



Morning Star

Summer 2020



*** Club Info ***

Announcements

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).

Wanted - PR person

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

Moving or Changing Email?

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

Hinesburg Observing Site

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

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

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

Board approval is required in both cases. Some training is required. 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 Member's interested in getting a heads-up

when someone will be at the Hinesburg Observing Site (HOS).

If interested in getting on the list contact info@vtastro.org

Observing Certificates

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

Outreach

Acknowledgment Letter

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

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

Dues

Associate Members \$15
Full Members \$25

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

Connect On-line

www.vtastro.org
[Twitter@VTAstroSociety](https://twitter.com/VTAstroSociety)

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

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

webmaster@vtastro.org

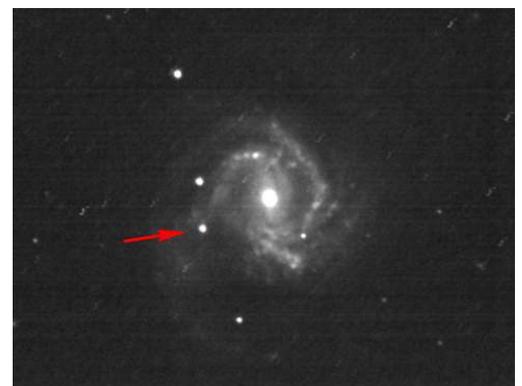
(Goes to Secretary and Webmaster)

Board Members

Jack St. Louis	Pres	857-5049
Joe Comeau	VP	238-1664
Doug Williamson	Treas	388-3482
Paul Walker	Sec'y	388-4220
Bob Horton		879-7802
Keith Lawrence		453-5496
Jim Bosek		879-1697
Terri Zittritsch		
Scott Turnbull	Webmaster	

Editor and Publisher - Paul Walker
Contributors: Joe Comeau, Lawrence Garrett, Steve Grimsley, Maura Kelley, NASA Night Sky Network, Paul Walker, Richard Whitehead, George Viscome, Terri Zittritsch.

(My apologies if I missed anyone)



George Viscome took this image of SN 2020 jfo in M61 using the telescope and camera he uses for doing astrometry on asteroids. 74 sec. total exposure time. (37 two second exposures stacked).

George is an amateur astronomer living across the lake in New York, he has been know to some VAS club for many years partly through the asteroid work both he and Larry Garrett do.

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Gary's Astronomical Events for the Month

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

Jack on the Radio

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

Stargazing and other Events

All observing events -are weather Permitting unless otherwise stated.
Bring extra clothes. Even a summer evening can be chilly after standing still for a couple hours in damp air. We have an mail List for Member's interesting in getting a heads up on impromptu events at the Hinesburg Observing Site (HOS).

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

Events are listed on our website (vtastro.org) and Google Calendar (<https://calendar.google.com/calendar?cid=Nzc5dnQ1bnZrN2ljcDA2NG9vbXFnczI1M2NAZ3JvdXAuY2FsZW5kYXluZ29vZ2xlLmNvbQ>)

Member & Invited Guest Star Gazing at HOS & other events

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

Corona Virus Note:

Members are welcome use the Hinesburg Observing Site. Please use precautions when more than 1 person is there. For those on the observing@vtastro.org email list, as always it is at your discretion as to whether or not to send a notice via that email list.

Update:

The Board has decided to open the site more like usual, now that the limit on group gatherings is up to 25. Which means we can have star gazing parties following appropriate social distancing and mask usage recommendations. The only other restrictions for us is no sharing of eyepieces, so you will have to bring your own to look through the club's or other member's scopes and a recommendation of wearing gloves of some type when using someone's scope (could be light cotton or leather or the rubber kind). Now we just need the Sun to get back to setting at a reasonable time!

Contact info@vtastro.org

Green Mountain Astronomers (GMA)

All events start about sunset. Check before going as some events are not cast in stone or written in the stars yet.

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

Jul 20 (Mon) Saturn at Opposition, GMA Members Only, Lovers Lane, Brandon.

Jul 25 (Sat) GMA Members Only, Hubbardton Battlefield.

Aug 8 (Sat) GMA Members Only, Hubbardton Battlefield.

Sept 26 (Sat) GMA Members Only, Bristol Harvest Festival, Solar Event.

Oct 10 (Sat) GMA Members Only, Tracy Holden's, Wheeler Road, Brandon.

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

Corona Virus Note: We will likely have not public events for the next few months.

New Members

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

Reg Chaput

Carol Slatt

Richard Whitehead

Meetings/Presentations

Normally meetings are held at Brownell Library, due to COVID-19 we are holding them remotely.

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.**

July 6 Remotely via Zoom

4 Mini-Talks

Some Springtime Galaxies and Nebulae

By Richard Whitehead

Millions and Billions...making DRY numbers a bit more interesting for outreach programs

By Cale Shipman

Images from the Texas Star Party

By Steve Grimsley

August 3 Probably remotely via Zoom

Part 1 of 2:

The 2020 Opposition of Mars: Our Last Chance to See Mars This Favorable until 2035

Of all the planets visible; Mars is surely the one that has cultivated the most human imagination and interest. Approximately every 15.7 years; Mars has a closer then typical approach to Earth. In the late Summer and Autumn of 2020; Mars will have a fairly close

approach to Earth. At the time around Mars' close approach, amateur size telescopes will have some reasonable views of Martian surface features. Mars is the only planet in our Solar System (besides Earth) that we have a reasonable chance of seeing the actual surface features such as volcanoes and canyons. Mars is a dynamic planet with surface features that show subtle changes over time due to the effects of the Martian atmosphere. The Martian planet displays changes such as variability in cloud formations, shrinking ice caps, and occasional dust storms. This talk is designed for visual amateur observations through telescopes of 4" – 8" aperture. This showing of Mars is our last chance to see the Red Planet in a favorable position until the year 2035.

Part 1 Outline:

- A. Introduction to Mars
- B. Mars Quiz (History of Mars and Mankind)
- C. Mars Orbital Characteristics
- D. Factors effecting Mars Observations: Atmospheric

The presenter; Gary T. Nowak is a long-time member of the VAS and is a former club president and former board member. His specialty is advanced visual amateur astronomic searches with telescopes and binoculars. The presenter has built several telescopes over the years which included grinding and polishing his own telescope mirrors. His first recorded observations with a telescope were in 1968. He has been observing Mars since 1971. In 1999, he discovered a Nova visually with binoculars. He is a member of the Association of Lunar and Planetary Observers (ALPO).

September 14

Probably remotely via Zoom

Part 2 of 2:

The 2020 Opposition of Mars: Our Last Chance to See Mars This Favorable until 2035

Of all the planets visible; Mars is surely the one that has cultivated the most human imagination and interest. Approximately every 15.7 years; Mars has a closer then typical approach to

Earth. In the late Summer and Autumn of 2020; Mars will have a fairly close approach to Earth. At the time around Mars' close approach, amateur size telescopes will have some reasonable views of Martian surface features. Mars is the only planet in our Solar System (besides Earth) that we have a reasonable chance of seeing the actual surface features such as volcanoes and canyons. Mars is a dynamic planet with surface features that show subtle changes over time due to the effects of the Martian atmosphere. The Martian planet displays changes such as variability in cloud formations, shrinking ice caps, and occasional dust storms. This talk is designed for visual amateur observations through telescopes of 4" – 8" aperture. This showing of Mars is our last chance to see the Red Planet in a favorable position until the year 2035.

