



THE FOCUS

NEWSLETTER OF THE DELAWARE ASTRONOMICAL SOCIETY

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ON THE MERIDIAN

Just for Fun!
Comet Pons



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In This Issue

The last few weeks at DAS have been productive, despite the less-than-good weather. Galaxy season is coming on, and the best time to observe multiple Messier objects in a given evening is here now. We have included what is arguably a good primer for the "Messier Marathon" which is an exercise for non-faint-of-heart astronomers. See the article here. BTW, the article comes directly from a sales promo for a Messier Marathon book. No shame here.

The DAS workshop, in the last few weeks, under Chris Myers' guidance gave DASers an opportunity to build solar filters, just in time for the April eclipse. This session was a reprise of a workshop held several years ago, and is an example of the value of a

DAS membership.

In this issue you will see an introduction to the ZWO Seestar S50, which may be the next great astronomical device. There are



Stack of 15 x 55 sec exposures on my ASI183MC. Processed in SIRIL and MS
Photo—Sidney Ocampo

several Seestar photos, including the one to the right. Lots of good information and reviews of the Seestar beginning here.

Elections for the DAS officers is

coming up in May. See Sid Ocampo's announcement here, and don't forget to update your information in the Club database.

Friday Night Lights is scheduled for July and more information will be provided by Fred De Lucia as it gets closer.

The Book Club has been very active, and more detailed information can be found on the Club web site. The meeting calendar is included in each edition of the FOCUS.

In the meantime, Clear Skies.

Mark

Deadline for the April FOCUS is
April 2
Please submit articles or other
material to
focus@delastro.org

3/1 Monthly Meeting—"Catching a Shadow from beyond Neptune - What a minute, how far away is Neptune?"

Looking for a new astronomy project? How about using your telescope to prove that something exists by not observing a deep sky object itself, but rather

by capturing an image of its shadow. Join us as we explore and share adventures on how you can use your own telescope (or a local observatory

scope) to contribute images and/or data to researchers around the world as part of the growing citizen science facet of amateur astronomy.

MESSAGE FROM THE PRESIDENT

Dear DAS Members,

We have had some exciting activities the last few weeks, and it is about to get a whole lot more exciting! We had an extremely successful solar filter making workshop thanks to the hard work of Chris Myers. This should really help us to prepare for the April 2024 Solar Eclipse. A significant number of DAS members are planning to travel for the eclipse and are currently making their preparations and gearing up for the excitement. I hope everyone is planning to either watch the eclipse from the local area or travel to be in the eclipse path. Please let us know if you have any questions or need any advice. We recently had exciting book club and astrophotography SIG meetings. Also Chris Horrocks is starting training on the use of the club observatory. Please let him know if you are interested. Also, we have had some great Astronomy Workshops where we have worked on a number of fun projects. Please consider coming out on a Tuesday night.

I hope everyone got a chance to either attend our meeting in person or view the presentation over Zoom. Thank you to Peter Detterline for an excellent presentation about research and preparing for future trips to Mars. If you did not get a chance to see the talk or want to watch it or any of our talks for the last few years, please head over to our club [YouTube Channel](#). This month, we will have an out of this world talk by Roxanne Kamin called "Catching a Shadow from beyond Neptune - What a minute, how far away is Neptune?" As usual, a Zoom link will be sent before the meeting and the board meeting will be at 7 pm while the main meeting will start at 8 pm. You can attend both meetings if you like, since our board meetings are open meetings, or you can show up (or log in) a little before 8 pm to attend the main meeting.

Remember that we are still holding DAS Astronomy Workshops every Tuesday, working on projects, and doing observations. All of you are welcome to attend and if you have any questions about astronomy, need help with a telescope, need help with an astronomy project, want to observe with club telescopes, or just want to talk with your DAS friends, these meetings are a great place to do all of that. We also have monthly AP-SIG meetings and Book Club meetings, please watch for announcements on Groups.io. We have a number of outreach events coming up as well. Please consider bringing a telescope out to help at one of the events, since it is a lot of fun! We are also planning on having more member star parties and deep sky sessions this winter and spring. Please stay tuned for details for more of these sessions or events via groups.io. I hope to see you at some of our events!

