

Morning Star

Winter 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://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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Richard Whitehead, Jim Williams, Ter-
ri Zittritsch.

(My apologies if I missed anyone)

The Morning Star Newsletter from Yesteryear

1988-Summer Morning Star:

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

<https://drive.google.com/drive/folders/12zBSjZqEwKOd9a14LHdqMMH1NaaWNq?usp=sharing>, look for the file "1988 Summer Morning Star Newsletter.pdf".

Brad Vietji was President, Russell Chmela VP, Frank Pakulski Secretary,

Tom Yandow Treasurer and Board Members at large were Larry Laforge, Paul Walker, Al Sterns and Bob Williams at this time.

Contents:

- Upcoming Astro Events for Summer 1988 by Bob Williams.
- Outline of History of VAS by Gary Nowak.
- Board Meeting Minutes - May 1988
- VP's Page by Russel Chmela

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.

The Morning Star Summer 88'



IN THIS ISSUE :

 Upcoming Astro Events	 V.P.'s page
 History of VAS.	 Minutes of May Meeting
 Board Meeting	 Constution and By-Laws of VAS.

The members of V.A.S. would like to voice thier thanks to outgoing President Steve Hayhurst, also to wish him a safe move to and success in a new career in Indiana. Our thanks to Mrs. Hayhurst for her understanding of the needs of on an astronomer and Society President. We welcome his sucessor, Brad Vietje

MORE INSIDE

Contents

Announcements _____	Pg 1
Club Info _____	Pg 1
The Morning Star Newsletter from Yesteryear _____	Pg 2
Gary's Astro Events _____	Pg 3
Jack on the Radio _____	Pg 3
Events _____	Pg 3
-VAS Events	
- Public Star Gazing	
- GMAAA Events	
New Members _____	Pg 3
Meetings/Presentations _____	Pg 3
<i>Jan 15 Images from Eldorado Star Party, Central Texas & Stellafane 2023</i>	
<i>Feb 5 -HOO Narrowband Imaging - Making the Most of Vermont's Limited Clear Nights</i>	
<i>-High Resolution Imaging of the Moon with a DLSR Camera</i>	
<i>Mar 4 What Members Like About Their Telescopes</i>	
Articles _____	Pg 4
Mobile Warm Room	
Sky Lore and Stories _____	Pg 6
Orion	
Board and Committees _____	Pg 6
- Board Minutes	
- Committee Updates	
Under the Stars & Planets	
OBSERVER'S CORNER _____	Pg 7
Member's Observations _____	Pg 8
Observing Article _____	Pg 9
The Partial Solar Eclipse from the Trapp Family Lodge	
Objects to Observe _____	Pg 11
ASTRO-IMAGER'S CORNER _____	Pg 12
MEMBER IMAGES _____	Pg 12
Locator Maps of Objects_	Pg 17
Services /Wanted / For Sale _	Pg 26

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.

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

New Members

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

Lori Barg
Jacques Delori
Tanis Sheehan
Bob Murray
Yvette Feig
Bridget Kimsey
Christopher Belanger
William Kight

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

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

Total Solar Eclipse

April 8, 2024

Rain date, May 1, 2079 (the next total solar eclipse visible from Vermont)(suggested by Jim Williams as a joke :)

Contact: info@vtastro.org

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.**

January 15

Images from Eldorado Star Party, Central Texas - October, 2022 & Stellafane 2023
By Steve Grimsley

The Eldorado star party, at the X-Bar ranch in central Texas, was of average productivity this year with two of the nights clouded out. Only four nights out of six were good and even those were compromised by fair transparency and the waxing crescent moon. Fortunately, I was able to capture nine images when conditions were clear. My main target was Orion and I captured two large objects in this very late rising constellation.

There are numerous notable objects to see and discuss in the images that I acquired this year. My camera scope is an Astro-Physics 92 mm refractor mounted side by side with a Takahashi



NGC 6914, a diffuse nebula in Cygnus between Deneb and Sadr. Credit Steve Grimsley 78 mm guide-scope. The sharpness and exceptional tracking of this telescope configuration and mount brings out much fine color and detail. Emission and dark nebula, small background galaxies, and open star clusters are most of the type objects that we will be seeing.

I used this same equipment combination to image two objects on the last night at Stellafane this year. These will also be a part of this talk. There maybe some additional images from the 2023 Eldorado star party that I will attending in a week's time.

This will be a short presentation with an open format for questions and comments on these interesting astronomical objects.

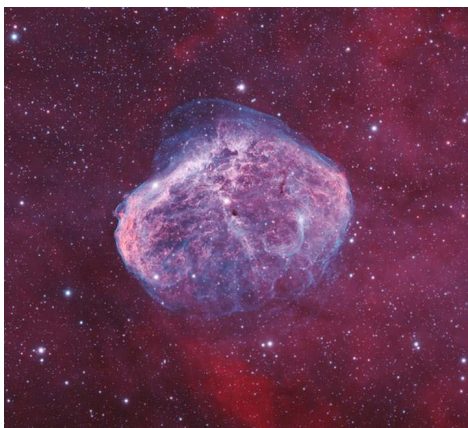
February 5

2 mini-talks

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

By Richard Whitehead

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



NGC 6888 (Crescent Neb. in Cygnus)

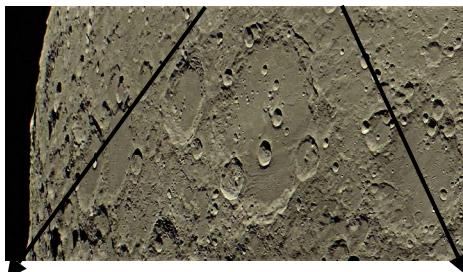
With Vermont's limited opportunities for clear skies and being able to image when the moon is out makes modified HOO imaging an attractive option.

Richard will show some examples using Pixinsight processing but also talk about the principles so you can use any software.

AND

High Resolution Imaging of the Moon with a DSLR Camera

By Paul Walker



High resolution image of the large crater Clavius (near southern limb of the Moon). The smallest craters visible are about 1 arc sec across (1.85 Km or 1.15 mi). Taken with a Canon Rebel T7i DSLR and 2X Barlow on a 10" f/5.6 telescope. Stacked the best 1300 out 9200 frames of a 5 minute long video.

A short presentation on the method I currently use to produce high resolution images of lunar features using a Digital Single Lens Reflex Camera (DSLR) on a telescope. This method can also be used with mirrorless cameras and, if configured with a 1.25" or 2" nose piece, astro-cameras. Depending on time, Paul may cover using point & shoot cameras.

March 4

What Members Like About Their Telescopes

This is a suggestion Keith Lawrence sent in back in 2015.

VAS Members will talk about what they like about the telescope(s) they have. Be it the size, versatility, the observing they can do, features it came with and/or features they have added.

Articles

Mobile Warm Room By George Viscome

[From an email to Paul Walker. George times asteroid occultations and submits his data to IOTA (International Occultation Timing Association). He uses a fixed telescope and a portable telescope. An alternative for those astro-imagers who want to stay warmer but for whom an observatory is not an option.]

Just thought you might find this --- "amusing".

I built the observatory which houses my 14 1/2 inch about 38 years ago. For many years I used a computer outside in cold and damp conditions. A serious "Why didn't I do that earlier" revelation happened about 8(?) years ago when I decided to build a small warm room inside the observatory - a building within a building. What an amazing difference it made!

Having an observatory makes life so much nicer, but one aspect I can't get away from, is that it's fixed in one place - and with scattered tall trees all around me, at times an object I need to observe falls right behind a tree. So I'm finally attempting a solution....



As I love this warm room I built so much, and I find it perfectly functional, I decided to build a mobile copy of it.

It's the same dimensions as the one in the observatory - 29"x39"x75". Most all of it was built with scrap materials I already had. Total cost was maybe \$75. It was built in my cellar and easily fits out my standard sized cellar door. It's easily moved using a hand truck, so I can place it anywhere in my yard [along with his portable scope] in order to see a region of sky I can't see from the obser-



vatory. And it's light enough (built out of Lauan plywood and 2x4's ripped to 2"x2" on a table saw) that I can quite easily bring it up and down the eight steps and put it on the elevated deck attached to my house. Roofing material is a piece of ice and water shield.



To use it I go outside about 45 minutes before I want to observe and run an extension cord to, and into the building - I have 50' and 100' cords. After that the routine is the same as the one in the observatory..... Place a small, portable electric heater (either 250, 500, or 750 watts) inside the "shack". At the same time I might set-up the telescope outside. In



less than 30 minutes, the temperature inside has risen from maybe 25° to 55°. I can then set up the computer inside (keeping it warm and dry), attach the camera to the telescope, and I'm all set to go.

Both warm rooms have a little Plexiglas window which allows me to be outside at the telescope but at the same time to look inside and see the telescope's field of view captured on the computer screen (as well as to see the temperature inside without opening the door). After the telescope is set on the target, it's a joy to go inside the warm room, close the door, and observe in 60-65° temperature. Any adjustments to the telescope are easily done - as it's just outside the door. Both warm rooms have 1" rigid foam insulation on about 50% of the interior wall surfaces. For the portable warm room, the floor has 2 inches of rigid foam insulation. It gets stored outside on my deck, under my roof overhang.



I'm expecting that I should be able to capture asteroid occultations that I might otherwise dismiss. Yes it does look a little bit like a fishing shanty or ----- an outhouse. So if I'm capturing occultations with it, I might call it a "wink-out house" ??? ??.

Suffice it to say, it's my revenge against winter.

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

Orion

No series of sky stories would be complete without a tale of Orion—a prominent constellation in our Vermont winter sky. Orion's position on the celestial equator makes it visible all over the planet and the constellation was recognized by many ancient cultures. The Babylonians, Egyptians, Armenians, and Chinese all saw Orion as a human figure. Medieval Muslim astronomy and European folklore also saw a human in the pattern of stars. Polynesians see a child's string cat's cradle while pre-colonial Filipinos referred to the belt region as "balatik," a trap for catching pigs. The Greeks and Romans saw the hunter Orion in the sky, with the three star asterism representing his belt. Here is one of several tales about Orion, the hunter:

Orion was a mighty hunter who, while quite talented at locating and dispatching his mark, was also quite the braggart. He went on and on about how amazing he was, angering the gods. Some say it was Artemis, some say Hera, but in either case a challenge was put forth to Orion to prove his awesomeness. A fierce and deadly beast was placed in the woods and it was up to Orion to find and kill the animal. Orion ventured into the woods and searched both day and night for the horrible beast. It must be something so huge and so fierce to be of any challenge to him! After many, many hours of searching Orion decided to take a break and walk

home to rest a bit. On his way out of the forest, Orion saw a small, crawling creature on the ground. Frustrated and angry, he lifted his foot to step on the arachnid, planning to squash it to death to ease his frustration a bit. As Orion lowered his foot, the animal, a scorpion, stung Orion. The venom from the scorpion coursed through Orion's body and killed him. The scorpion was the deadly creature that was Orion's challenge to find! Orion assumed nothing of the small creature while thoughts of his own greatness had blinded him. Artemis (or Hera) had proven that Orion was not as great as he said he was—he was taken down by a 3-inch bug! Zeus decided to put Orion up in the sky to honor the great achievements Orion had made during his lifetime and to shine on all the people below as a reminder that bragging and being overly confident are never good things.

Artemis (or Hera) felt that the scorpion deserved equal praise for its role in the story and so Scorpio was also put up in the sky—albeit in the opposite season of Orion, as the two are never to meet again.

Board & Committee Meetings

October Board Meeting

Jack opened the meeting. He shared pictures he took of the solar panel farm that was installed on the landfill cap next to the Hinesburg Observing Site.