Part 2 Outline:

- A. Factors effecting Mars Observations: Instrumental
- B. Amateur Telescopes for Visual Mars Observations
- C. Filters for Mars
- D. Observing Mars: Survey of Various Visual Features
- E. Changing Mars Phenomena: Atmospheric
- F. Mars Moons
- G. Summary

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Articles

This article is distributed by the NASA Night Sky Network, a coalition of hun-

dreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.



Become a Citizen Scientist with NASA!

David Prosper

Ever want to mix in some science with your stargazing, but not sure where to start? NASA hosts a galaxy of citizen science programs that you can join! You'll find programs perfect for dedicated astronomers and novices alike, from reporting aurora, creating amazing images from real NASA data, searching for asteroids, and scouring data from NASA missions from the comfort of your home. If you can't get to your favorite stargazing spot, then NASA's suite of citizen science programs may be just the thing for you.

Jupiter shines brightly in the morning sky this spring. If you'd rather catch up on sleep, or if your local weather isn't cooperating, all you need is a space telescope - preferably one in orbit around Jupiter! Download raw images straight from the Juno mission, and even process and submit your favorites, on the JunoCam website! You may have seen some incredible images from Juno in the news, but did you know that these images were created by enthusiasts like yourself? Go to their website and download some sample images to start your image processing journey. Who knows where it will take you? Get started at bit.ly/nasajunocam

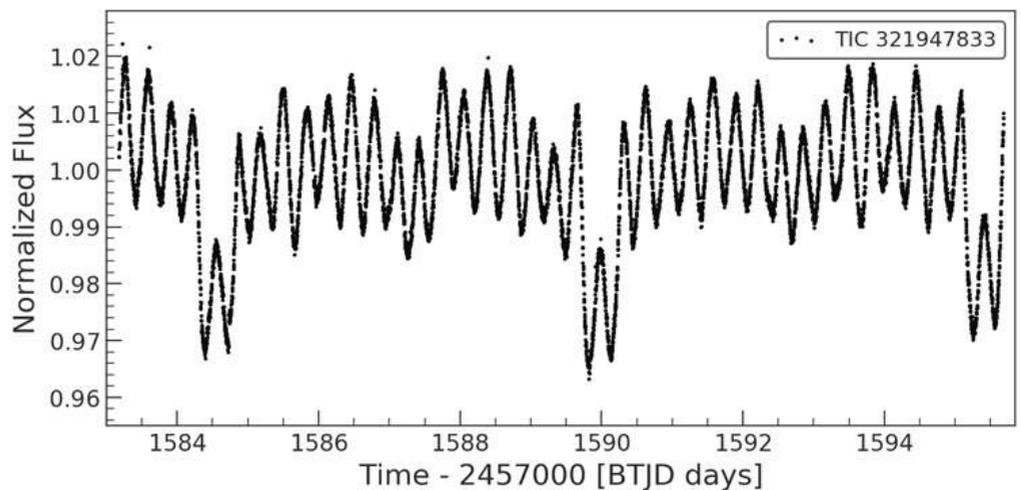
Interested in hunting for asteroids? Want to collaborate with a team to find them?? The International Astronomical Search Collaboration program matches potential asteroid hunters together into teams throughout the year to help each other dig into astronomical data in order to spot dim objects moving in between photos. If your team discovers a potential asteroid that is later confirmed, you may even get a chance to name it! Join or build a team and search for asteroids at iasc.cosmossearch.org

Want to help discover planets around other star systems? NASA's TESS mission is orbiting the Earth right now and scanning the sky for planets around other stars. It's accumulating a giant horde of data, and NASA scientists need your help to sift through it all to find other worlds! You can join Planet Hunters TESS at: planethunters.org

Intrigued by these opportunities? These are just a few of the many ways



GREAT SOUTHERN JUPITER: Incredible image of Jupiter, submitted to the JunoCam site by Kevin M. Gill. Full Credits : NASA/JPL-Caltech/SwRI/MSSS/ Kevin M. Gill



to participate in NASA citizen science, including observing your local environment with the GLOBE program, reporting aurora with Aurorasaurus, measuring snowpack levels, training software for Mars missions – even counting penguins! Discover more opportunities at science.nasa.gov/citizenscience and join the NASA citizen science Facebook group at facebook.com/groups/Sciencing/ And of course, visit nasa.gov to find the latest discoveries from all the research teams at NASA!

Light curve of a binary star system containing a pulsating (variable) star, as spotted on Planet Hunters TESS by user mbuten and featured by project scientist Nora Eisner as a "Light Curve of the Week." Credit: Planet Hunters TESS/NASA/mbuten/Nora Eisner

First Telescope Program (Kept in as a reminder for all)

With the support of the VAS Board, I am developing a First Telescope Program for new members of the club. For

now I am seeking a few old 4 1/2" f/8 Newtonian telescopes that I can renovate, fit with 1 1/4" rack and pinions and eyepieces then outfit with Dobsonian mounts. My target is to sell these to club members for \$100 or non-members for \$125. For the first year the new owners can return it for full refund in case of non-use or to upgrade, etc. After a year the refund will depend on condition. Sales will depend on availability of telescopes and components, so if you have old telescopes, eyepieces or parts you want to sell or donate please contact me.

Keith Lawrence

sleepingbearwoodworking@yahoo.com

802-453-5496

Board & Committee Meetings

Board Meetings

April

Jack opened the meeting. Discussed the possibility of having the Annual Business meeting in June. We decided to hold it on May 4 via Zoom remote conference software. We also discussed the voting for the officers and board at large that are up for election/re-election. We decided it was easiest to do the vote completely by email ballots.

Monthly meetings- We will need a presentation that is compatible with a virtual meeting for the July meeting on the assumption it could be a virtual meeting. We are set for June with Paul doing "Imaging Processing Basics", August and September Gary doing part 1 & 2 on Mars for the upcoming Fall opposition.

Joe noted that the Earth Hour event was canceled.

There is only 1 other public star gazing event scheduled. An event at Underwood Property Park off Spear Street in South Burlington organized by South Burlington Recreation & Parks. This likely will be canceled.

Doug updated us on the amount in the bank. He filed with the IRS and sent in the Bi-Annual report to the state. He brought up the question of whether we plan to sell some of the club's donated items at Stellafane this year.

Bob is working on a project for which he may do a mini-talk at one of the monthly meetings in the Fall.

Keith is holding off on ordering more scopes and parts for the Library Scope Loaner Program.

Jim suggested we consider having a Mars observing event in the Fall. He also suggested we think about having a club barbecue in August or September.

We discussed the idea of using Zoom after things get back to normal to "broadcast" our regular monthly meetings for those who can't attend in person. We do have several "far flung" members who would appreciate this. The logistics will be a little different than a totally virtual meeting but shouldn't be too hard to manage.

The question came up about doing some work at the Hinesburg Observing Site this spring, mostly brush cutting. Paul will set up a virtual Site Committee Meeting to work out the details. Shouldn't be too hard to maintain social distancing. We will want to be particularly careful about not getting hurt.

