and 152,000 ly across.

Takahashi 5" 130 TOA-130NFB telescope
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ZWO EAF (electronic automatic focuser)



Crescent Nebula (NGC 6888)

By Terri Zittritsch

Here's a couple of goes (go to link below to see both) at the crescent nebula in a bit wider field than I've done in the past. There's lots of interesting nebulosity in the area of the Crescent and can bring hours of enjoyment just letting your eyes drift around the images to look at the interesting nooks and crannies. At least for a geek like me.

NGC 6888 is an emission nebula in the constellation Cygnus about 5000 ly from Earth. It was discovered by William Herschel in 1792. It is formed by the fast stellar wind from the Wolf-Rayet star WR 136 colliding with and energizing the slower moving stellar wind ejected by the star when it became a red giant around 250,000 to 400,000 years ago. The result of the collision is a shell and two shock waves, one moving outward and one moving inward. The inward moving shock wave heats the stellar wind to X-ray emitting temperatures. (Wikipedia)

Another interesting object in this image, that doesn't show up in the annotations is something known as the Soap Bubble. The Soap Bubble Nebula, Ju 1 (also known as PN G075. 5+01.7) is a planetary nebula in the constellation Cygnus, near the Crescent Nebula (NGC 6888). The nebula derives its name from its symmetrical spherical shape which resembles a soap bubble. (Wikipedia) The Soap Bubble small and almost perfectly round. It can be seen in the images to the lower left of the Crescent Nebula not quite 1/2 the way to the corner on the right side of the red "cloud" there. This is the first time I've taken a wide enough image to capture it.

I've captured NG C6888 with a TEC140 scope with Astro-Physics and Chroma narrowband filters for the nebula and surround gas regions and Chroma RGB filters for the stars. The camera used is an ASI6200MM and everything is mounted on an Astro-Physics 1100GTO mount. My narrowband exposures are 10 minutes and RGB exposures 2 minutes per color. Total integration times for the object are 9 hours for the narrowband and 1.5 hours for the colors.

Lots of interesting areas here and are annotated in one of the on line images. I've processed in both SHO and HOO. I think HOO is the more typical processing and I struggled with SHO to make the colors interesting, but I almost like the lack of color as the color can distract from the details. I think this particular object would benefit from 10's of hours of integration as the dust and gas around the Crescent is very interesting but very dim.

For full sized version follow this link:

Link: <https://vtastro.org/community/images/crescent-nebula-ngc888/#post-1009>



NASA News

--by Scott Turnbull, VAS Member and Solar System Ambassador volunteering for JPL/NAS

Europa Clipper - Launching soon on a mission to explore Jupiter's ocean world.

NASA's Europa Clipper spacecraft will launch in October 2024 and will conduct a detailed survey of Jupiter's icy moon Europa to determine whether there are places below the surface that could support life. See Figure 1 for an artist's rendition of what the Europa Clipper will look like in the skies above Europa. The spacecraft will arrive at Jupiter in 2030, and once in orbit around Jupiter, it will conduct nearly 50 flybys of Europa, shifting its flight path for each encounter to soar over a different location so that it eventually scans almost the entire moon.

Europa Clipper launches from Kennedy Space Center in Florida on a SpaceX Falcon Heavy rocket. The launch period opens on October 10, 2024. See Figure 2 for a timeline of what the launch milestones will be.