Thank you,
Rob Lancaster

March Monthly Meeting

Hold the
Date!

Tuesday,
May 21

Charles Messier

- 1730-1817
- France



- discovered upwards of 21 comets
- compiled a famous catalog of non comet objects he observed (nebulae, galaxies and star clusters) that are now called Messier Objects (named M1 through M110)
- Examples of his discoveries: Crab Nebula and the Andromeda Galaxy

Meeting Speaker Bio —Roxanne Kamin

As an avid amateur astronomer and fly fishermen, Roxanne Kamin has viewed night skies from both the Northern and Southern hemispheres, including three trips to Australia with the Southwest Research Institute (SwRI) / NASA. Recently retired from IBM and residing near Hershey,

she is active in measuring asteroids with SwRI along with the International Occultation Timing Association (IOTA), and can be found most clear nights observing at Cherry Springs, the Naylor Observatory, Ryan Observatory at Muddy Run or simply from her home.

Roxanne's observing gear currently includes; a 16" f/4 New Moon Dob along with a C11HD SCT and an 80mm Stelervue (EQ6R-Pro, HAZ31, Pegasus NYX101 mounts) or on sunny days, a SolarMax III. Her go to cameras are QHY and Mallin-Cam.

2024 DAS Annual Dinner Meeting

2024 DAS Annual Dinner Meeting

St. Thomas Episcopal Church (276 S College Ave, Newark, DE 19711)

Guest speaker is Dr. Jessica Noviello who will discuss the Mysteries of Cryovolcanism

Bread & butter

Salad

Meat or Vegetarian Lasagna Bolognese with a vegetable

Dessert

Water & soda

Beer & wine by free will donation

****please contact Jeff (jefflaw76@gmail.com) for any allergy concerns**

—> PRICE IS STILL \$20!

[REGISTER HERE](#)

M is for March Messier Marathon

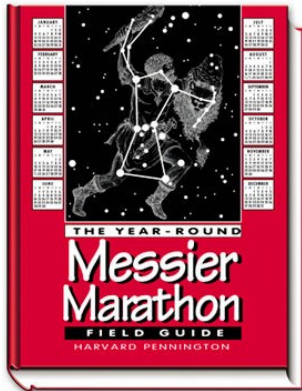
The Messier Marathon is here! This is an exciting challenge of spotting all 110 objects in a single night. The best time for this is during the new moon and the optimal weekend this year is March 9 to 10. This issue of the FOCUS will appear after the optimum window, but you still can explore most, if not all, of the Messier objects in March and April.

The next page is unabashedly lifted from the ShopatSky.com web site, and it provides a good explanation of the Messier Marathon and also is a site where you can order the book *The Year-Round Messier Marathon*. This book is one of the best Messier guides in print.

If you take the Messier challenge, let us at the FOCUS know and we can share your experience. —Kathy Koons

Messier Marathon Primer-

[From Sky & Telescope's Store.](#)
[Shop at Sky/com](#)



Among the deepest satisfactions of amateur astronomy is knowing your way around the sky. From the familiar guideposts of the brightest stars, you confidently point your binoculars or telescope toward the Andromeda galaxy, the Hercules cluster, or the Lagoon nebula. This book was written for the person who wants to become deeply familiar with the most famous list of 110 deep-sky wonders, the Messier objects. Using bright “guidepost stars” and detailed sky charts, the novice soon learns how to find the nebulae, star clusters, and galaxies that every amateur astronomer should know. And you need not “run” this marathon just a few weeks a year. Even at the worst you will have about 90 of the 110 objects visible throughout the year!