MOTIONS:

None

ACTION ITEMS:

Paul- Send out a notice about the virtual Annual Business Meeting, send out the ballot to Full Members for voting for board members, send out a notice to the Site Committee Members for that meeting.

Jack- Create and send out the invitation for the virtual Annual Business Meeting.

May

Jack opened the meeting. Discussed the site usage policy we put in place to address the COVID-19 virus issue. With the Governor opening things up for groups of 10 people or less, we will open the site under that guideline and will follow the general social distancing guidelines. The only other "restriction" at the site will be not sharing of eyepieces or more than 1 person viewing through each telescope. Jack will send the new lock combinations to members who have previously been approved for observatory and/or gate access.

Monthly meeting presentations:

July - Richard Whitehead has offered to show some of his recent galaxy images

and Cale Shipman has offered to do a mini-talk called "Millions and Billions" that he uses at public outreach events. August and September meetings will feature Gary Nowak with a 2 part presentation about Mars and equipment and techniques for observing it (this is in preparation of Mars's evening appearance this Fall).

Richard Whitehead has requested training for gate access to the Hinesburg Observing Site.

Maura Kelley has requested training for access to the 18" Obsession.

Joe received a request for a presentation to be done via Zoom. Jack offered to do a presentation for them and will contact them.

Terri reported that she helped one member (Richard) and one non-member with issues with their astro-imaging setups.

MOTIONS:

None

ACTION ITEMS:

None

June

Jack opened the meeting. He suggested we open the site more like usual, now that the limit on group gatherings is up to 25. Which means we can have star gazing parties with appropriate the social distancing and mask usage recommendations. The only other restrictions would be no sharing of eyepieces so you would have to bring your own to look through the club's or other member's scopes and a recommendation of wearing some type of gloves when using someone's scope (could be light cotton or leather or the rubber kind). Now we just need to Sun to set at a reasonable time!

Jack is helping a person with how to operate their 8" SCT.

Discussed suggestion to put our By-Laws on our web site. We decided it was not advisable. Any member can request a copy from the secretary at any time.

Discussed whether to swap out the Chmela (planetary) scope, currently on the Byers mount for the 14.5" Patterson scope. Since no one has requested use of the 14.5" and Jupiter and Saturn will be moving into the evening sky this summer and Mars this Fall, we decided

to leave the Chmela scope on the mount.

We have another request for a Library Loaner Scope.

Jack asked about the status of the forum. Terri indicated that it is basically ready to go. She will send the board the link for them to check it out. Should be going live soon, the membership will be informed when it does.

Jack would like to put his observatory dome (currently stored at the site) up with an astro-imaging setup or possibly make it available to Members for short-term set up of their equipment at the site.

Doug received the invoice for the 6 VAS member who are also Astronomical League members and has sent in the payment. He updated us one our bank account, we still have money in there. He has ordered handles for the front of the observatory sheds to make it easier to pull them back on.

Bob updated us on a project he has been working on. He is making his own custom digital setting circles using information and parts available on the web. He will do a presentation at some point for the club.

Jim suggested having HOS (Hinesburg Observing Site) sign-in sheets available outside of the Warming Hut so it would be easier to sign in.

Paul suggested the club buy a set of stereo speakers so that when we are again meeting at the Library and we have any presenters doing so remotely via Zoom or other service, that everyone in the room will be able to hear them. (We have a person scheduled to present to us remotely in October)

Monthly meeting presentations: July - Richard Whitehead will show some of his recent galaxy images, Cale Shipman will do a mini-talk called "Millions and Billions...making DRY numbers a bit more interesting for outreach programs", Steve Grimsley will show his mages from the Texas Star Party and Terri Zittritsch will show her images from the Winter Star Party. August and September meetings will feature Gary Nowak with a 2-part presentation about Mars and equipment and techniques for observing it. October- Tom Field will give a talk on Spectroscopy

that amateur astronomers can do, he is the president of Field Tested Systems.

Richard Whitehead and Duane Waller has been trained for gate access to the Hinesburg Observing Site.

Jack and Terri have been trained for training members of HOS access.

MOTIONS:

None

ACTION ITEMS:

None

VAS Membership Committee

No meetings.

Observatory Site Committee

No meetings

Site Survey Analysis

The results were reported in the Winter 2020 newsletter. The full 2018 Site Survey results are available as a PDF file on request (contact info@vtastro.org)

Observers Page

Social Distancing at HOS ~

By Maura Kelley

We've had several nights in a row of very welcomed clear dark skies: June 15-18, so I made it up to HOS for 3 of the 4. It was very nice to see a couple

others working up there each night. I also went up on the 19th only to see the clouds roll in early. Even with that, there was another couple of folks observing in between the clouds. We have a gem of a space up there at HOS! If you haven't been, the view to the south is particularly wonderful since I can't see it from my home up the road. I encourage members to check out the HOS! Below is one image that I finally got to processing..

Trifid Nebula (M20) & Lagoon Nebula (M8) taken with Olympus micro four thirds OMD E-M10 modified camera w/ 300mm lens, mounted on Explore Scientific EXOS2-GT equatorial with PMC-Eight GoTo System. 161, 20 sec. lights, 21 darks, 21 flats, total integrated time 53.66 minutes.

Focusing Issue with Modified Camera When Using Camera Lenses

By Paul Walker

Those of you with modified DSLR cameras for astro-imaging may have noticed an issue when using them with standard camera lenses. While the APO refractors popular with many astro-imagers are color corrected over a wide enough range of wavelengths to provide good focus for all the colors even when using a modified (extended red sensitivity) camera, the typical camera lens is not. This results in red halos around most of the stars making it look like there are lots of red stars and less



detail in nebulae. This is something I noticed with my first modified camera.

There is no perfect fix for this. One option is adding a filter in front of the camera lens but that makes the camera like an unmodified camera which would defeat the purpose of getting it modified in the first place. Another is shifting the focus of the lens toward the red end of the spectrum. I.e., focusing the red light better. A drawback of course is the blue and green light become less focused. The stars will be slightly out of focus (larger) which will limit how much you can magnify them or how large you can print. It is a compromise but the result is an more aesthetically pleasing image. It may also be possible with the right software and knowledge to



Red out of focus, green and blue in focus. Lots of stars with red halos which make it look like there are lots of are red stars.



Red a little more focused, green and blue slightly out of focus. Fewer stars with red halos.



Red mostly focused, green and blue a little out of focus. The red stars here are really red.

remove the red halos, however, it will not restore fine details in red nebulosity.

With my old camera I had to focus, take an image, check, change the focus very slightly, take an image, check, until I found the best compromise. On some of my lenses I placed finely spaced reference marks to make this easier. My new camera has live-view with 10x magnification which speeds up the process. Once I get used to it I should be able to get it right on 1 try.

These test images are 25% crops of the original 24 Mp images and re-sampled at 50% (binned 2x2) to match the 300 dpi print resolution of the newsletter.

Originals are single shots taken with a Canon T7i DSLR using a 50mm f/1.4 lens at f/2.2, 60 second exposures, ISO800.