Terri reported that there are currently 96 paid up members and updated us on our bank balance.

Keith has an inventory of 4 Library Loaner Scopes. 3 have homes. Paul has printed up Operation Manuals and stickers for Keith for the scopes. Keith will laminate them.

Paul has scheduled a work party this weekend (10/28) for removing the brush that has grown up around the perimeter of the observing area at the Hinesburg Observing Site.

Jim says things are heating up regarding entities gearing up for the 2024 Total Solar Eclipse. Jack has a list of 10 requests for presentations about the eclipse.

Scott received a request from Abby for in-person help at the Deborah Rawson Memorial Library in Jericho on eclipse day.

November Board Meeting

None.

December Board Meeting

Jack opened the meeting. We discussed Jack's stepping down after his term ends in May.

Any Full member can have their name placed on the ballot for any position, whether or not that position is already filled.

- President replacement may be expected from the Board but not required.

- Jack will not make any recommendations.

- If no nominations, VP takes on the responsibilities until the position is filled.

Jack will no longer:

- bring the club's projector or his personal laptop, speakers and cables, etc to the Library meetings. (board will consider purchase of our own laptop, speakers, cables, etc.)
- pay the Zoom fee, needed for sessions lasting more than 45 minutes. (board will consider paying for our own Zoom account)
- regularly pick up donations of equipment to the VAS or maintain the resource list; but may do an occasional pick up if asked.
- receive or reply to emails sent to info@vtastro.org
- store the VAS signs, they will be placed in the HOS Shed unless another member is willing to store them.
- need to have his photo on the website.
- need to have his name on the Key Bank account.

When possible, Jack will continue to:

- attend monthly meetings
- support VAS-member events
- support Outreach activities
- help with HOS work parties

Jack will send out 1 more list of the 'VAS Library' items, and the list of Recycled Optics items, to both email lists.

Jack will continue to operate in his "usual way" until the end of his term in May 2024.

Jack has been the prime contact with the Town of Hinesburg so someone else will have to pick this up.

There was discussion about the idea of rotating the position of President and the pros and cons.

There was discussion of trying to enlist the help of other members (non-board) for specific tasks as they come up.

Jim offered that he could MC the monthly meetings. He lives only a few minutes from the library.

Regarding eclipse day activities, it was suggested we look into renting some out houses to support events that club members are organizing (out houses and solar viewers will be key to these events).

ACTION ITEMS:

Paul will send an email to the membership to remind members that we are looking for a new President and will provide information from the by-laws about the duties of the President.

Paul will contact Brad Vietji to see if he is interested in the position of President, Brad has recently rejoined the club as a Full member and has previously been the President of VAS.

VAS Membership Committee
No meetings this quarter.

Observatory Site Committee
No meetings this quarter.

We had 2 work parties this Fall to clear the brush that grows around the Hinesburg Observing Site.

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

▶ (repeat) Try using "averted vision" on deep sky objects, that is, look a little off to the side. The center of your vision is good for seeing small details but is less sensitive to dim light than the areas away from the center. Because of this, objects look dimmer when you look directly at them. Dim objects can even disappear. This works for both stars and extended objects. Even away from the center, the sensitivity varies from place to place so you may have to "look around" to find the most sensitive area.

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)
Electric Heating pad for your scope.

If you are one of those observers who braves the winter temperatures and use a goto mount, this tip is for you, or rather your mount. Because lubricants become stiff at cold temperatures some mounts will "freeze up", especially when slewing to objects or trying to star align the mount. Most annoying!

Once I used a hair dryer to warm my mount when that happened, but it took several minutes. A couple of times I literally took a blow torch to warm it up. It was faster but required a lot of care to avoid damaging wires, other plastic parts and avoid burning the paint. Another technique I have used is covering the equatorial head with a vest to slow down the rate of cooling. But on really cold nights that is not enough.

I then had an aha moment. I could use an electric heating pad to keep it warm (my wife uses one to keep her feet warm while using her computer). With the heating pad set to high and the air temperature at 13 degrees F, the mount was a relatively warm 40 degrees. I could have used a lower setting with no problem. This pad uses 55 watts at max heat so you can use the pad with a small inverter running off car battery or large lithium-ion battery for at least a few hours.

Note, you should try running it with the inverter you plan to use as most inverters produce a very "dirty" line voltage and if the heater has electronics for control, it may not work. FYI- the inverter at the Hinesburg Observing Site is a "true RMS" (has a clean sinusoidal line voltage) and 600 watt output so any pad will work on it. Any modern heater pad will likely have a safety feature that shuts it off after 10-15 minutes, so keep an eye on the power light and turn it back on.

In most cases you may be able to just drape the pad over the housing of the equatorial head without it falling off as the scope moves. You don't want to tie it down in a way that will interfere with the movements of the mount.

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 vtastronomy@list)

Partial Solar Eclipse
2023-10-14



Brian Johnson used this setup to view the partial eclipse. His "solar funnel" is fancier than most. Rather than a plastic funnel, he made one out of sheet

aluminum. This image was taken before the eclipse started. He sent it with the comment: "Was checking for gaps in the clouds." Looks like he found one.

Public Event at
Carpenter-Carse Library
By Gerry Davis

The Carpenter-Carse Public Library in Hinesburg hosted an eclipse event for kids and adults, with picture books, games, snacks, chalk drawing the solar system on the parking lot tarmac, and solar protective glasses for all to view the eclipse. The Vermont Astronomical Society supported the event with 3 of us setting up telescopes, and Paul Walker showing a brief video of the total eclipse in 2017 as well as a description of the current event.

I set up my Lunt 40mm hydrogen-alpha telescope on a portable Sky-Watcher Star Adventurer mount. I used my ZWO ASI178 color camera to project the image onto a laptop screen, best seen under a dark cloth. Paul and Nick set up refractor, Dobsonian, and Newtonian reflector scopes with solar filters. We were ready to go.

visitors oohed and aahed as the Moon carved a dark notch in the bright Sun ... perfect viewing! The clouds returned by about 1:15, and everyone went inside for snacks, Paul's slide show, and some games. The clouds parted again for 15 minutes about 2:20 just as the eclipse was ending, so we got another brief look at the action before we packed up for home.

This was an excellent event, nicely planned and executed by Jenn and the Hinesburg Library team. It was great fun to participate and to watch the kids get excited about astronomy.



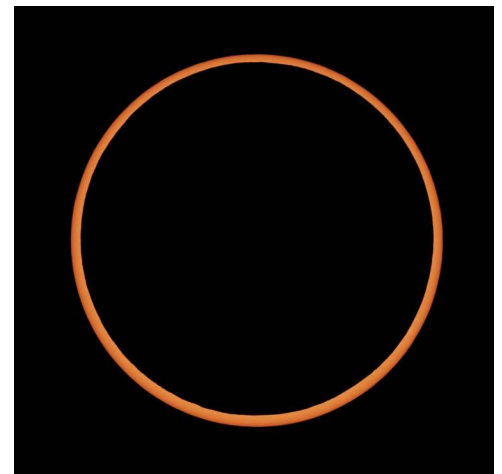
The kids drawing the eclipsed Sun, planets, flowers and other things
by Gerry Davis



Partial Eclipse in H-Alpha
by Gerry Davis

The sky was completely clouded over when the library activity started at 12:30 with stories outside near the telescopes. No eclipse would be seen if the clouds stayed that way! Dense cloud cover continued until about 12:50 when we could see a large patch of blue sky coming our way! The sky cleared nicely about 1:00 PM, we focused the telescopes, and everyone put on their solar protective glasses. Kids, parents, and

While the eclipse was partial for us (however, probably not partial *of* us) it was annular across part of the country. Terri Zittritsch traveled to Texas to witness and image it as an annular eclipse. This is one of her images. See some of her other images on page 16 in the Imager's Corner



We get an annular eclipse when the Moon is too far away to completely cover the Sun.



Jack and other members at the ECHO, Leahy Center for Lake Champlain on the Burlington Waterfront. Image by Jack St. Louis

**The Partial Solar Eclipse from the
 Trapp Family Lodge**
 By Gary T. Nowak

I wanted to observe the Partial Solar Eclipse on Saturday 14 October, 2023 from a site which could be used for observing the Total Solar Eclipse on Monday 8 April, 2024. The historic Trapp Family Lodge in Stowe, Vermont is well within the Path of Totality of the Total Solar Eclipse and a site for public viewing for the Total Solar Eclipse. The Trapp Family Lodge Staff were eager to have their site checked out by someone with tactical and technical astronomical knowledge.

This Partial Solar Eclipse would be used as a “dress rehearsal of sorts” for the upcoming Total Solar Eclipse. The outdoor area was open to the public for partial solar eclipse observing for a day pass fee (which included other amenities).

Before the Partial Solar Eclipse, I was requested to put together a feasibility statement for the site, astronomical biography of myself, an itinerary of my time there and an outline of my presentation which was to be given before the Partial Solar Eclipse. I also prepared a large poster board with information about safe solar observing techniques and the dangers of improper and unsafe solar observing. The poster board was mounted on an easel and Trapps supplied me with a presentation pad and easel for my use. Originally, I was planning to bring 2 telescopes. Due to the dismal weather forecast, I decided only to bring one scope. The scope selected was a VAS Surplus telescope, a rebuilt

60 mm (2.4”) F/15 Refractor on which I used a Solar Funnel Projector. I mounted this on a VAS Surplus, Edmunds Scientific German Equatorial Mount (GEM) with a 120 VAC clock drive. The GEM was mounted on a homemade wooden tripod with power supplied by an inverter and battery pack.

When I arrived at the Trapp Family Lodge, I was instructed to set up next to the open stage in the concert field. The sky was clouded over but the clouds were a light gray. After I set up the telescope, I aligned the polar axis using the Magnetic Declination Method. I encountered a difficulty with this method because I was having a hard time seeing the fine degrees lines and reading the very small numbers on the azimuth circle. Plus, I noticed that some of the markings on the azimuth circle were not centered properly. Then I set up the 2 easels on the outdoor stage. A few people came to listen to my presentation. Meanwhile the clouds grew thicker and darker. The director of the restaurant at Trapps told me about the clouds and the mountain tops. When the clouds descend onto the top of Bolton Mountain and Nebraska Mountain, storms will hit. If the clouds lift off the tops of those mountains, then clearing will come. About 5 minutes before my presentation, the sky darkened and a gust of wind came out of the Nebraska Valley, blowing over both easel stands. Then a short burst of light rain showers followed the wind gusts. This was enough to send the folks fleeing from the area and head to the Outdoor Center or their cars. Well, that burst of weather ended any thoughts of doing an outdoor presentation. I then checked the large clear plastic bag over the scope and picked up my easel and poster board and placed them into my car. My car sensor was reading +45°F outside. Fortunately, I had brought extra warm clothes, so I was prepared. I returned to my telescope in the concert field. I was the only one in that field. So, I waited by my scope for 15 minutes before 1st Contact (12:14 PM). I could see the clouds descending on the mountain tops again so I braced myself next to my scope for another blast. Sure enough, a short burst of cold wind and few scattered cold rain drops hit again. I estimated the wind gust to be

about 15 mph and the rain drops felt a little bit like snowflakes. I estimated that the blast only lasted about a minute or so. I then looked over towards the West toward Bolton and Nebraska Mountains. The clouds covered the top of the mountains and were about 1/3 way down them. Nebraska Notch was partly obscured by clouds.