The observing techniques taught in this book are both easy to learn and powerful, suitable not only for the novice but also for the experienced amateur. By following the sequence of charts presented in the second half of the book, a beginner using Harvard Pennington's methods should be able to locate and identify 25 to 30 Messier objects at any time of year before midnight. By working systematically against time, by running the “Messier Marathon” the observer quickly hones crucial observing skills and soon gains a deep familiarity with the night sky.

Once each year, on a moonless night during late March or early April, observers have an opportunity to test their skills by trying to observe all 110 objects that make up the Messier catalog in just one night! In the early evening, it's a race against time to sight the first objects before they set. During the night, marathoners maintain a steady pace to find object after object, and as the dawn light grows, they try to spot the last one before it is lost in the morning twilight. It is not easy, but those who have done the dusk-to-dawn Messier Marathon run it again and again.

In this book, Harvard Pennington shows how to:

- Learn 17 bright finder stars and 17 prominent finder constellations so you will know where to look for all 110 Messier objects.
- Align a sighting device such as the Telrad® so that you can point your telescope rapidly and with assurance toward all of the Messier objects
- Calibrate your telescope so that you know exactly how much sky you see through your finder and through the eyepiece of your telescope.
- Find all of the Messier objects using the maps, drawings and descriptions included in this book. You will know exactly where to point your telescope, and what the object should look like when you find it.
- The [Year-Round Messier Marathon Field Guide](#) is designed around pages like those shown above which take the guess work out of locating Messier Objects. The circles shown on the map of Orion are Telrad finder views. Just place the Telrad as shown and you are very close. Then check (if necessary) the 8 x 50 finder views shown on the opposite page to zero in on the object. The sketches and accompanying text take the guess work out any final identification. This technique works year-round so you do not have to limit your fun to a single night in the Spring!

To enjoy a gallery of 85 of the 110 Messier objects imaged by Hubble please click [HERE](#).

**VOTE!
FOR YOUR
FAVORITE
OFFICER**

**OR
JOIN THE
DAS
BOARD!**

**THANK
YOU
CHRIS
MYERS!**

2024 DAS ELECTIONS ARE COMING UP

WE ARE OPEN FOR NOMINEES! Feel free to nominate someone or yourself for any of the club's officer positions; President, Vice-President, Treasurer, and Secretary. Deadline for submissions would be at the April 16th Members meeting.

The primary qualification for nomination is simply a desire to contribute some of your energy and time to DAS for the benefit of all the members, and would need to be 16 years of age or older. If you haven't nominated yourself, or anyone previously, why not take the step to become a larger part of an outstanding organization. Nominees' names should be emailed to me; Sidney Ocampo at sidastronomy@yahoo.com. Along with a 200 to 500 word write up about yourself.

SPECIAL NOTE FOR ALL MEMBERS: Kindly verify that your email address, mailing address and phone number. We would like to update the current membership information file prior to the May 1st balloting. Please email your current contact information to Bob Trebilcock, DAS Treasurer at treblicock@aol.com. By doing so, Bob can keep the club's records updated, and thereby, your votes will assuredly count.

Thank you and clear skies!

Sidney Ocampo DAS Elections Chair

Recently DAS members met at Mt Cuba, where Chris Myers led a workshop to build solar filters for scopes and binoculars in anticipation of the April 8th solar eclipse. He had us dusting off our early grade school art skills to cut, bend, glue, tape and coax foam board into cylinders, which we fitted with white-light solar film. While we waited for glue to dry, Chris demonstrated with a flashlight how to check a filter's integrity before each use. Chris' time and patience provided observing and a fun evening. Hey, come on, when was the last time your scissors stuck to your gluey fingers!?