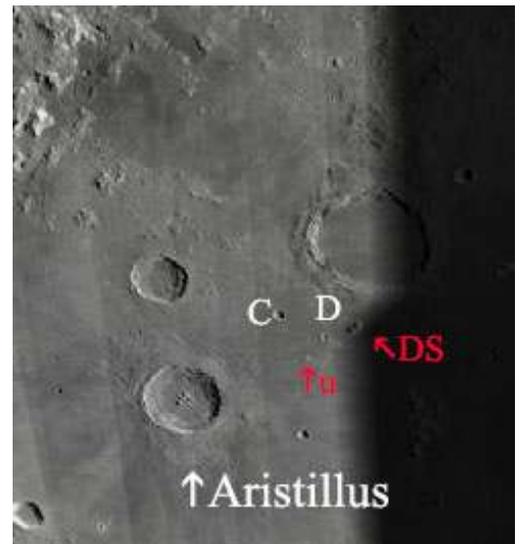
Lunar Days Nights

By Lawrence Garrett

For those of us with with backyard telescopes, the moon held a lot on April 1. I held these items of interest in my XT6 reflector, 6" f/8 (see graphic top right).

33 mile diameter ARISTILLUS had rays so well illuminated you would swear you were using a MUCH larger telescope.

C and D marked in white were satellite craters of ARCHIMEDES (actually



mostly in shadow, unlike the graphic here.)

This was a chance to see small features with ease, C being five miles in diameter, and D three miles.

Unnamed mountains are marked in red. U is near U ARCHIMEDES, appeared as a bright white spot.

DS was fully in shadow, just the two peaks visible as a "double star"!

Joe Comeau provided the image of Mare Imbium below that shows Aristillus and all the other features Larry describes, look carefully. Aristillus is the bottom of the 3 large craters on the left hand side (north down). Also marked with arrows is Alpine Valley (bottom) and the Apollo 15 landing site (far left). Taken with a 6" f/4 Newtonian.

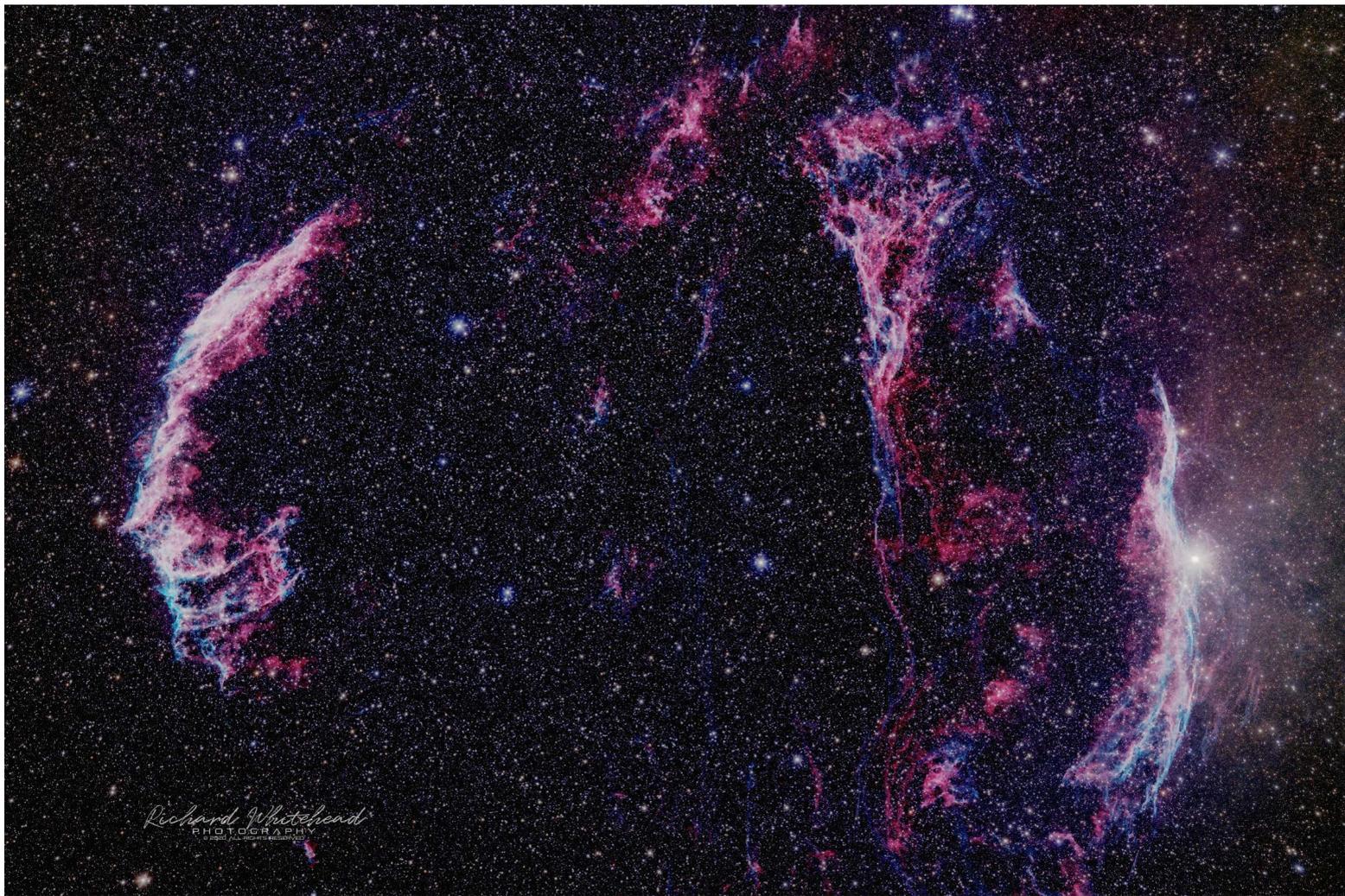




**The Elephant Trunk (IC 1396)
Taken by Richard Whitehead**

This is a star birth region. The Elephant Trunk is a combination of obscuring dust and glowing hydrogen gas associated with the open cluster, IC 1396.

RASA 11" f/2.2, 620mm focal length on Celestron CGX mount
ZWO ASI 6200MC Pro cooled color camera (Full frame, 1 shot color astro-camera, 61 Mp), gain 100
3 minutes X 40 subs (2 hours total)
Stacked in DSS with 10 darks and 10 flats
Cropped from the original image.



The Veil Nebula

Taken by Richard Whitehead

The Veil Nebula is the remains of a supernova explosion. It's most prominent parts are NGC 6960 (Western Veil) and NGC 6962 (Eastern Veil). Though they appear bright here, they are actually fairly dim and difficult to see visually. A nebula (light pollution filter) helps a lot. The field of view here is about 3.5 degrees.