At this point, I was giving some serious consideration to packing up and leaving but I decided to stay for a while longer. At 12:14 PM, I noticed the clouds lifting off both mountains and Nebraska Notch. In about 2 minutes or so, the clouds parted in the sky. I removed the plastic bag cover and pointed the scope at the Sun. I could see the projected Sun in the Sun Funnel with a small dark notch in the Sun’s western edge. I was using a 20 mm Plossl Eyepiece, which with the 9” (225 mm) projection distance of the Sun Funnel, provides 45X magnification. The projected sun image was 3.25” (81 mm) in diameter. I could clearly see 2 sunspots and a slight roughness on the Moon’s edge that is caused by craters and mountains seen in profile. Due to the short gaps in the clouds, I decided to switch the eyepiece to a 25 mm Plossl that produces 36X with the same throw distance. This creates a smaller, 2.5” (62 mm), projected solar image. I could still clearly see the 2 sunspots. The cloud openings would last about 2 -3 minutes. I also used my 1000 Oaks Optical Solar Viewer and my Baader Solar Viewer Eclipse Sunglasses. Both gave excellent sharp views of the partially eclipse Sun. Then the cloud gap passed and the clouds came back. These clouds were lighter gray and there were no more clouds hugging the mountain tops.

My Edmund clock drive, which was made in July 1975, was tracking fairly well. The scope was a bit off in South Declination. The tracking was good enough. Though the Sun kept disappearing behind the clouds, when it reappeared it’s image would still be on the screen. The lower magnification wide field eyepiece also helped to keep the Sun image on the projection screen.

I had 5 similar small cloud gaps before maximum eclipse. About 3 minutes before maximum coverage (1:20 PM), a huge gap developed in the clouds and

Geminid Meteor Shower (December 13-14)

the Sun was free from any clouds for a while. So I was able to see the maximum coverage of the Sun at 01:20 PM (Magnitude 0.285, a measure of how much of the Sun was covered). I changed back to the 20 mm Plossl eyepiece, which again, provides 45X and produces a 3.25" (81 mm) solar image. The Seeing was good, since when I looked at the two sunspots I could distinguish both their umbra and penumbra. A few people came over and viewed the projected image of the partially eclipsed Sun. This was the first time they had seen sunspots. Due to the possibility of thin clouds coming into the cloud gap. I had removed my 1.75" (44 mm) aperture stop and was using the Refractor at its full aperture of 2.4" (60 mm). At 01:28 PM, I noticed that the cloud gap was moving away and the clouds were moving in fast. The clouds were soon starting to go over the Sun's disk. My last view of the Sun was at 01:30 PM. Then the clouds completely covered the Sun. I stayed next to the telescope in hopes of another cloud gap. There were no more gaps and the clouds grew much darker and thicker. At 01:45 PM, I noticed dark clouds descending quickly onto the mountain tops. So, I quickly disassembled the telescope and carried it to my car.

I had just gotten all 5 telescope parts into my car and myself into the driver's seat when a gust of wind came through with a few splatters of rain drops on the windshield. After the very brief wind driven shower, which came on and off a few times, the rain and wind passed by. I noticed the digital clock in the car was reading 02:00 PM I decided it was not worth setting up the telescope again. But I did get out of my car and walked around checking out the possible eclipse observing areas. I had my Baader and 1000 Oaks Solar Viewers in my pocket in case the Sun broke through the clouds. There were no other breaks so I decided to head home.

The number of people who observed the projected Sun image with me that day was 24. Had the weather been much better, I am sure that number would have been much greater. The Trapp Family Lodge is a viable site from which to observe the Total Solar Eclipse. The biggest drawback is the mountain weather patterns.

On 12/14/2023 3:34 PM, Russell J. Lavigne wrote:

It was so overcast when I went to bed at 10:00. All I could see through the haze was a dim view of Jupiter, from our front lawn, just south of St. Abans.

Then I got up a little after 2:00 AM. There were broken clouds blowing around through fairly large, clear patches of sky.

Astropherics.com said: 21°, 12% cloud cover, less than average seeing and transparency.....so I dressed warmly, grabbed a stool and went out to our back deck on the north side of the house, where I have a pretty good vista north to northeast and west to south-southwest.

I counted some 40 meteors between ~2-3 am. 8 out of 10 seemed to come more from the Auriga portion of the sky than from Gemini. Most were modest in size and short in duration. I would say a half-dozen got a slight "Oh, wow. That was a good one" from me in my solitude.

At a little after 3:00 AM I was getting cold, came inside and went back to bed. All in all it was worth the little effort it took. It sure was lovely to see some clear sky for a change!

Jack St. Louis and I attended a Geminid/Stargazing event down here north of town [Middlebury] sponsored by the Middlebury Area Land Trust (MALT). Some of the people saw a few Geminids. I saw 2.

When I got back home, I prepped for trying to get some images in the morning. I thought I had set the alarm on my "dumb" phone to wake me up at 2:30, but I guess I'm dumber than it is as it never went off. But I did wake up at 1:00 AM and see mostly clouds out the window. I woke up again at 3:30. I could see some clouds in the East looking out the kitchen window but since it was time to go out or not go out, after feeding the fire, I poked my head out the back door and wouldn't you know, it was mostly clear.

I set up my Canon T7i with an 18mm f/3.5 lens with an intervalometer on an iOptron Sky Tracker. I then went back inside to get a hot cup of coffee before settling in a comfy camp chair in the backyard to watch for meteors.

I shot about 230 images. I think I caught a few but I'm not sure as some satellites masquerade as meteors. Based on the direction of the shower's radiant I got 3 Geminids. Though I got more satellites than I did meteors. I saw fair number of satellites "flare" in brightness during my visual watch. These are the type that masquerade as meteors in images. In one image I do have what I took to be a faint meteor but is actually 1 of 2 faint flares of a "tumbler", a defunct satellite or a discarded booster rocket. In my initial inspection I missed the fainter of the 2 flares. None of the "meteors" show any color. Often with digital imaging actual meteors will start out a bit bluish and/or end a little reddish. At best I got 3 "probable" meteors. And a bunch of definite satellites.

I fared much better visually, with a total of 53 Geminid (a few of which were moderately bright) and 13 sporadic (non-shower) meteors. In 2 time windows totaling about 1 1/2 hours, between 4:15 to 6:15 AM EST.

-Paul

(in case you missed this notice on page 2)

Total Solar Eclipse

April 8, 2024

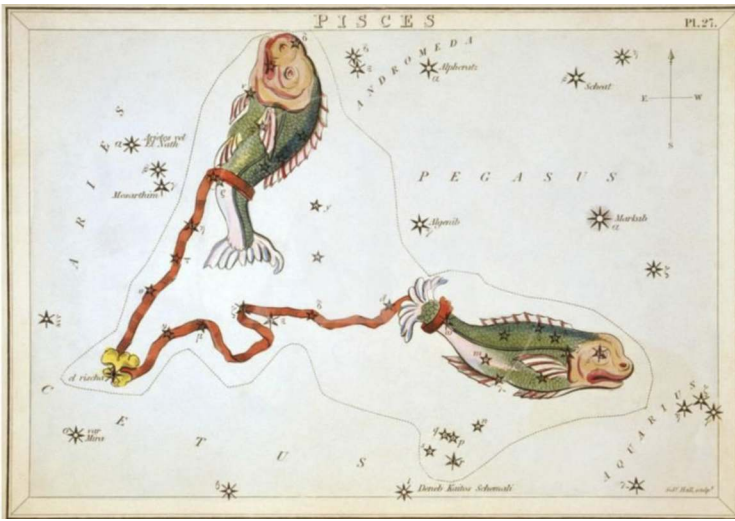
Rain date, May 1, 2079 (the next total solar eclipse visible from Vermont)(suggested by Jim Williams as a joke :)

Contact: info@vtastro.org

OBJECTS TO OBSERVE

Pisces

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



Pronounced: PIE – sees

- Genitive: Piscium
- Pisces means “the fish” (plural) in Latin
- 14th largest constellation at 889 sq degrees
- Bordered by Triangulum, Aries, Pegasus, Andromeda, Cetus and Aquarius
- Pisces is thought to have a Babylonian origin where the Babylonians saw two fish joined by a cord

The Greek myth:

- Typhon being the son of Gaia (earth) and Tartarus (underworld where some Titans were locked up)
- Typhon being one of the worst monsters to emerge after the Greek gods killed the giants and defeated the Titans
- Typhon had 100 serpent heads that spit poison
- Gaia sent Typhon to defeat the Gods
- Pan (man-goat) alerted the gods of Typhons approach
- Aphrodite and Eros (mother and son) were carried to safety by the fishes, or themselves turned into fishes to escape Typhon

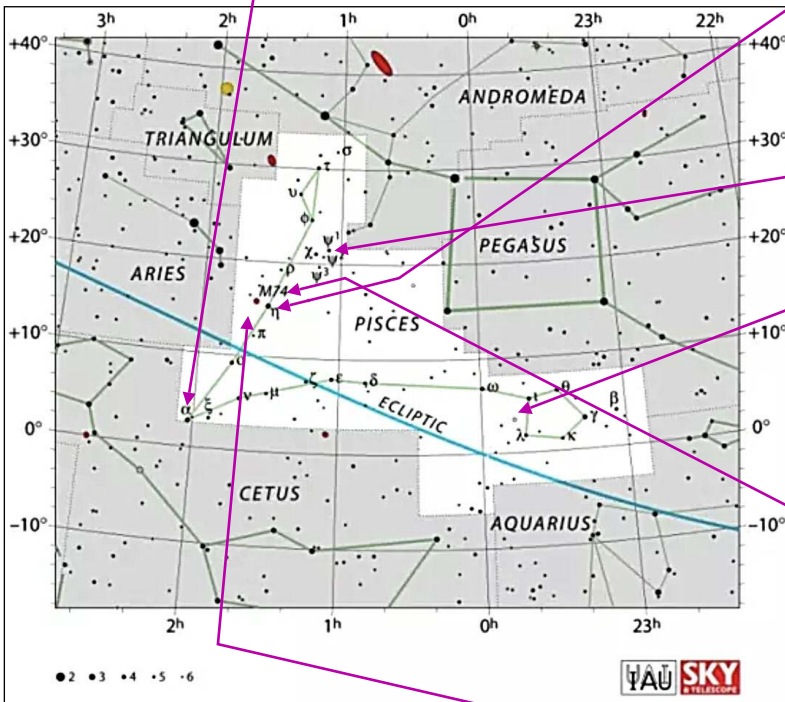
Observing in Pisces

Bright stars and double stars:

- Alpha Piscium (Alrischa) – third brightest star in Pisces means ‘the cord’ in Arabic. A double of two bluish hydrogen burning main sequence stars of mag 5.2 and 4.3, separated by 1.8”.
- Eta Piscium (Kallat Nunu) – brightest star in Pisces refers to ‘the cord’ in Arabic. A mag. 3.69 bright G7 III giant with a surface temp of 4390K and 294 ly from our Sun. Eta Piscium has a measured diameter of 26 times our Sun with a luminosity of 316 suns.
- Psi 1 Piscium – an easy optical double star for most scopes and many binoculars. A pair of mag. 5 stars 30” apart. The stars are also close in color, A1V and A0V spectral types and at distances of 220 and 240ly.
- 19 Piscium – Mag. 5 variable star of spectral type C7 2. It is one of the reddest stars in the sky so also a carbon star. Its energy output is 637 times that of our sun. A type LB variable (4.9 to 5.2 mag.).