Fortunately, we were able step outside to put our solar filters to immediate use and observe currently active sun spots. -Kathy Koons

SOLAR FILTER WORKSHOP

On Saturday, February 24th , glue guns, X-acto knives, and cardstock were aflutter as DAS members built solar filters for their telescopes, binoculars, and camera lenses. Chris Myers led a group of 13 people through the process of constructing inexpensive, but durable and effective filters in preparation for this April's total eclipse

Rob Lancaster, Bill McKibben, Craig Deppish, Kathy Koons, Tom Lapp, Jeff Miller, Robert Stack, Eric Stricko, Keith Love, and Sidney Ocampo made filters, while Jeff Lawrence, Greg Lee, and Dave Groski provided comradery and moral support.

Please note – staring directly at the sun, either with your bare eyes or especially through a telescope is very dangerous without the proper filter. If making your own filter, please be careful – if not built properly, you can still damage your eyes. Chris was great in reinforcing solar viewing safety, and proper filter construction. –Jeff Lawrence

Chris cautions Keith and Craig to not cut themselves, while Robert takes a break from construction to work on the DAS Library



Bill and Sid try very hard to look exactly like



Kathy challenges Tom to fit as many circles on one page as Jeff

DAS BOOK CLUB 2024 CALENDAR

All Meetings are held via Zoom at 7 PM ET
Guests are welcome to attend.
Questions? email librarian@delastro.org

January 25	<i>Ormsby Macknight Mitchel, Astronomer and General: A Biographical Narrative</i> (1887) By Frederick Augustus Mitchel	Philip S. Shoemaker PhD, author of <i>Ormsby Macknight Mitchel and Astronomy in Antebellum America</i> and Trudy E. Bell, contributing editor for <i>Sky & Telescope</i> will join us. Brad Wolvin will lead the meeting.
February 29	<i>How William Huggins Shaped Astrophysics</i> by Barbara J. Becker	Celebration of the bicentenary of the birth of English astronomer William Huggins (1824-1910), best known for his pioneering work in astronomical spectroscopy together with his wife, Margaret. Barbara J. Becker Ph.D., the leading expert in the life & work of Huggins will join us. Jim Barkley will lead the meeting.
March 28	<i>Amazing Stories - Armageddon 2419 A.D.</i> by Philip Francis Nowlan	Philip Francis Nowlan's granddaughter, Diane McDevitt, will join us. Matt Brobowsky and Marie Breton will lead the meeting.
April 25	<i>The Globemakers: The Curious Story of an Ancient Craft</i> by Peter Bellerby	Author and globemaker, Peter Bellerby, will join us. Greg McNiff will lead the meeting.
May 30	<i>Catchers of the Light</i> by Stefan Hughes	Nico Carver will lead our discussion. The Delaware Photographic Society has been invited to join us.
June 27	<i>The Day We Found the Universe</i> by Marcia Bartusiak	Marcia Bartusiak will join us. David Ives Brown will lead the meeting.
July 25	<i>Nathaniel Bowditch and the Power of Numbers</i> by Tamara Plakins Thornton	Tamara Plakins Thornton will join us.
August 29	<i>Accidental Astronomy: How Random Discoveries Shape the Science of Space</i> by Chris Lintott	Oxford and Gresham Professor Chris Lintott will join us.
September 26	<i>The Sirens of Mars: Searching for Life on Another World</i> by Sarah Stewart Johnson	Professor Johnson will join us. Jim Kerschen will lead the meeting.
October 24	<i>Lenape Astronomy</i> by Professor Emeritus Roslyn Frank	Professor Roslyn Franklin and Chief Dennis J. Coker and Citizens of the Lenape Indian Tribe of Delaware will join us
November 28	<i>Origin of the American Astronomical Society</i> by David DeVorkin PhD	Professor DeVorkin and members of the AAS will join us to celebrate the 125th anniversary of the founding of the AAS.
December 19	<i>What an Owl Knows: The New Science of the World's Most Enigmatic Birds</i> by Jennifer Ackerman	Ian Stewart, ornithologist, and members of the Delaware Nature Society will join us