RASA 11" f/2.2, 620mm focal length on Celestron CGX mount

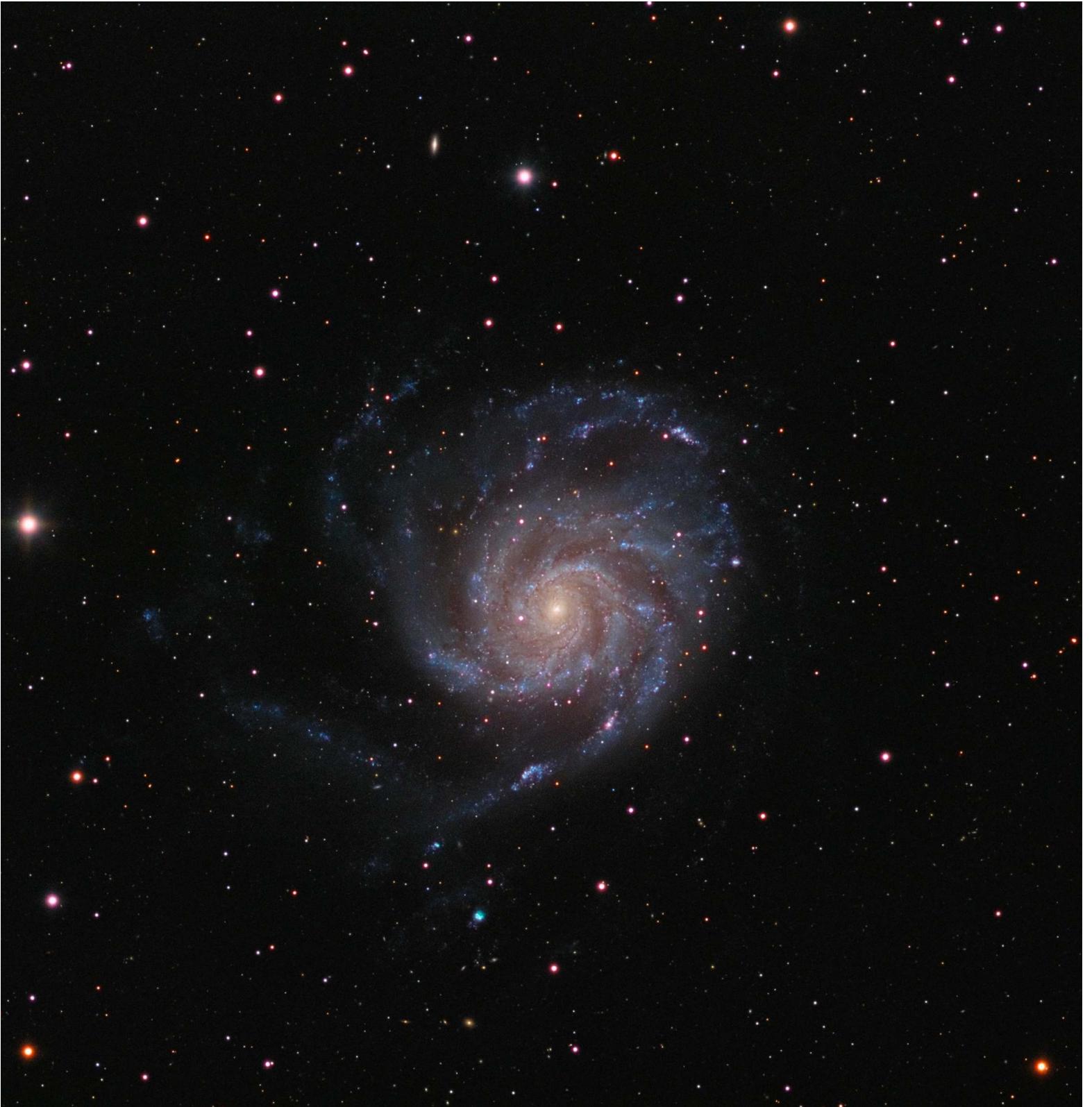
ZWO ASI 6200MC Pro cooled color camera (Full frame, 1 shot color astro-camera, 61 Mp), gain 100
67 x 3min subs. (3hrs 21 mins integration time)

Stacked in DSS with 10 darks and 10 flats

This part of the sky has a lot of stars overlaying, so Richard used starnet++ then layered with an original and a layer of just stars to balance it out.

The cropped image below of the Western Veil or Witches Broom is shows a lot of detail. Even this is presented only at 50% of the full resolution of the original image.





M101 (The Pinwheel Galaxy)

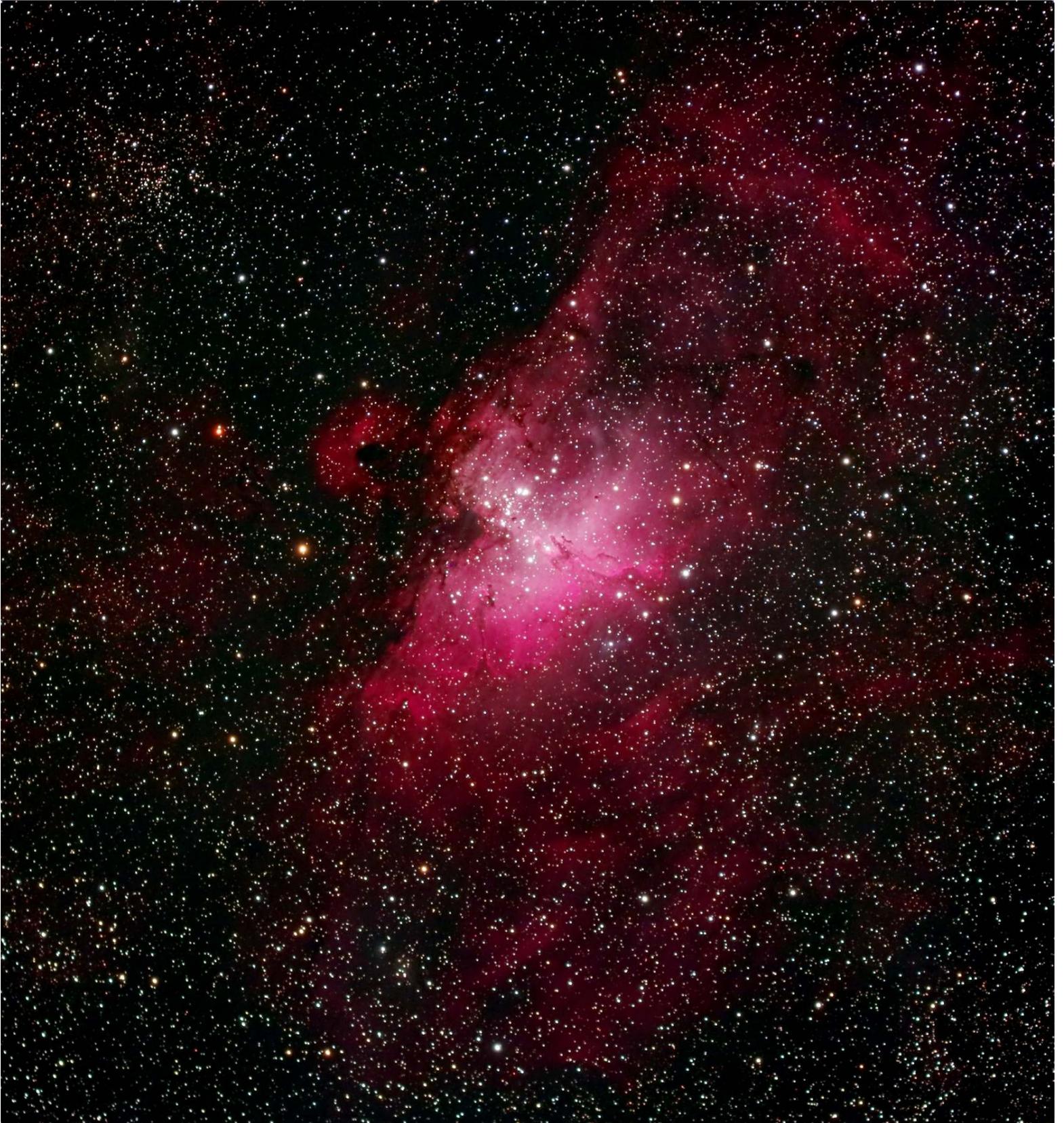
Taken by Terri Zittritsch

M101 is one of 2 galaxies called the Pinwheel Galaxy, the other is M33, there is 3 if you count the Southern Pinwheel Galaxy (M83)

TEC APO 140 f/7 Fluorite Apochromat telescope

ASI1600MM Pro (monochrome) camera

Approximately 7 hours total of capture in L R G B and Ha bands.