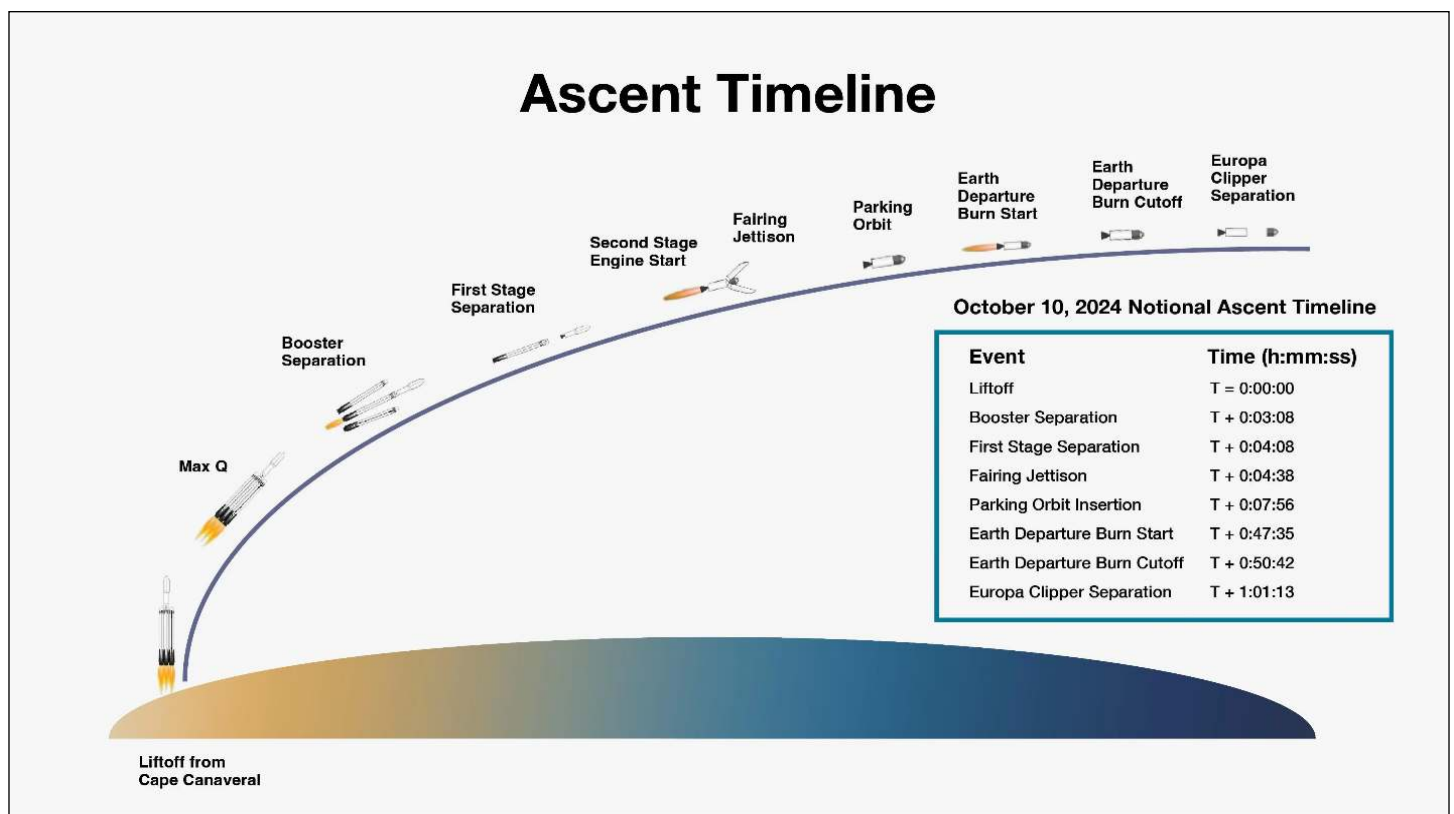


Figure 1 - Timeline of the Europa Clipper Launch Milestones

Depending on the launch day, Europa Clipper will come to within 300 to 600 miles (500 to 1,000 kilometers) of the surface of Mars in February 2025. This enables the spacecraft to use the planet's gravity to help it accelerate towards Jupiter.

In December of 2026 Europa Clipper comes home (briefly) for its second gravity assist, swinging about 2,000 miles (3,200 kilometers) from Earth. This flyby, along with the earlier Mars flyby, gives the spacecraft enough energy to reach Jupiter.

In April of 2030 Europa Clipper will use its engines as brakes to slow the spacecraft down to match Jupiter's orbit. This process will take about six hours – unusually long for a space probe. However, Europa Clipper's engines are designed and test-

ed to ensure they are up to the task. Europa Clipper will fly by Jupiter's moon Ganymede as it does so.

In October of 2030 Europa Clipper will use multiple flybys of Jupiter's Galilean moons, including Ganymede, the largest moon in our solar system, to reduce the spacecraft orbit to the desired resonance with Europa's orbit.

In Spring of 2031 Europa Clipper will finally arrive in an orbit around Jupiter that will provide it with multiple flybys of Europa.

For additional information:

<https://science.nasa.gov/mission/europa-clipper/>

<https://europa.nasa.gov/mission/about/>

<https://europa.nasa.gov/mission/faq/>

Services

Planetarium Shows

There's a planetarium in Williston! The Planetarium Lady's immersive Digital 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

Need more precise drilling and shaping than hand tools can provide? Custom machining of brackets/adapters and modifications to existing hardware for astronomy purposes. Or just want the results to be aesthetically pleasing?

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

I have a mini milling machine and a mini lathe for metal working.

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

Wanted

For Sale

VAS Surplus Items

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

4.5" F/8 Meade 4504 Newtonian Reflector with rings, no mount.

Your's for a donation of \$40.



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

Celestron Evolution 9.25" SCT.

This is being sold with the bundle as originally purchased from Highpoint Scientific. Excellent condition. I'm helping a friend sell this that is in failing health and is unable to use it. Has been used 5 or 6 times at the most.

- 9.25" F/10 OTA
- Single arm mount with GoTo and wifi, can be controlled with the included hand controller or a phone/tablet app.
- Red dot finder
- Heavy duty tripod
- AstroZap dew shield
- Celestron Eyepiece and filter kit

Extras:

- Homemade heavy duty tripod dolly
- Revolution Imager 2 with the optional DVR.

Asking \$1800 (new price).