Deep Sky objects:

- M74 (NGC 628) - A face on ‘grand design’ Sc spiral galaxy of mag. 9 and 9.2' x 10.5' in size. Distinction of having the lowest surface brightness of any Messier object, so also known as the Phantom galaxy. Discovered by Pierre Manchain in September of 1780 and verified by Messier. Similar in structure to M33 but 15x further (35Mly). Its spiral arms reach out 95k ly from its core. It has 192 H2 regions in its arms.
- NGC 660 – A mag 11 Sa barred spiral, but also known as a polar ring galaxy, one of only 12 known. It has angular size of 4.6'x1.7'. Assumed to have been formed by the collision of galaxies. Called a Polar Ring galaxy because of gas/dust/stars orbiting in a ring perpendicular to its orbital disk



ASTRO-IMAGER'S CORNER

All things astrophotography, for the beginner to the expert.

Imaging Tips

► (repeat) **Electric Heating pad for your scope.** (see **Observer's Corner**, pg7)

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 and time-lapse into a video. Very useful when your telescope doesn't have tracking, such as a Dobsonian. (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

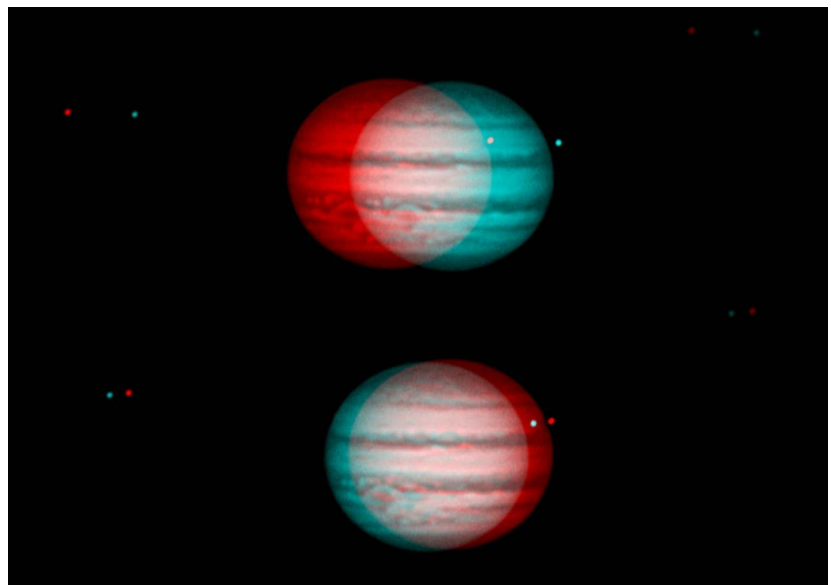
Jupiter, Europa & Io (far right)
2023-10-01, 12:02 AM EDT
10in f/5.6 Newt., 2X Barlow (2.8 X prime focus), Canon T7i, HD video, 3x digital zoom, 10% of 9154 frames, cropped 50%
Paul Walker

Jupiter, Io, Io's Shadow & Callisto

2023-10-29, 12:02 AM EDT
10in f/5.6 Newt., 2X Barlow (2.8 X prime focus), Canon T7i, HD video, 3x digital zoom, 6% of 3615 frames, cropped 50%
Paul Walker



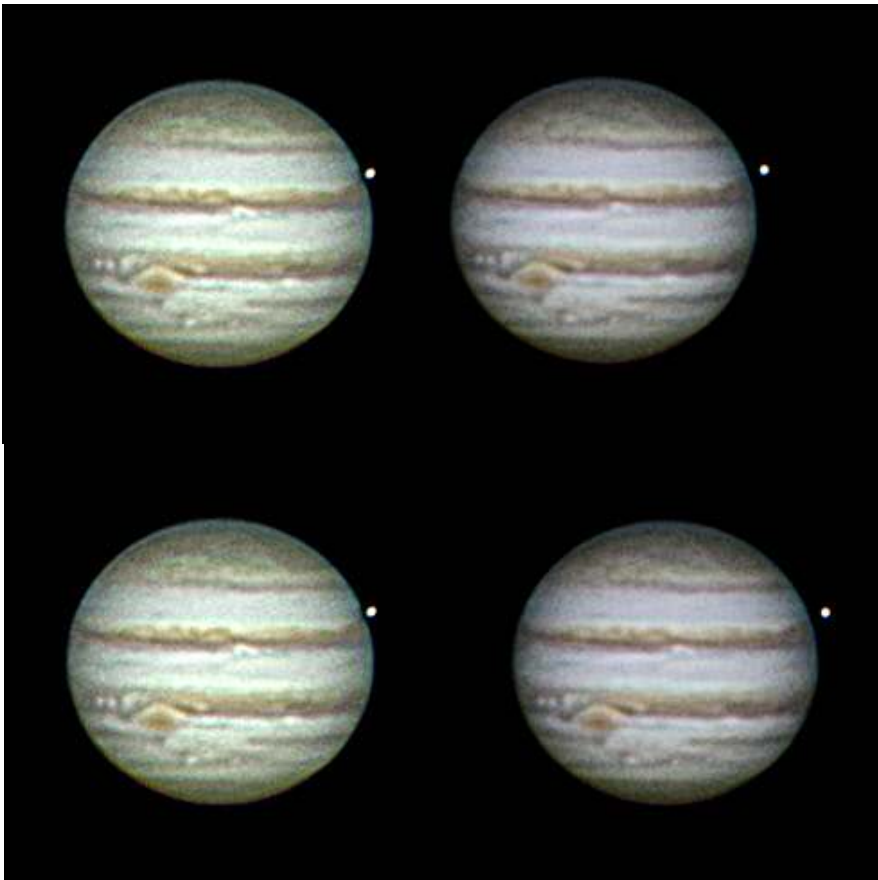
Jupiter & Great Red Spot, Europa (upper left) & Callisto (right)
2023-11-05, 10:00 PM EST
10in f/5.6 Newt., 2X Barlow (~2.5 X prime focus), Canon T7i, HD video, 3x digital zoom, 6% of 9121 frames, cropped 50%
Paul Walker



Jupiter in 3-D 2023-11-05 (requires red-blue 3-D glasses), 8:04 and 8:08 PM EST (right/left) (The moons are, L-R, Europa, Io and Callisto). I did not take these images with the idea of making a 3-D image but after processing them I realized they might work as a 3-D pair (pseudo 3-D). Note that in 3-D the images look different sizes. However, they are the same size. Measure them with a ruler! A result of how our brains process visual information for distance and size.
-Paul Walker

The images below are for those of you who can't find your 3-D glasses. These are for "free viewing", that is they don't require any type of glasses or other 3-D viewer.

To view them, change the zoom factor of the page so that the top images are about 2" apart, center to center (or left edge of Jupiter to left edge of Jupiter). The easiest way to view them is to place a piece of paper (cardboard works better) between the left-right pairs and place your nose on near end of the paper. This will make it so each eye can only see "its" image and you will see a single combined image. Without the paper, if you can get it to work properly, you will see 3 images, the left and right images with a 3-D image in the middle.



It is difficult and not everyone can do it. It requires each eye to look straight ahead at its respective image while focusing close up, hence the difficulty. When looking at something close up, your eyes automatically rotate toward each other (like when you purposely look cross-eyed). Can't let them do that. If you have difficulty, close your eyes, let them relax, slowly open them. You will see an out of focus image at first. Slowly refocus your eyes and hopefully you will see a 3-D Jupiter with Io appearing behind it. If not close your eyes and try again.

There are 2 sets because the spacing between peoples eyes are different. The top set is 2" apart, the bottom 2.25", if the page is printed on an 8.5 x 11 piece of paper. If you do manage it, you can try zooming the page a little and try it with the images bigger. However, it will be harder because your eye will have to rotate out, something they don't like to do.

If you get it to work, carefully note the size of the upper and lower 3-D images. Are they the same size? Not quite? The upper should look closer but smaller, the lower, farther and bigger. However, measure them, as with the red-blue 3-D images the disks are all the same size!

**Occultation of an 11.8 mag Star
by Uranus' Moon Titania,
2023-11-20**

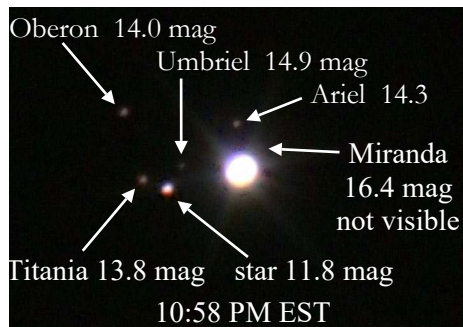
By Paul Waller

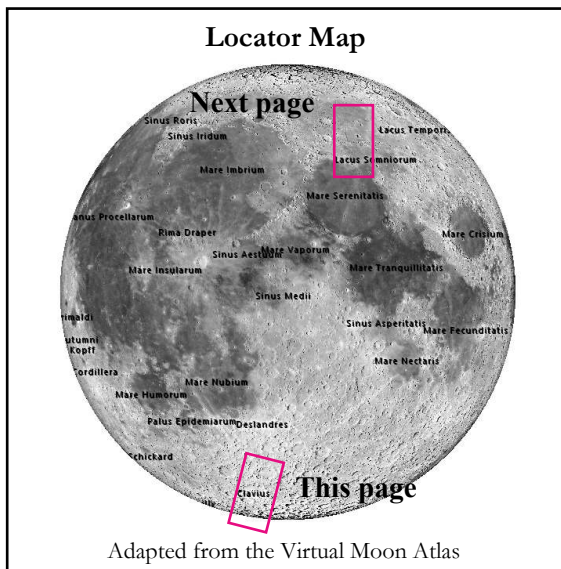
It's a rare event of a small moon in the outer solar system to pass in front of a relatively bright star. I learned about this from an avid timer of asteroid occultations, George Vicome of Lake Placid, NY. He gave a talk for us on this subject a while back.

I watched the event through my 12.5" Dob. With enough magnification (~300x), I could make out the 3 brightest moons. I missed the disappearance (but did see the reappearance) because I didn't realize the time given was for the middle of the event which lasted over 1 minute. So with my plan to start an imaging sequence ~45 sec before that time did not give me time to get back to the 12.5".

The camera got only 2 shots in before the occultation started.

10in f/5.6, 2.8 x prime, Canon T7i ~4.5 sec @ ISO 3200, stacks of 8-16 images, 12% crop.