The Eagle Nebula (M16)
Taken by Steve Grimley

This is a star birth region with an associated young open star cluster, NGC 6611. Visible in the center of the nebula are the “Pillars of Creation” made famous by Hubble Space Telescope images of them. Inside these “pillars” and other similar features in the nebula are very young stars and proto-stars that will soon (a few hundred thousand years or so) break out of their cocoons of dust and gas and add to the star cluster.

6” f/5.2, 813mm focal length refractor

Canon Ra camera

75 minutes exposure time.



The Seagull Nebula (IC 2177)

Taken by Terri Zittritsch

2020-02-20

The Seagull Nebula is located about 23 degrees East and 5 degrees South of M42, the Great Orion Nebula. Though it is much fainter than M42, about the same as the Horeshead, it is kind of surprising it is not imaged more. It has a whole slew of dark, emission and reflection nebulae as well as star clusters.

Astro-Physics 92mm f/6.65 APO refractor (612mm f.l.)
with Astro-Physics 0.8x telecompressor (490mm eff. f.l. @ f/5.3)
ZWO ASI 1600MM Pro, cooled (16.4 Mp, monochrome) camera
Orion Atlas AZ/EQ Pro mount

8.2 hours total exposure time.

2 hours each with red, green and blue filters (2 min X 60)

2 hours 15 minutes luminance filter (1.5 min X 90)



Venus Visits the Pleiades
Taken by Joe Comeau

A beautiful but difficult shot to be sure.

Taken on the 4th of April.

6" f/4 Newtonian, Canon XT camera.

6, 1 minute subs for Venus combined with 30, 1 minute subs for M45.



April 23rd, by Paul Walker, stack of 20 images, 1/3200 sec, ISO 100. 10" f/5.6 Newtonian, 2x Barlow, Canon T7i camera, cropped

More Views of Venus

Venus continued it's favorable apparition this Spring on it's way to inferior conjunction with the Sun on June 3rd.

Paul Walker and Joe Comeau imaged Venus several times as Venus grew in size while it's crescent got thinner and thinner.

Larry Garrett observed it several times as did Paul.



May 13th, by Paul Walker- single image, 1/640 sec @ iso 200, cropped. Canon T7i camera and 2x Barlow on 10" f/5.6 Newtonian. Corrected color dispersion with software.



May 24th, 8 days before conjunction, by Paul Walker- stack of 14 images, 1/2000 sec @ iso 100, 10" f/5.6 Newtonian, 2x Barlow, Canon T7i camera, cropped.



June 8th, 5 days after conjunction, by Joe Comeau - "I finally found Venus again at 12:56 on 6-8-20. I couldn't find in in the glare of the sun on the 6th and 7th. When I finally found it, it was in the center of my finder scope, perfectly visible and like it was never gone. The seeing wasn't too good and there was a little bit of haze. The sun was shining inside the body of the scope."

This shot is with a Celestron 14" SCT. 2000 frames with a Sentech video camera and stacked in Registax.

Lunar Occultation of Venus

Larry Garrett managed an early morning session to catch the very tail end of Venus emerging from behind the Moon.

“On 6/19/2020 at 5:16 AM, I Spotted Venus break the tree line about 10 seconds before full egress from the Moon’s disk. Using 20x80mm binoculars the single horn planet soon gave way to two full horns.

The naked eye view on the horizon, at 1.4 degrees high, was a sight to behold. This reminded me of the 1974 Venus occultation, which was much higher in altitude and I observed fully in Burlington.

We need more events like this!! Any other success here [by others]?”

“I got lucky as this fell in a gap on the horizon and had it been about 3/4 degrees more north, I bet I would have seen the complete egress.

This is the second low moon in a month here, with May 24th the 1.56% illuminated Moon visible 1.7 degrees up [in the west], under Mercury and Venus in a challenge observation posted by sky and telescope.

-Lawrence Garrett

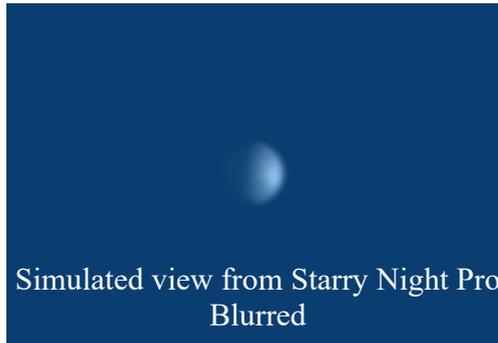
Mercury This Spring

By Paul Walker

The end of May, Mercury joined Venus in the evening sky briefly as Venus was quickly departing for a showing in the morning sky.

On May 22nd and again on the 23rd when I viewed and imaged Mercury it was only 6.4 seconds of arc in diameter. A mere 32 pixels in the image at top of the page. I had to catch it before it dropped below the neighbor’s trees. On the 22nd it was 27 deg high on the 23rd I got out there when it was 37 deg high.

I have seen Mercury before but this is the first time I have been able to make out the shape and surface. (not that I could make out anything surface details). Viewing while the Sun was still up, the only way I was able to locate it was by offsetting from Venus. I used my homemade 10” f/5.6 telescope which has setting circles but not goto capability. I even showed Mercury through the telescope to my wife, Jan.



It looked like a very tiny gibbous Moon.

The top image is 44 still shots stacked using Registax 6. I enhanced the contrast by using a histogram stretch and the wavelet sharpening functions available in Registax. I also corrected for atmospheric color dispersion by using the RGB Alignment tool. The color dispersion was very significant due the Mercury’s tiny apparent size and low elevation (see image below).



Is it my imagination or I can start to resolve surface details (top image). It could simply be due to the poor seeing and the image processing. What

do you think? I have included 2 simulated views for comparison.

10” f/5.6 (1407mm fl) Newtonian, Canon T7i camera, images were taken approximately 6:00 PM on 5/23). Used a 2” Barlow for 2.65 X prime focus (3730 mm eff. f.l.). Image scale is 0.2 arc sec/pixel). The image is 270 pixels wide, a 4.5% crop of the original 6000 pixel wide image.

I also took some video of Mercury with the same setup at up to 10x digital zoom. Too bad I can’t share that in the newsletter.

Viewing with 20x90 binoculars

By Paul Walker

I have a pair of WWII 10x50 Carl Zeiss/Jena German tank binoculars I bought at a flea market over 30 years ago and Kasai Trading Company’s 2.3x40 ultra wide binos (20 degree field even with my older eyes) purchased a couple years ago. Both are nice and fill their niches well. I recently added to my repertoire by buying Gary’s 20x90 giant binoculars. I have never owned large binos and I don’t think I have even viewed through someone else’s. These were made by Oberwerk but this model is no longer produced. Now I know what the fuss is about. I am impressed with the views.