If you would like to purchase books, please contact Dr. Claire van den Broek, Founding Partner, at [Huxley and Hiro Books](https://www.huxleyandhiro.com), a Delaware Public Benefit LLC, at 419 N. Market Street Wilmington, Delaware 19801 Store: (302) 439-0805 Mobile: (971) 386-8294 Email: claire@huxleyandhiro.com

INTRODUCING THE NEXT BEST ASTRO SCOPE

ZWO Seestar S50 50mm f/5 All-in-One Smart Telescope*



The **Seestar S50 50mm f/5 All-in-One Smart Telescope** from **ZWO Astro** lets even novice users observe and photograph the cosmos without the need for bulky, complex equipment. Simply connect your phone or tablet and select the celestial object you want to see—the Seestar S50 turns to and focuses on your target, delivering unforgettable views of our universe, even from light-polluted cities. The telescope employs an air-spaced triplet apochromatic lens system and is equipped with light-pollution and solar filters. Live-stacking capability allows you to enhance your images the way the experts do. In Landscape mode, the S50 can be used for terrestrial observation and photography, too. Wi-Fi and Bluetooth connectivity allow you to enjoy and share your photos and video.



- App on smartphone or tablet controls finding/tracking celestial objects and displays imagery
- 1920 x 1080 image resolution
- OIII 30nm and Ha20nm filters reduce the impact of urban light pollution and moonlight
- ND 5.0 filter blocks 99.999% of white light for solar observation
- Scenery mode for landscape/terrestrial photography, Stargazing mode for lunar, solar, and deep-space imaging
- Live-stacking capability for images with enhanced color and detail
- Triplet air-spaced apochromatic lens system resolves three colors instead of the more common two to minimize chromatic aberration or "color fringing"
- 6000mAh rechargeable battery, 6 hours runtime
- 14.3" tabletop tripod with 3/8" mounting screw

** The information above is from the [B&H Photo and Video web site](#) and is in no way an endorsement of B&H. This is being used as an easy way for DAS members to have an overview of a device that both experienced and newer members of the Club are excited about and, in some cases, already own and are using a Seestar. See the following articles.—MJ*

SEESTAR FIRST IMPRESSIONS FROM A NEW OBSERVER

BY JEFF MILLER



I first learned of the ZWO Seestar S50 telescope from Dave Groski at a DAS workshop last fall. It seemed like a very simple and inexpensive way to jumpstart observations at home combined with astrophotography and immediately perked my interest. He brought his Seestar to a workshop in mid-January and it became very clear that this was for me. I ordered mine from High Point Scientific (\$499 + tax and free shipping) and received it a few days later. The Seestar weighs 6.6 lb, comes with a short carbon fiber tripod, an external solar filter, internal dew heater and an internal light filter, all of which fit in a foam case. It works entirely through the Seestar App (phone, tablet, laptop) by WIFI. One of several tutorials/reviews can be found here: [Seestar S50 Review and Setup Guide](#)



I followed the setup guide provided in the Seestar app and quickly connected the telescope. It has 5 observing choices: Stargazing, Solar, Lunar, Planetary and Scenery. The Solar and Lunar choices include 1X, 2X, 4X, time lapse and video options. There are also suggestions for the best deep sky objects to observe each night. My first observation was the Orion Nebula (M42). A few nights later I looked at the moon (85% illuminated) and then the sun and M31 on February 29th. In each case the telescope easily found the object of interest, checked to see if the object was centered and performed an autofocus, although manual focus is an option (see pictures below, none of which have been processed further). I would note that the M31 picture was taken when it was very low in the western sky and light pollution was significant so I had to limit the exposure time.