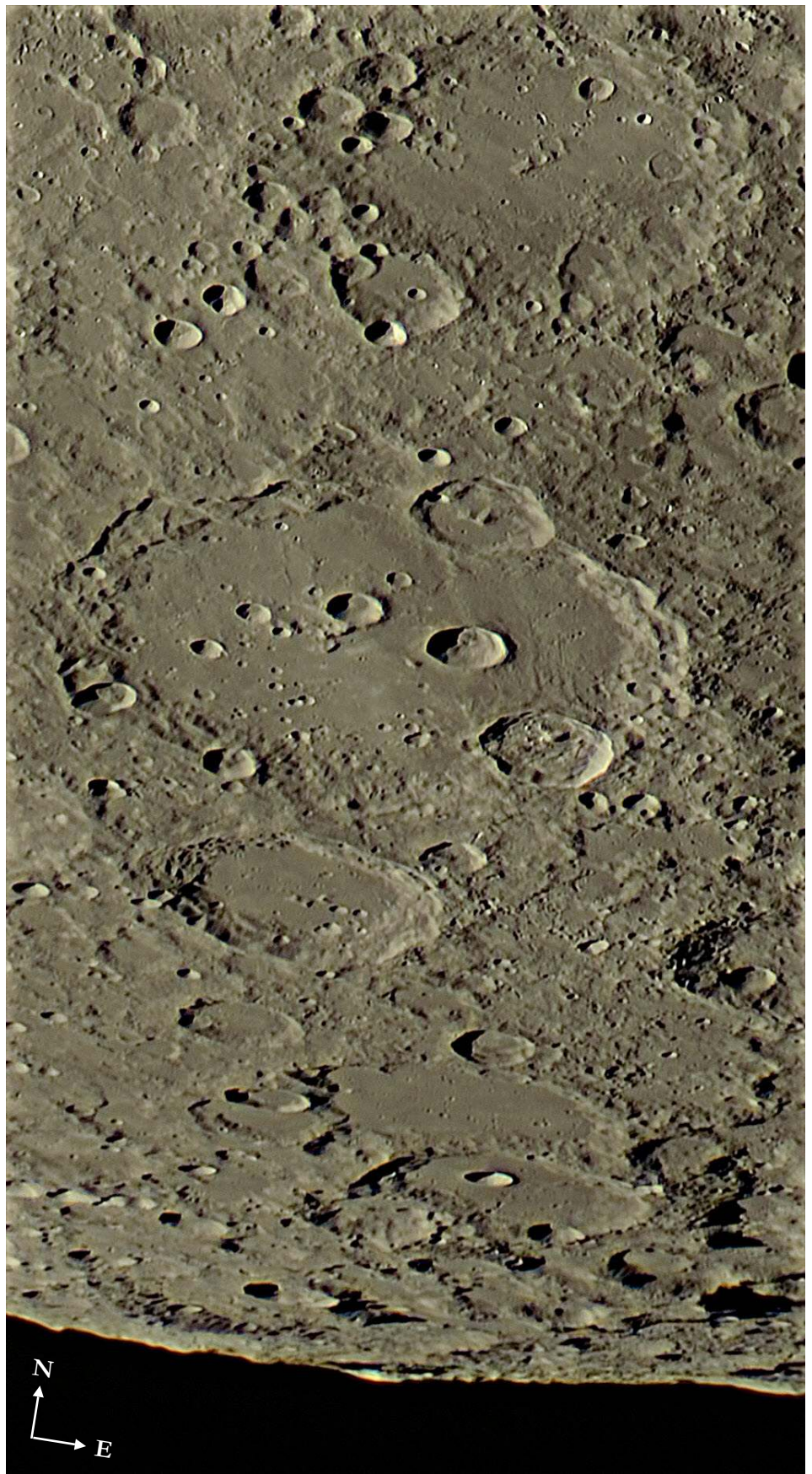


**Magnus, Clavius, Blancanus,
Klaproth, Casatus**
2023-09-05, 06:33 UT
By Paul Walker

10" f/5.6 Newt @ 5100mm efl (Meade 2",
2x Barlow + 2" to 2" ext.), org scale 0.15"/px,
Canon T7i, HD video @ 3x digital zoom,
1/200 sec @ ISO 800, Stack- 14% of 9203

This is one of my favorite features and no doubt for many other people. Something I learned recently from another local club member that makes Clavius even more special for a Vermonter is that on the north rim of Clavius, at the 1:00 position is the crater Porter. Named after Russell W. Porter of Springfield, VT. Arctic explorer, architect and telescope builder among other things. He was instrumental in the design of the 200 inch Palomar Telescope and in starting the Springfield Telescope Makers (Stellafane) and more broadly in promoting amateur astronomy in the US.

There is an interesting difference between the floor of Porter (53Km) and another similar sized crater on Clavius' rim, Rutherford (55Km) at the 4:00 position. Porter has a central peak, half the floor is flat, half a bit rough due to the wall slumping. With Rutherford there seems to be no central peak and the whole floor is jumbled. Using the Virtual Moon Atlas (VMA) it appears it may have a central peak but it appears to be offset from the center. In considering the reasons for the differences, where Porter is, the wall of Clavius appears lower than where Rutherford is located which could mean that the strike that formed Rutherford had a "softer" landing. From this image it is hard to tell the relative ages of the 2 craters. However, looking at them on the VMA at high resolution, Porter



clearly looks older. The information in the VMA says that Porter is more than ~3.85 billion years old while Rutherford is less than 1.1 billion

years old. I would say both the age difference and where the respective asteroids struck are the main contributors to the differences.

The large degraded crater at the top is Maginus (164Km, 100mi). It appears to be older than Clavius, though still has some of the central peak visible. Just below Clavius is Blancanus (106Km, 64mi). Skip down a little and you come to Klapproth (119Km, 72mi). Next is Casatus (111Km, 67mi) with Casatus C (17Km, 10mi) inside to the north and Casatus J (22Km, 13mi) on its south rim. Casatus looks like it could actually be 2 or maybe 3 conjoined craters as it looks like a distorted oval. The lower left (SW) rim looks funky like it was pushed in by a nearby impact except there is no clear sign of such an impact. The pronounced foreshortening makes it hard access.

The smallest craters visible in this image are 1.6-1.9Km (1-1.2mi) across. For reference, the effective visual magnification of this image (vertically) is ~765X (5100mm X 3x zoom / 50mm). Visually you will need about 300X to see the smallest features and very good conditions.

**Mare Frigoris, Lacus Mortis
and Lacus Somniorum
2023-10-04, 08:17 UT
By Paul Walker**

10" f/5.6 Newt @ 5100mm efl (Meade 2", 2x Barlow + 2" extension), (0.15"/px org. image), Canon T7I, HD video @ 3x digital zoom, 1/200 sec @ ISO 3200, Stack-4% of 9212 Paul Walker

Though this the last of the areas I imaged on morning of October 4th it is the most northerly image. It is not a mosaic.

Starting at the bottom of this image is a bit of the northeast corner of Mare Tranquillitatis. Depending on what's considered the northern extent of Dorsa Smirnov, the top end of it may be visible. Just above this is the western end of Lacus Somniorum with some wrinkle ridges and a prominent rille of the Rimae Daniell complex on the right. Other Daniell rilles can be seen on the left side of Lacus Somniorum. There are also what look like several lunar domes in the northern part of Somniorum among many non-volcanic hills.

Moving up is Lacus Mortis with Burg forming a big off center hole in it. If Mortis did not have the Lake designation it surely would be a great example of a fractured floor crater. I would not be surprised to find out that it is counted as one. The rilles in it are Rimae Burg.

A small piece of Mare Frigoris sits at the top of the image, the East End of which is



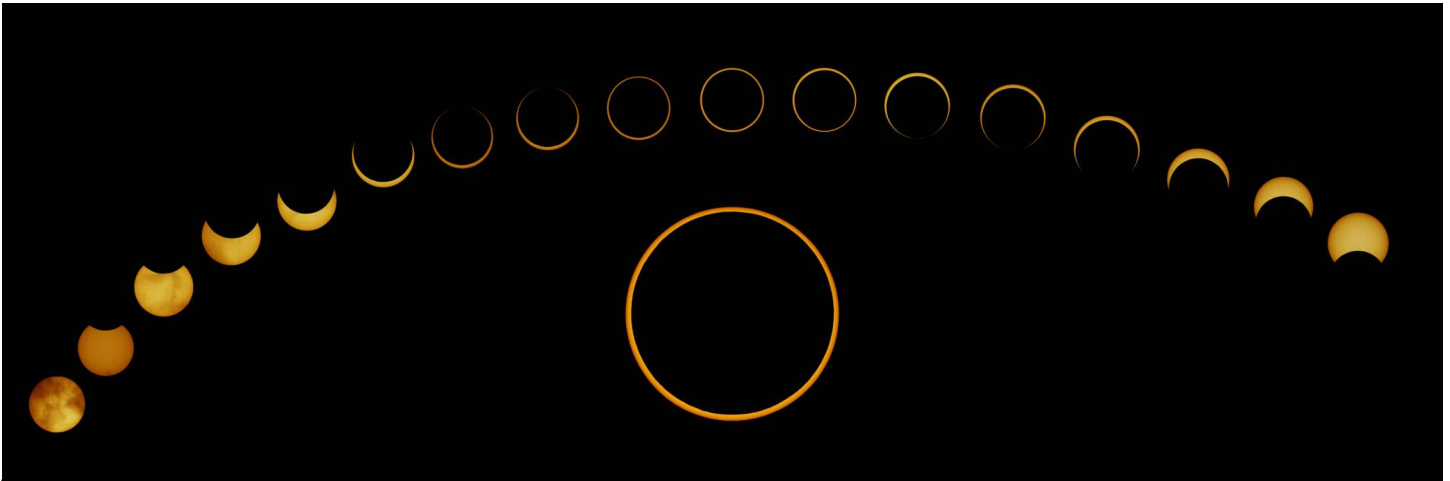
about 140 Km (87 mi) outside the right side of image. This part has a nice array of polygonal wrinkle

ridges. I don't see that any of them have official names.



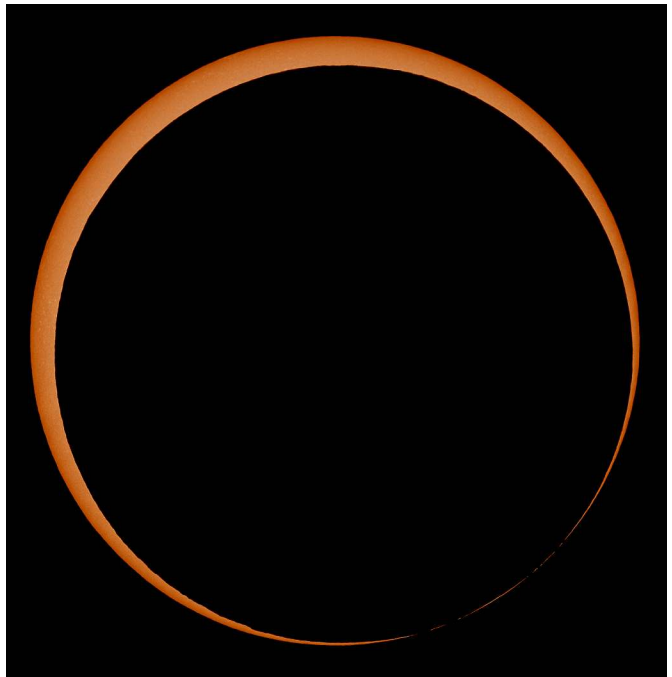
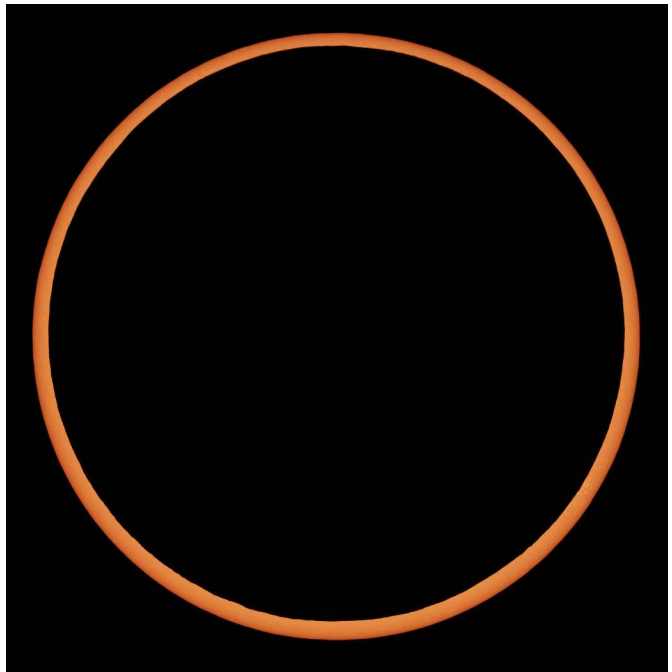
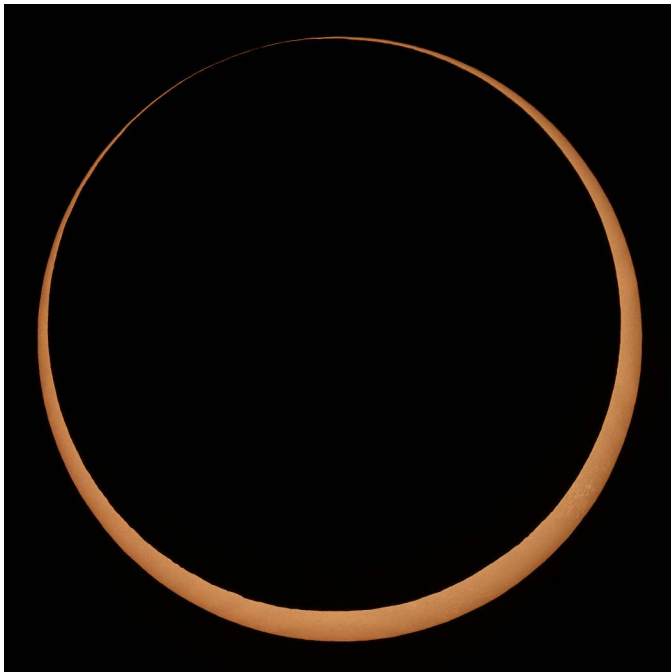
Geminids
By Greg Warrington

I had a mostly similar experience [as Russ Lavigne, see pg 10] with the Geminids; not many really bright ones, but reasonably frequent. I set up some cameras, but neither was tracked, one camera only had an f/4 lens, I didn't take dark frames, etc., so the quality could be better. Regardless, I finally had a chance to make two composites illustrating where the meteors were emanating from. The first image is looking west over Lake Champlain. The second [this image] is looking right up at Castor and Pollux (i.e., near the radiant). In the second image, the Beehive Cluster is left of center.