M4 in Scorpio was very obvious moderately large patch of haze. Moving up a few degrees to M80, that too was obvious as a fuzzy “star”. I could even distinctly see that the core is very condensed.

M51 and it’s companion galaxy were easy to see. I could even make out the cores of both as tiny specks of light. In darker skies than Middlebury it may be possible to see the spiral arms, hopefully I’ll get to check that out.

M101 was less obvious due to lower surface brightness. No spiral arms were visible but I could see it was non-symmetrical.

The Double Cluster was gorgeous. I have always considered the low power view of the Double through my 10” f/5.6 Newtonian to be the best, however, the view through the 20x90’s is equally good.

The Mizar and Alcor field was very nice with Mizar’s, 3.8 magnitude 14 arc

sec distance companion, Zeta U Ma, easily split from Mizar.

The 3 degree field of view is great on most of the star clouds of the Milkyway. Not to mention the dust clouds like the "E" (B142 & B143) in Aquila.

On June 23rd I viewed the crescent Moon, many craters were visible. The "horns" narrowed down to the sharpest of points. As the sky slowly darkened the Earth Glow emerged, eventually revealing dark and light shadings on the shadowed part of the Moon.

On July 1st I viewed the 10.7 day old gibbous Moon. Absolutely gorgeous! I was surprised by how much detail was visible. Even at 20x it would take someone a long time to pick out all the features visible. The crater rays stood out like sore thumbs as did the different tones of the lava flows. The number of craters visible was astounding. In Clavius I could see at least 4 of the 5 curved row of craters within (should have counted). Another surprise was the 3-D effect, I think due to a combination of lighting (brighter to darker on the globe), the shadowing in the craters toward the terminator and the magnification.

Being able to view with both eyes rather than closing one or covering one up is quite relaxing and you can resolve finer detail with both eyes working together.

Two Supernovae at the Same Time!

By Paul Walker

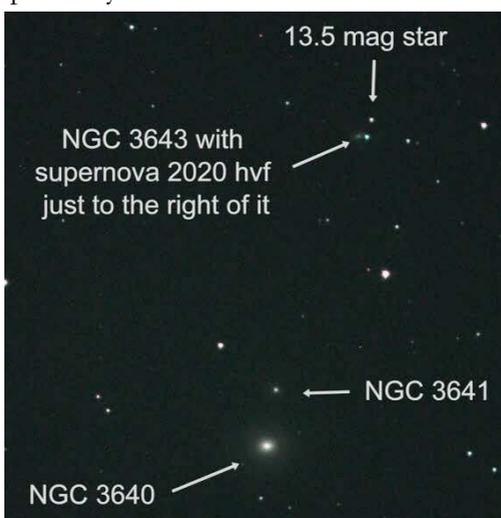
2 supernova in 1 night and in galaxies only 15 degree apart!

Imaged and viewed supernova 2020 hvf in NGC 3643 (in Leo, below the Leo Trio) and supernova 2020 jfo in M61 (in western Virgo).

Supernovae are not exactly uncommon in the universe but it is unusual to have 2 visible in amateur sized telescopes at the same time. And even more unusual to have them in relatively nearby galaxies in the same region of the sky.

Viewing 2020 hvf with my 12.5" f/4.5 Dobsonian at 190x it was fairly dim in moderate light pollution but clearly visible. The 14.7 magnitude gal-

axy NGC 3643 in which it resides was not visible though imagined I could glimpse it with averted vision, but I probably didn't.



Above- single image, 4 minutes @ iso400, 10" f/4 Schmidt-Newtonian telescope, Canon T7i camera.



Above- single image, 4 minutes @ iso400, 10" f/4 Schmidt-Newt telescope, Canon T7i camera.

Viewing 2020 jfo with my 12.5" f/4.5 Dobsonian I found it to be very dim in moderate light pollution. It required 300x magnification and averted vision to see it, the 14.55 mag star and the star mark "16.3 ?" (which was probably about magnitude 15 or a little brighter). The supernova was a little dimmer than the 14.55 star and brighter than the one marked "16.3 ?". The star marked 16.1 mag was not visible,



as I would expect. These star magnitudes are from Starry Night Pro. The magnitudes according to Cartes du Ciel are respectively- 14.1, 14.3 and 15.7. Both supernovae appear blue in these images which I understand is typical.

They all look so much brighter and easier to see in the pictures!

Near Earth Asteroid

By Paul Walker

Larry Garrett flagged us about NEA 52768 1998 OR2 in mid April.

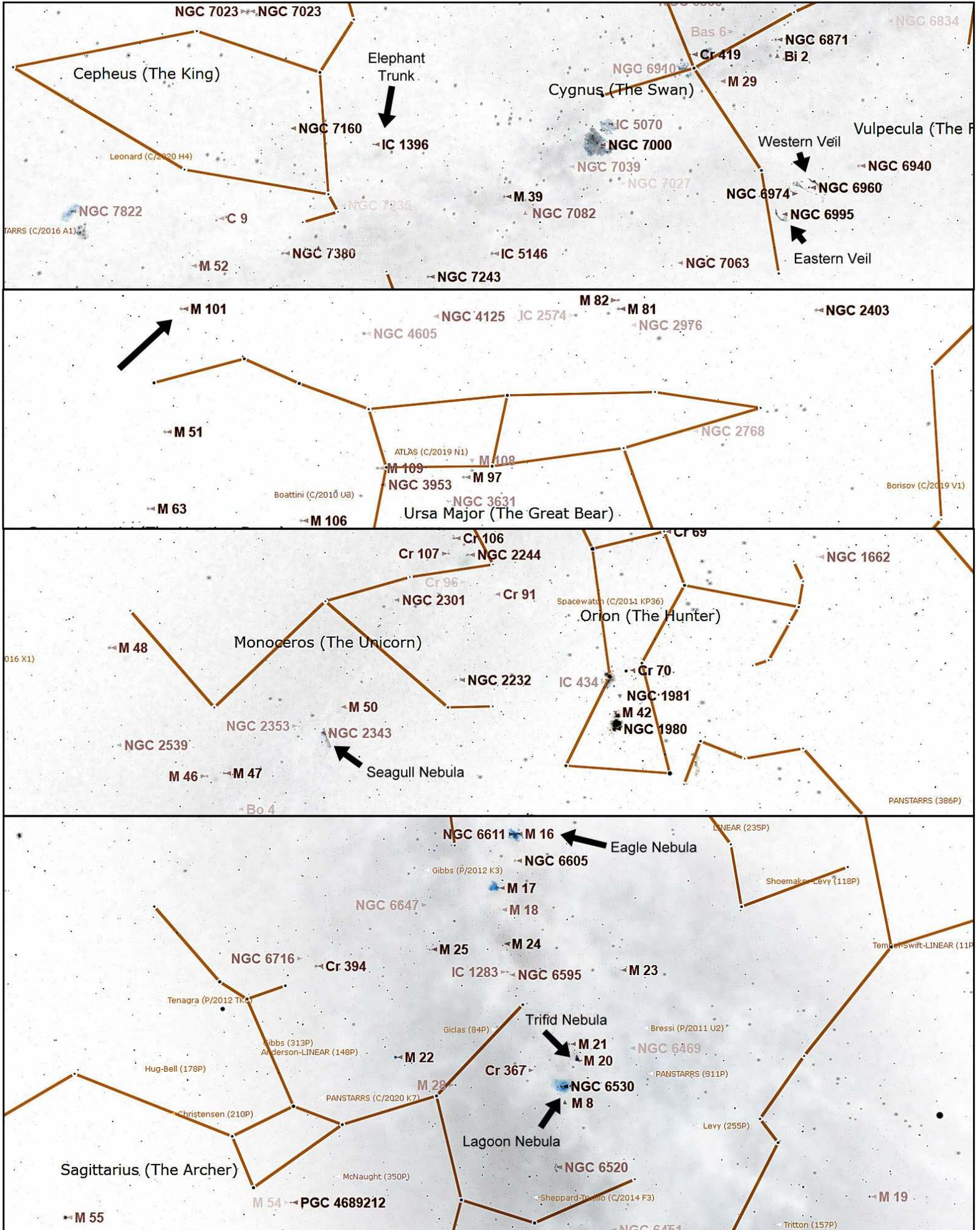
With my 10" f/4 scope I took 90, 1 minutes exposures which I might make into video. At the bottom of the page is a composite of 9 of the images covering 1.5 hours. On my planetarium software (Starry Night Pro) I noticed a bonus asteroid nearby, the main belt asteroid Fides at magnitude 11 (upper left).