Pick up near Rutland, VT

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

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



Various optics for sale. Three raw mirror blanks, two projection lenses whose optics might be useful, and 4" and 6" mirrors of unknown focal length (with one exception), and whose finish is in various states of disrepair but that may be good for ATM or experiments. . Items can be shipped or I can meet you within an hour east or south of Burlington, VT.

Various optics for sale from an estate in Morrisville.

(Prices do not include shipping, if necessary)

- 1 raw 10" thin mirror blank, **\$100**
- 3 polished 6" Pyrex mirror blanks, no apparent curve, 2 with Beral coating, **\$20 apiece**
- 2 Kodak Ektar 4" F1.5 projection lenses, rear lens on one is cracked – **best offer**

(Prices do not include shipping, if necessary)

Items can be shipped or I can meet you within an hour east or south of Burlington, VT.

If interested or for more information, contact Neil Perlin at lcvts@gmail.com

Celestron AstroMaster 130 EQ-MD #31051

It has been used maybe 6 times since 2009.

For sale \$225. cash preferably

Contact Mike Thompson at mikehtvt@yahoo.com

I live in Milton. May be able to deliver also.



VAS Surplus Items **All items stored 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 suggested donation of \$25.00.



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



Meade Polaris Model 114EQ-D, with 3 eyepieces: 25, 12 & 4 mm, 3x Barlow but all are .965" barrels. The F/8 mirror seems in great shape.
D = 114mm, FL = 910mm.

Yours for suggested a donation of \$50

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

Altair 72 EDF telescope, iOptron CEM25P mount, eyepieces and accessories.



Celestron XL Series 1.25" eyepieces:

7 mm

5mm

Barlow

Altair Altra Flat eyepieces:

10mm

Altair Lightwave 1X Field Flatteners

Altair GP-CAM, 1.25" USB camera

Celestron Power Tank

Asking \$1700.

Cell contact, 802 598 1886
senfbleberfritz@yahoo.com
Fritz Senfbleber

VAS Surplus Items **All items stored at the Hinesburg Observing Site**

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



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

The following items are the property of the late Ron Lewis of Brandon, VT.

Top of the line 18" f/4.2 Obsession Telescope...\$6,600

This scope was built for Ron Lewis (longtime VAS member) with every accessory that could be added to this dream telescope.

-18" f/4.2 Mirror made by Optical Mechanics Inc. in 2016.

-Argo Navis Hand Controller System

-ServoCAT Go To System (motorized)

-Feather Touch dual focuser

-Finder Scope, Telrad Finder, Shroud, Power Base, Stalk for controllers, padded box for upper assembly and poles, the list goes on! This scope is absolutely loaded.

Current new retail value is probably around \$14,000. This is like new.

Pick up only (Brandon, Vermont).

Lunt 152mm Solar Scope...\$6,600.

This Hydrogen Alpha scope was owned by Ron Lewis.

Comes with:

Single Stack H Alpha filter

Night time visual back to allow the scope to be used as a 152mm duplex.

Calcium K back for astrophotography of the Sun in that wavelength of light.

Padded carrying case.

Lunt Zoom eyepiece.

Weight of scope is about 30 pounds depending on the configuration.

Mount is not included.

Six TeleVue Ethos Eyepieces. Sold as a set-in case. Excellent condition. If bought new \$4,281 plus tax. This set is priced at **\$3,780**, a \$500+ savings. 3.7mm, 6mm, 10mm, 13mm, 17mm, & 21mm

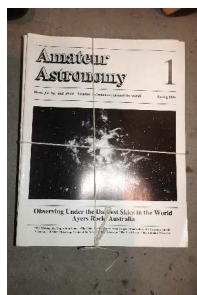


**TeleVue
31mm Na-
gler type 5;
\$598.00**

**Millennium Star Atlas,
\$599.00**, three volume set in
excellent condition or best offer.

Sky Atlas 2000.0 Deluxe ED. 1981; W. Trion, 26-star
charts **\$50.00**

Magazines:



Amateur Astronomy

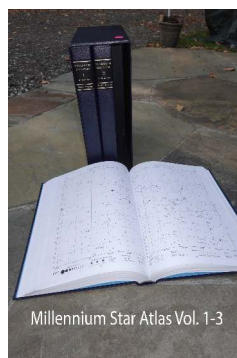
1-67 Set of 55; **\$80.00**

Telescope Making

1-46 (missing # 7 & # 8) Rare materials. **\$ 175.00**

ATM Journal/ Amateur Tel. Making,
(1-16) **\$80.00**

Contact Allon Wildgust 802-247-3119 or
allon.wildgust@gmail.com



8" Apertura dobsonian f/5.9

Helping a friend sell this.

2 years old, very little use as owner lost interest.

Options as purchased from Highpoint

- Primary mirror cooling fan
- 8x50 RACI finder
- 2" dual speed focuser
- 9mm and 30 mm eyepieces (plus one I gave him somewhere in between the two, don't remember the size)
- 1.25" moon filter
- I believe this comes with a laser collimator too.

Asking \$ 500.00

Patrick Porch 802-236-2463 or
pcwizard2600@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.

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