Eclipse 2023 collage from Eldorado by Terri Zittritsch

The full sized version on the VAS Forum at: <https://vtastro.org/community/images/eclipse-2023-collage-from-eldorado/>



Here are some of images from the Eldorado star party of the 2023 annular eclipse. Enjoy.

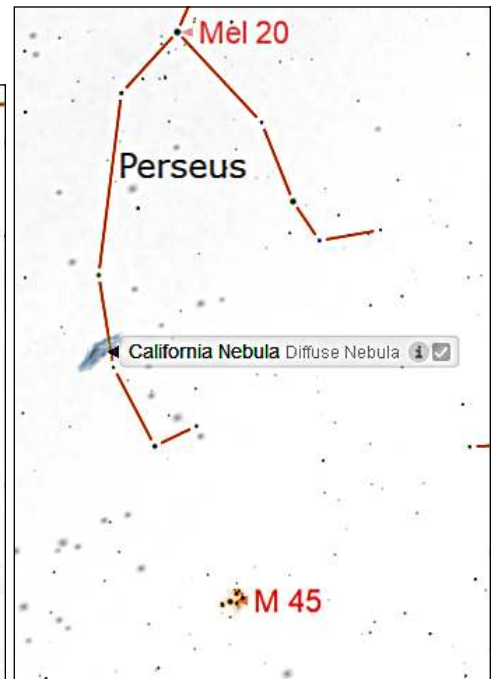
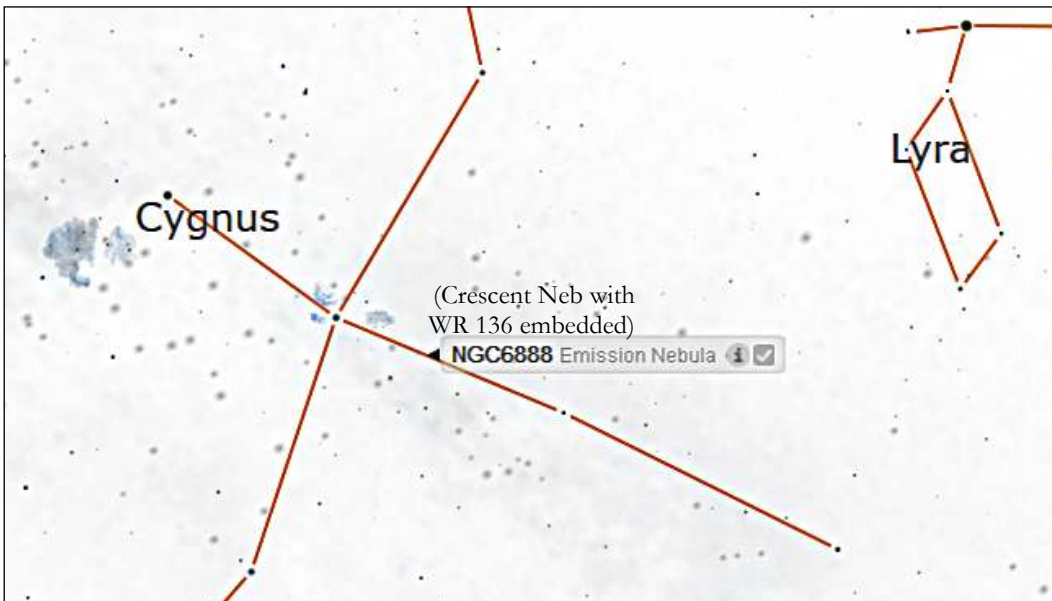
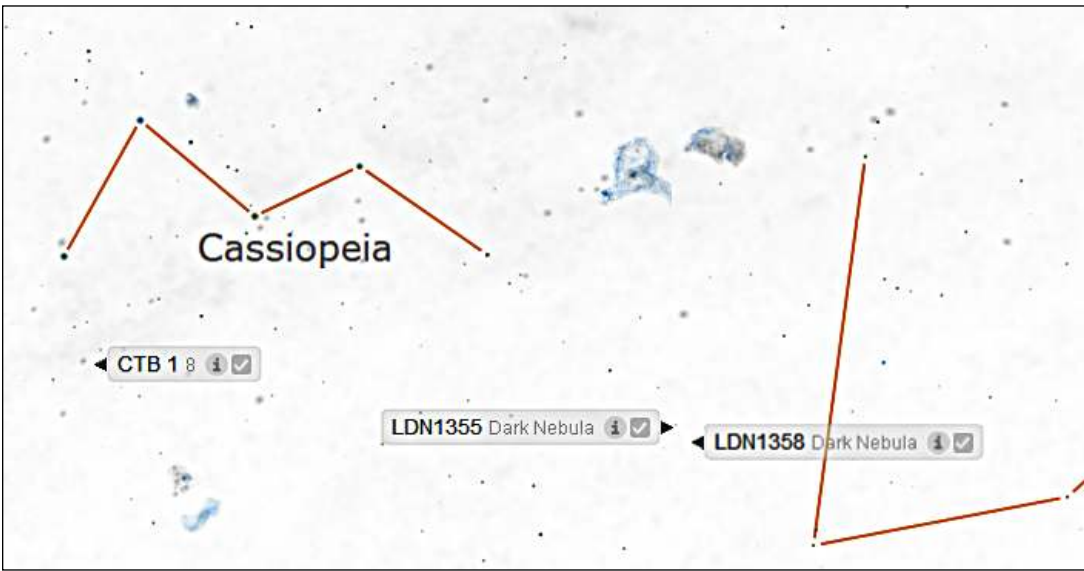
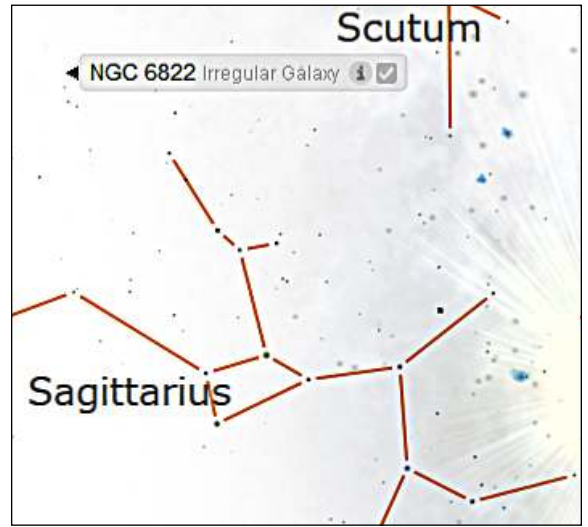
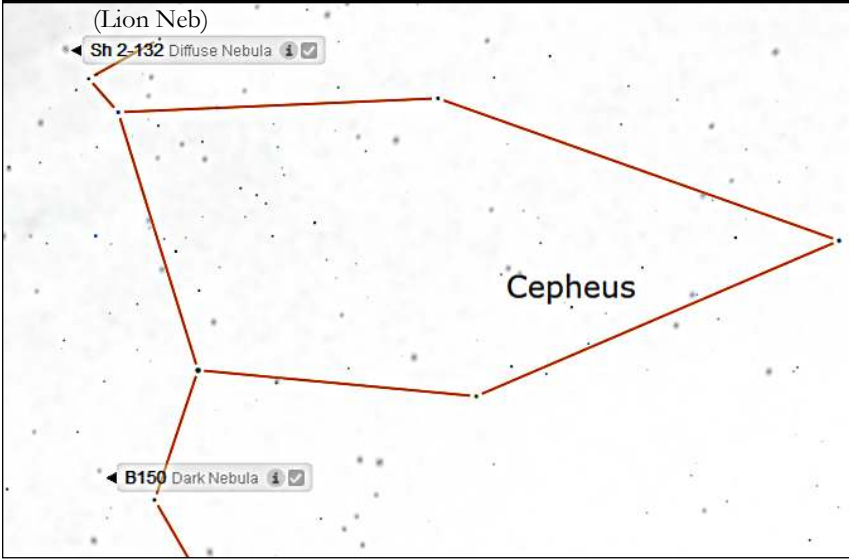
We almost didn't see it as after a week of clear sky predictions, we had clouds roll in right as the eclipse was starting, but by full annular, the clouds magically opened up for us to fully see it.

Shot with a TEC140 ED at 2000 mm of focal length with 2X Powermate and Canon Ra SLR.

-Terri Zittritsch

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

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





The Dark Seahorse ~ Barnard 150
By Maura Kelley

Here is one of my favorite "little" subjects!

The Seahorse Nebula, Barnard 150, is a dark (or absorption) nebula, which is a dense interstellar cloud containing interstellar dust grains that are located in the coldest, densest parts of larger molecular clouds that cause light extinction. By obscuring the light from objects behind it such as background stars and emission or reflection nebulae, this Seahorse appears as a black “void” swimming among the sea of colored stars in Cepheus.

Taken in Hinesburg, using an Olympus DSLR camera attached to my Explore Scientific 80mm Carbon Fiber triplet refractor, no auto-guiding. Total integration time is 4.15 hours, consisting of 20-sec. subexposures at ISO 16,000 over 5 nights. Darks & flats taken.



**Sadr Region, Widefield @ 300mm fl with OSC (One Shot Color) in Ha/OIII and SII/Hb
By Greg Erianne**

Full size image is on our forum at:

<https://vtastro.org/community/images/sadr-region-of-cyg-askar-acl200-widefield-with-antlia-ha-oiii-and-sii-hb-filters/#post-736>

There are quite a few objects hiding out in this ultra widefield image (about a 6 x 4 degree field!) of the Sadr Region of Cyg. This is a very rich, and beautiful area of the northern sky and the combination of Ha/OIII and an SII/Hb dual narrowband filters brings out some of the highlights, gas, and dust in this region of the sky.