I observed both asteroids through my 10" f/5.6 Newtonian. Visually, even though I located the field without too much trouble thanks to my pre-studying the charts Larry provided and having seen it in images on the camera, I still had to wait several minutes to verify it by observing which "star" was moving. Luckily it was near the 2 easy to see 12th magnitude stars immediately North of the beginning of the track on Larry's charts. I watched it off and on for about an hour. I would estimate it's brightness at 12.2 mag. I noticed that the asteroid was about 1 hour "late" in that it was at the 2:00 UT position a little after 11:00 PM EDT.

It was located between the 3rd and 4th positions in the image (counting from the right) when I first spotted it visually.

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

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



Wanted

Wanted - old 4 1/2" Newtonian telescopes with or without mount. Also 1 1/4" rack and pinions and eyepieces for my VAS First Telescope Program. I will renovate and sell to new club members for a starter telescope.

Contact Keith Lawrence, 802-453-5496, sleepingbearwoodworking@yahoo.com

Wanted- Old medium duty tripods and/or legs that I can use to manufacture binocular parallelogram mounts.

Contact Keith Lawrence, 802-453-5496, sleepingbearwoodworking@yahoo.com

For Sale**Books**

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

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

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

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

Cheryl Rayner

cheryll.rayner@gmail.com

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

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

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

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

Contact Paul Marino,

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

Meade model 4500 OTA only
4.5 inch F/8 newtonian reflector OTA,

1.25 inch rack and pinion focuser
2- 4.5 inch tube rings
MA 25mm and MA 9mm eyepieces
Meade 2X telnegative barlow

Asking \$70

Contact Bob Peacock (802) 658-2131
bcpeacock@outlook.com

Orion EQ-1 equatorial mount and tripod with Orion AstroTrack Drive.

Small portable mount good for a small telescope and/or as a camera platform for wide field astro-imaging. Also has Orion 1/4"-20 Adapter for quickly attaching cameras.

The drive runs off a 9v battery, uses a dc servo motor and has variable speed control.

All together the combination goes for \$192 new, **asking \$50.**

Tom Cleveland 802- or @

I was going to bring these items to the Stellafane Convention Swap Table for sale. Due to the COVID 19 pandemic, Stellafane was canceled this year so I'm offering these items up for sale for the readers of the Morning Star.

Giant Binoculars:

Oberwerk 12 X 60 Binoculars, Used but in good condition, soft case, FOV (Field of View) 5.7°, ER (Eye Relief) 14mm, EP (Exit Pupil) 5.0 mm. **\$60.00**

Garrett Optical 15 x 70 Binoculars, Used but in good condition, soft case, FOV 4.3°, ER 16mm, EP 4.6mm. **\$75.00**

Newtonian Telescope Mirrors: Left over from my mirror making class from students who did not finish their telescopes.

8" F/6 Pyrex mirror and mirror mount. Beral Coating, approx. 1/7 wave; **\$80.00**

10" F/4.975 Pyrex mirror and mirror mount, Enhanced Aluminum 96% coating, approx. 1/6 wave; **\$150.00**

Gary Nowak gtnowak@surfglobal.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 back at the Swap Tables the previous year. I don't really need 2 spares.

\$140 OBO.

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

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

Equatorial mount with oak tripod

2", 20mm Nagler type 2

2" 45deg. righting prism

2" Big Barlow

2", 4.8mm Nagler

1-1/4", 26mm Plossl

2", 45deg. Prism camera adapter

New Price \$1850 - will negotiate.

Contact Richard Cummings at Rick@vsbmetal.com

Or you can contact Ron Anstey anstey@myfairpoint.net

For sale - Binocular parallelogram mounts. Work well for use with lounge chair for looking at higher elevations or for multiple observers of different heights. I will fit your binoculars to the mount for optimum performance. **\$195**

Contact Keith Lawrence, 802-453-5496, sleepingbearwoodworking@yahoo.com

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

Contact Bruce Harmon, 802-876-7535 or bdhintv@yahoo.com.

6" Telescope Kit

Parts for a 6" Newtonian Telescope (unused), these were purchased new a number of years ago. The previous owner never made them into a telescope

Includes:

6 inch f/5, full thickness (1") mirror, Pyrex glass.
3 point cast aluminum mirror mount
Diagonal mirror (1 7/8" minor axis)
Diagonal mirror mount
1.25 inch rack and pinion focuser
Mirror coating are in like new condition.

Asking \$40 for the telescope parts, or best offers.

This was given to the club and is being sold by the club. It is located at Paul Walker's house.

Contact info@vtastro.org

10" Telescope Kit

Parts for a 10" Newtonian Telescope (used), these were in a home-made Dobsonian scope that was build many years ago. The tube assbly and base were in bad shape so we discarded them.

Includes:

10 inch f/5.5, lightweight (1") mirror, Pyrex glass.
Heavy duty 9 point floatation Mirror mount (Kenneth Novak & Co.)
Diagonal mirror (2.5" minor axis)
Diagonal mirror mount
1.25 inch rack and pinion focuser
Mirrors are usable as-is though could use re-coating.

Asking \$75 or best offer

This was given to the club and is being sold by the club. It is located at Paul Walker's house.

Contact info@vtastro.org

CONTINUED FROM PREVIOUS COLUMN**The second package is the telescope accessories, \$250 :**

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

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

Gene Harriman

Middleboro, Massachusetts

Bigwingboy@verizondot.net

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

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

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

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

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

Copies of "Mirror Mirror" - A History of the Human Love Affair with Reflection

by Mark Pendergrast of Colchester, Vt. available for **\$25**.

Mark will split the profits with VAS.

Contact Mark at

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

Modified Orion XT10 10 Inch Dobsonian Telescope

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

This sale is in two packages.**The first package is the telescope and mount, \$450 :**

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

CONTINUED IN NEXT COLUMN