Capture Date: 10/23/23

Average Moon Illumination ~ 71%

Askar ACL200 Astrophoto Lens @ f/5.6 (native fl = 200mm)

ASI2600MC Pro (APSC OSC camera; 1.5x crop)

Antlia 5nm dual narrowband filters: Ha/OIII (10 x 300s), SII/Hb (10 x 300s) -- [Total Exposure 1:40]

ZWO 5-position, 2" Electronic Filter Wheel

ZWO AM5 mount with guiding via ASI120mm mini and ZWO 30F4 guidescope



**Supernova remnant (G116.9+0.1)/CTB 1 (“Garlic Nebula”, “Medulla Nebula”)
@ 750mm fl in narrowband (Ha/SII/OIII)
By Greg Erianne**

Full size image is on our forum at:

<https://vtastro.org/community/images/ctb-1-abell-85-garlic-nebula-medulla-nebula/#post-715>

Supernova remnant G116.9+0.1/CTB 1 (“Garlic Nebula”, “Medulla Nebula”) was initially identified by George Abell as planetary nebula, Abell 85, but was later identified as a supernova remnant (G116.9+0.1) in 1972. The CTB designation is from the Caltech Observatory list B catalogue. The designation Abell 85 is still used today. CTB 1 is in the constellation Cassiopeia (Cas) and is approximately 10,000 light-years from Earth, about 100 light-years in diameter, and is estimated to have formed about 10,000 years ago. It is nearby several other emission nebulae: Sh2-170 (the dot in the Cosmic Question Mark), Sh2-168, and Sh2-173 to name a few. This supernova remnant has an interesting circular structure with many filamentary structures as well as a rupture in its shell (on the upper right of the photo), as well as a slim and faint OIII signal on part of its shell and lots of surrounding nebulosity.

Capture Dates: 9/30, 10/2, 10/3, and 10/4

Average Moon Illumination ~ 84%

Askar 107PHQ (fL = 749mm)

ASI2600MM Pro (Monochrome camera)

Antlia LRGB-V & SHO (SII, Ha & OIII) 2” mounted 3nm Narrowband Pro Imaging Filters with ZWO 7-position filter wheel

ZWO AM5 mount with guiding via SV106 and ASI178MM

Narrowband S-H-O Light Frames [Total Exposure 19:00]

-- Ha; 300 sec x 67 = 5:35

-- OIII; 300 sec x 94 = 7:50

-- SII; 300 sec x 67 = 5:35

RGB Frames for Stars 10 x 60 sec each [Total Exposure 0:30]



**NGC 6888 (Crescent Nebula) @ 1422mm with OSC in Ha/OIII
By Greg Erianne**

Full size image is on our forum at:

https://vtastro.org/community/images/crescent-nebula-c27-ngc6888-sh2-105_/#post-690

The Crescent Nebula (NGC 6888) is an emission nebula in the constellation Cygnus, and is about 5000 light-years away from Earth. Blue areas show the location of oxygen (O-III) gas, while the other areas of the Nebula and the surrounding clouds show the location of hydrogen (H-II/H-alpha) gas. This nebula, with the strong stellar winds emanating from its central massive star, ejects a mass each 10,000 years that is equivalent to the mass of our Sun.

Capture Date: 9/5/23

Average Moon Illumination ~ 59%

Celestron EdgeHD 8 with 0.7x Reducer (fL = 1422mm)

ASI2600MC Pro (OSC camera)

ZWO AM5 mount with guiding via OAG and ASI174MM Mini

Antlia 5nm dual narrowband filter: Ha/OIII (300s x 55 frames) -- [Total Exposure 4:35]

ZWO 5-position, 2" Electronic Filter Wheel



The California Nebula
By Richard Whitehead

This is my " first light" image taken at Dark Sky New Mexico on my Takahashi FSQ106/A-P 1100 combo

The California Nebula (NGC 1499) is an emission nebula about 1000 Light years from Earth. Its name comes from the fact that the central most often imaged portion looks (a bit) like the outline of the state of California. So maybe I should call this image "the West coast Nebula" as it does extend a fair bit further as its brightness diminishes.

This is a two-pane mosaic to capture the full width, and actually it was quite a 'pain' to process as Pixinsight's Mosaic process introduced artifacts and I eventually separately processed both images all the way through and merged the jpegs in PS.

The nebula is principally "excited" by the nearby super energetic star Xi Persei (Menkib) the brightest star in the image.

Tech stuff:

Telescope Takahashi FSQ 106 EDX4, Nitecrawler Focuser, Mount A-P 1100 GTO AE

QHY 600 camera and QHY Filter wheel

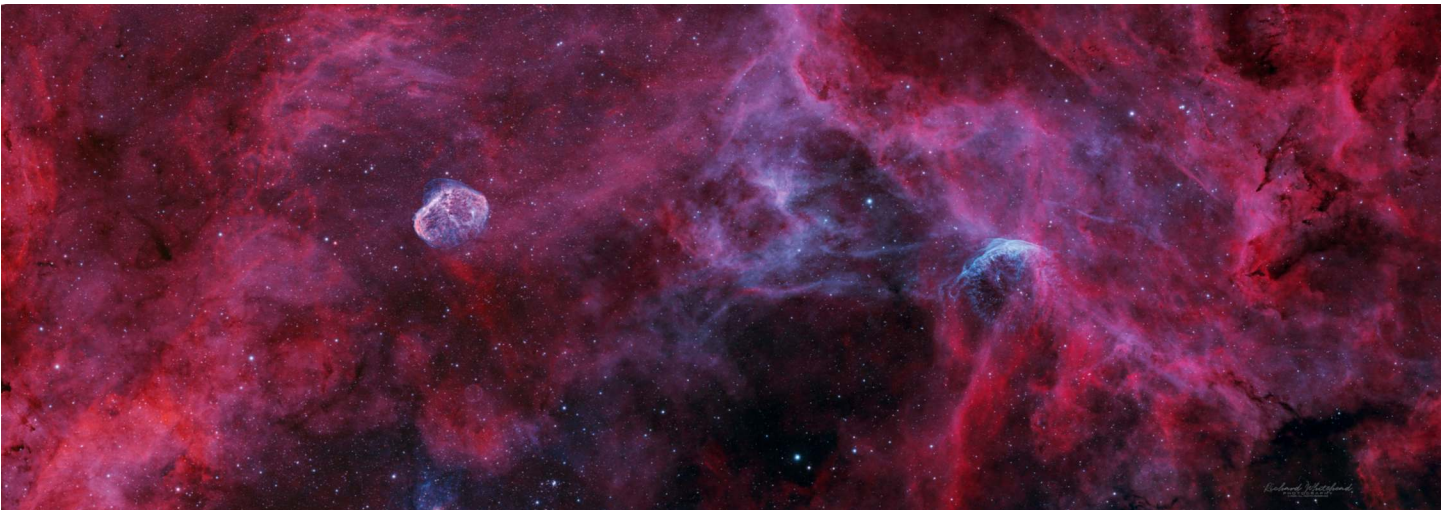
Chroma 3nm Filters SHO 20-26 x 15min (20min for OIII) for each filter and each pane

Eagle 4 Pro computer

Ha 15 x15 min, OIII 12 x 15 min, SII 5 x 15 min

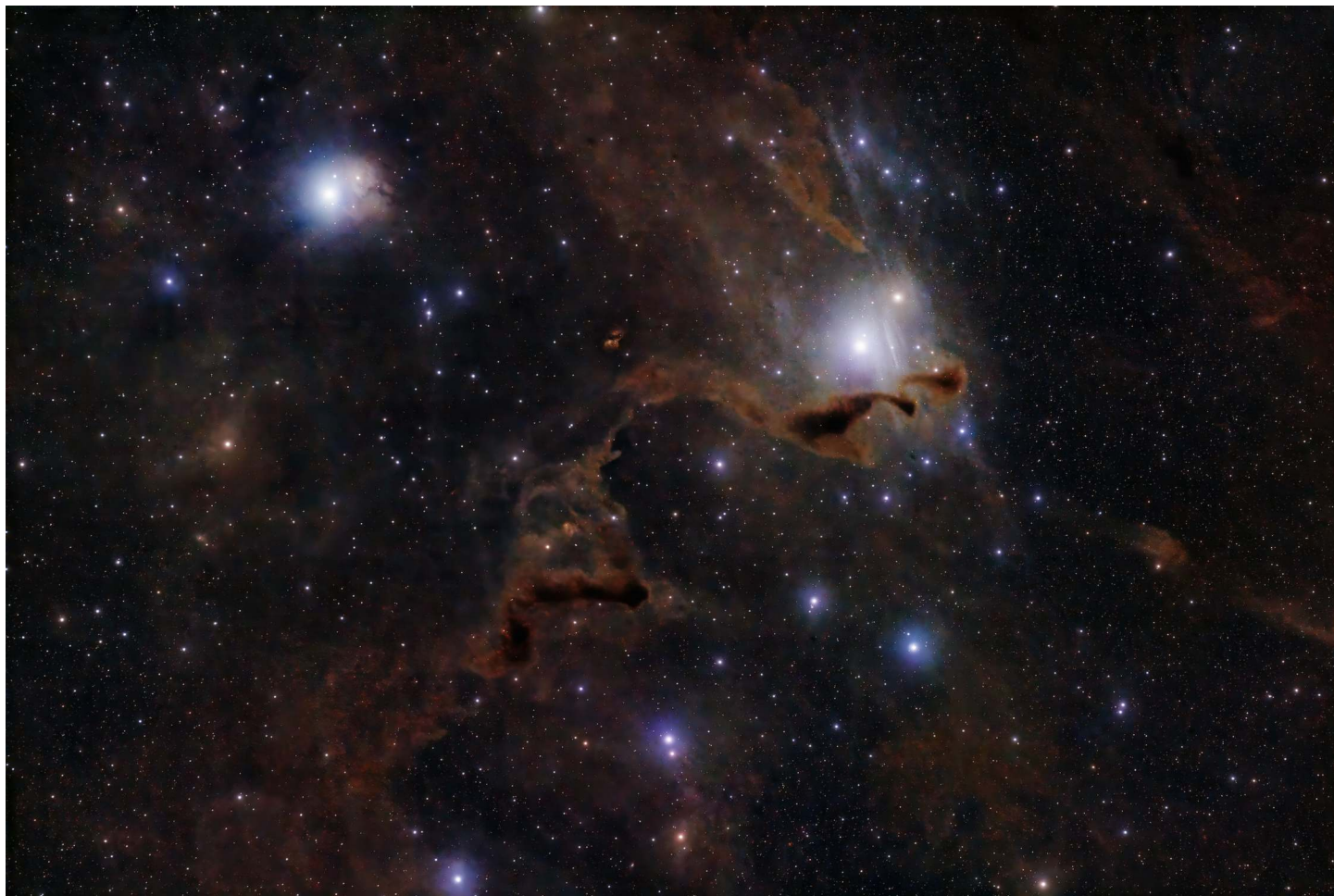
Location : Animas , NM, USA

Processed in Pixinsight and Photoshop



Wolf Rayet Stars in Cygnus
By Richard Whitehead

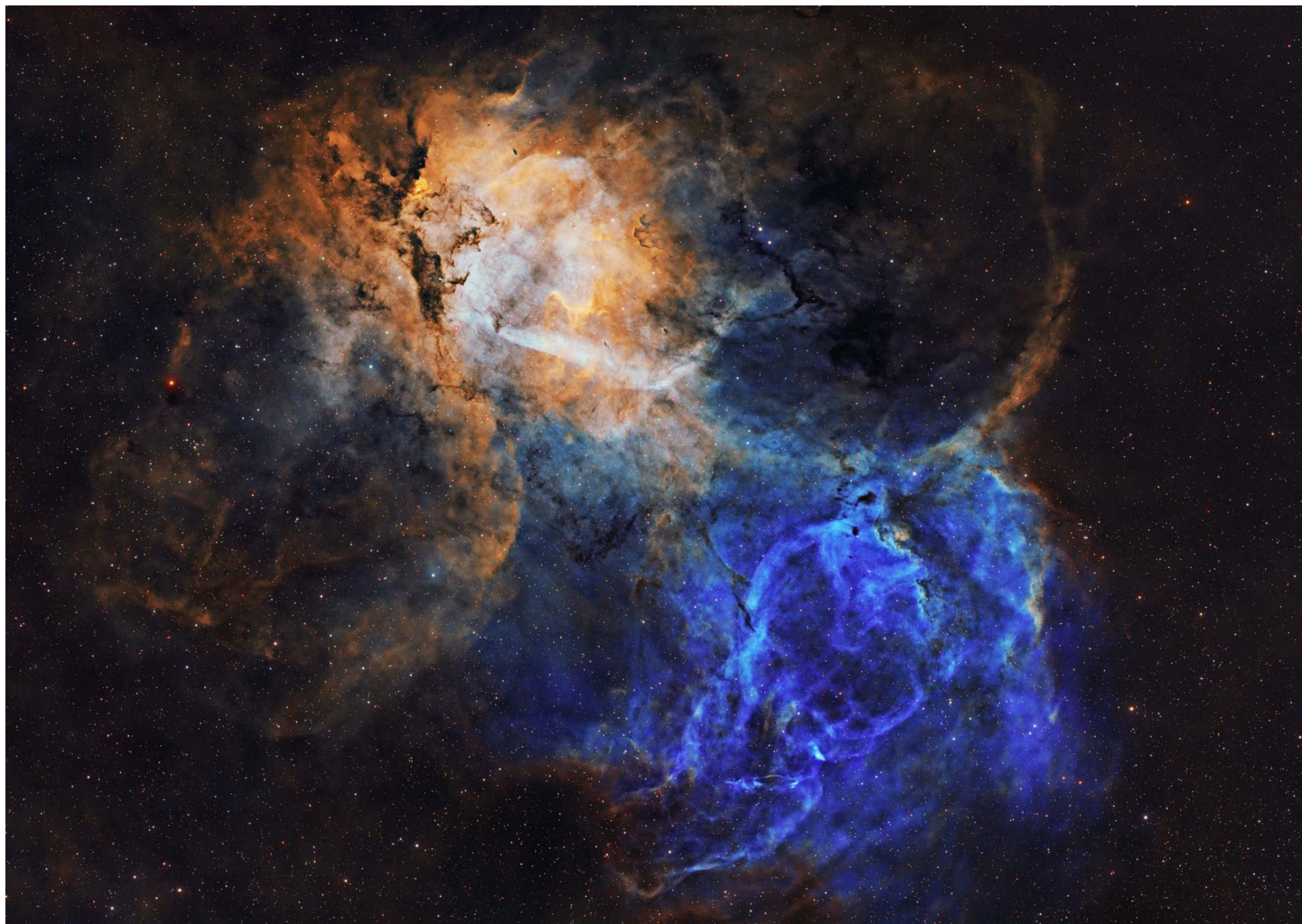
The Crescent Nebula (the brain-like Object on the left surrounds WR 136) and the less catchily named WR 134 on the right. Images 35 x 5 mins Ha Chroma 3nm, 30 x 10 mins OIII Chroma 3nm(two mosaic panes total). Same equipment as above.



LDN1355, LDN1358 - The helping Hand
By Terri Zittritsch

Full size image is on our forum at: <https://vtastro.org/community/images/ldn1355-ldn1358-the-helping-hand/#post-753>

This is an image I took during the Eldorado star party. I really struggled with picking targets and chose this one because it looked cool and I liked the name and I've wanted to take more images of dark nebula as I'm not very good at these. The objects, LDN1355 and LDN1358 are dark nebula also named LM4 and LM5. These nebula are in the constellation of Cassiopeia. I have approximately 4 hours of integration which isn't nearly enough, but I've teased out some of the details in the dark nebula nevertheless. LDN1355 is approximately 1 light year across and 2 x 5 arc minutes in the sky. I've shot this image with a TEC140ED reduced to 700mm with an AP reducer/corrector. The camera used is an ASI2600MC OSC, and probably not the best choice, but given my limited time I wanted to end up with whole images, but given they're in Cassiopeia, I can likely get some time on them at home as well. I can probably use 3 - 4 times as much integration time to get as much signal as this image requires.



The Lion Nebula, SH2-132

By Terri Zittritsch

Full size image is on our forum at: <https://vtastro.org/community/images/the-lion-nebula-sh2-132/#post-709>

This is the Lion nebula in the constellation Cepheus. An interesting object. The individual mono frames for Ha and OIII look very much like a lion, but putting them together makes the vision a bit harder. I kept the head/mane in a gold color which makes it easier for me to see the lion and its face. Lots going on in this nebula. I imaged this with a TEC140 at 1000mm of focal length and F7 with an AP field flattener on an Astro-Physics 1100GTO mount unguided. The exposures for the nebula are in narrow band taken through 3nm Chroma filters and exposed for 15 and 20 minutes each. The stars were taken through Chroma RGB filters. Total exposure of this object is about 24.5 hours. The most I've done on an object so far. Given the slow focal ratio, I needed it.

SH2-132 lies about 1800 light years away from our solar system and shows as 20x30 arc minutes in size, or about the size of a full moon. I shot this mostly during full moon nights, many of which were hazy with smoke.



**The Iris Nebula NGC7023 from Eldorado Tx
By Terri Zittritsch**

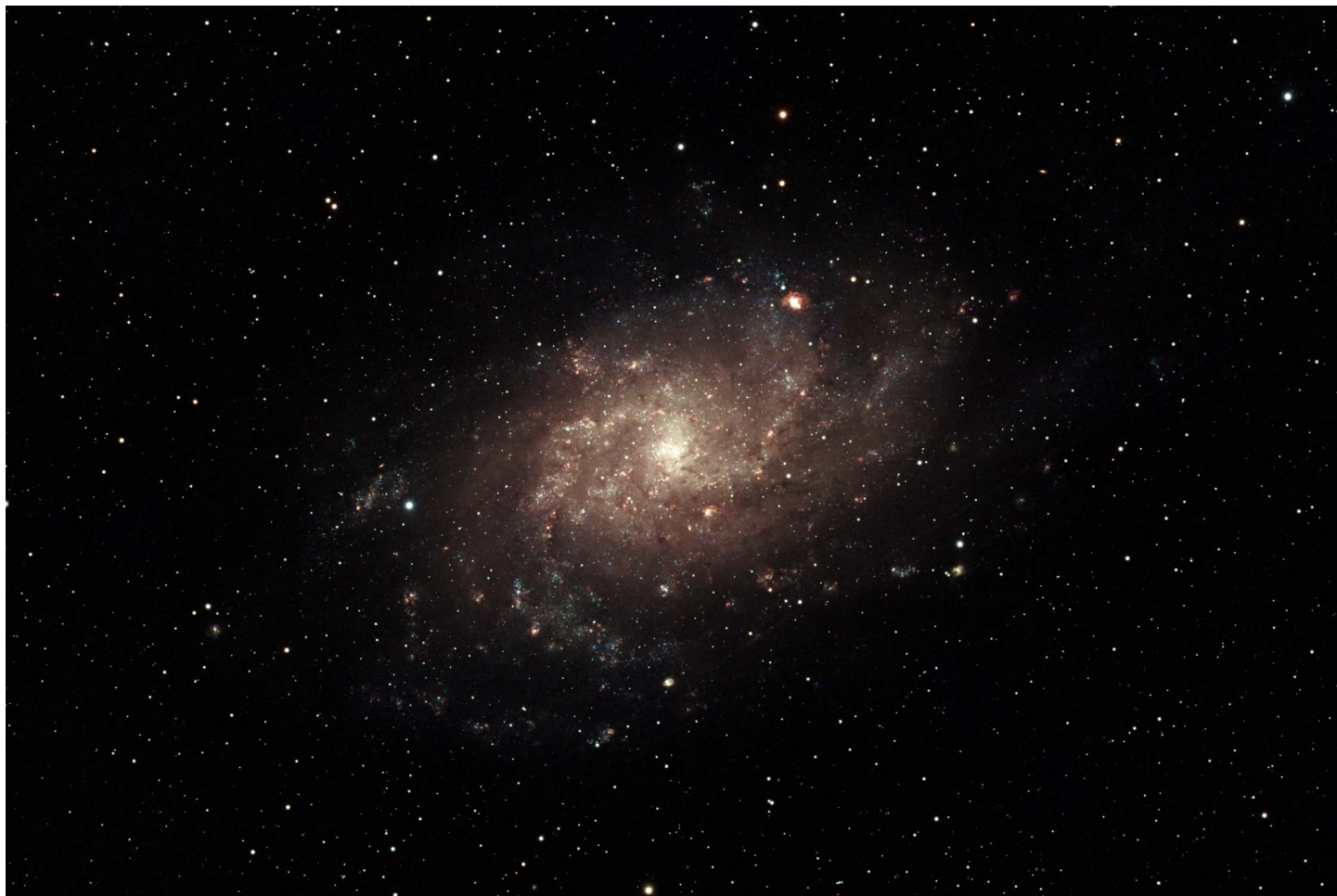
Full size image is on our forum at:

<https://vtastro.org/community/images/the-iris-nebula-ngc7023-from-eldorado-tx/#post-741>

I struggled with finding a target I wanted to image at the Eldorado Star party, finally settling on finishing the Iris (I started in Vermont) and then picking LDN1355/58 (helping hands) and then Barnard's galaxy. The latter 2 I did not get anywhere near the amount of time as I need to make good images, but I'll post them anyway until I get to improve them. The first image, the Iris, is the result of less than 4 hours of OSC imaging. I rarely do OSC but due to the weather and travel plans in Eldorado, we only ended up with 2 nights of imaging so it was my best attempt at getting a full image in that short time.

I shot this with a TEC140 scope reduced to 714mm with an Astro-Physics Quad Telecompressor and Reducer into an ASI2600MC one shot color camera. I used an Astro-Physics 1100GTO mount with encoders unguided and 4 minute exposures. The object is fairly bright so I have enough data to be presentable, I think.

NGC7023 also denotes an open cluster co-located with the nebulosity known as the Iris. The Iris nebula itself is a reflection nebula which is illuminated by a central hot young 7th magnitude star HD200775. The nebula's 18 arc minute size corresponds to 6 light years across and it is 1300 light years distant from our solar system. The open star cluster also associated



M33 (The Pinwheel Galaxy)
By Michelle Bayliss (her first image)

I confess I had to watch Peter Zelinka's Pixinsight for Dummies like 100 times (but then I typed out an idiot step list for myself). This was on the one clear night we had but I had to go to dinner so I only got 23, 180 second subs before my observatory roof blocked the camera! Oh well.

But I did finally get proper darks/flats/biases and hours figuring out how to use Pixinsight. So not a ton of data but I'm at least happy it was my first photo! I did two versions, my daughter likes the is one, the darker one.

Now if only it would CLEAR UP.

Takahashi 5" 130 TOA-130NFB

Astrophysics AP 1100goto mount on Sky Shed Pod Pier/Sky Shed Pod Dome

ZWO ASI2600MC Pro

Zwo ZWO ASI290MM guide camera with large OAG

ZWO ASIAir Plus

ZWO EAF

Only 23 subs X 3 min due to clouds rolling in, flats and darks

All Stacking/Processing in PI with BlurX, StarX, Noise X, GraXpert

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

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

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.

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 \$2100.

Also available is a heavy duty (homemade) 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

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

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

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



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.



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 a donation of \$50

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