In short, the Seestar S50 offers an inexpensive and simple way for a beginner to focus on observing. It is very lightweight, easy to transport and sets up quickly. I look forward to using it for the eclipse in April and on many nights each month. -Jeff Miller



The specifications are:

- Sensor - IMX 462
- Aperture - 50mm (2")
- Focal Ratio - f/4.9
- Focal Length - 250mm
- Resolution - 2 MP
- Weight - 6.6 lb



SEESTAR REVIEW FROM A SEASONED MEMBER

BY DAVE GROSKI

I hope that everyone understands the note below is my tongue-in-cheek response regarding the SeeStar. There are very dedicated astronomers, both visual and astrophotographers, who may resist the technology that may be able to change observing as we know it. Hopefully the Seestar will open the doors to new astronomers, and those who are more experienced, at a great price point. There is something to be said for almost instant gratification.

*Rob asked for thoughts about buying a SeeStar for our Club members to use. I **recommend we do not buy one**. My view is that like many seasoned amateurs complaining about new amateurs with GOTO telescopes is that they haven't "paid their dues". They don't know the sky, can't star hop to find objects and are totally lost without their GOTO scope. Just like GOTO scopes, the SeeStar S50 makes Astrophotography too easy—just way too easy! You just set it down, level it, connect to it with your phone or tablet and start taking nice images. All this in less than 10 minutes. What have they learned?*

Real Astrophotographers need to pay their dues. They need to understand how to set up their equipment, understand signal to noise ratio, pixel size vs focal length, cooling vs non-cooling, dark and flat fields, just to name a few. We can't have our members not fully understand this. They need to understand exactly how the images published in the FOCUS were processed and why this processing was chosen. With this device a novice can be imaging in minutes and doing it right the first time, using it taking great images. We are not doing our members any favors by having them miss out on experiencing frozen toes and fingers trying to type on their computer to control their astrophotography equipment versus being inside in their family room by the fire easily controlling their SeeStar in comfort. We don't want "soft" astrophotographers. I recommend we buy a couple of old 35mm SLR cameras so our members can start at the beginning, with film, and learn astrophotography the Hard Way like we had to do. So we don't need to acquire a simple device that the SeeStars is, especially one that does what it is supposed to do. Nope. We need to make sure our members do it right and pay their dues.

Ok I'll get serious now about my review of my SeeStar S50. I have been doing astrophotography since 1976 and started with a 35mm SLR and film. When CCD cameras came out I built my own, wrote my own image processing software, contributed to the "CCD Camera Cookbook" and had some images published in CCD Astronomy Magazine. I have been follow advancements in this subset of amateur astronomy over the years and the latest being that astrophotographers had been able to integrate GOTO mounts, cameras, electronic focusers, filter wheels, dew heaters and auxiliary finders that can do plate solving into one system controller with Raspberry type computers, Then they control this package wirelessly from another computer running programs that can talk to all these components. All these components needed to be purchased and the user needed to understand how to integrate them. Finally, if one doesn't have an observatory to store the assembled equipment, it takes a significant amount of time to set up in the field even if the field is one's own backyard.

In the Summer of 2023, ZWO started to advertise that they were coming out with a complete astrophotography system that integrated all of the needed parts into one package that could be controlled by an App on a phone or tablet and that the introductory price would be \$399 but they were not going to start shipping until the Fall. I decided to wait to see if the ad was hype or if the device would perform as they said but, in the meantime, the price increased to \$499.

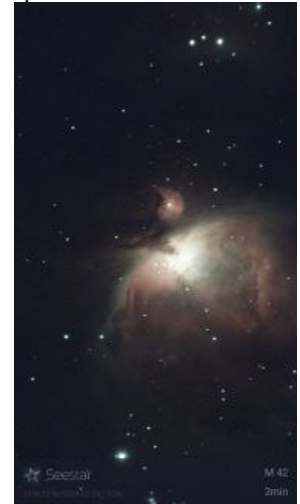
SEESTAR REVIEW FROM A SEASONED MEMBER, CONT'D

This is not the first system like this but they cost in the thousands of dollars and there were issues with them from the reviews I had read. In Fall 2023 the first SeeStars were shipped and within a few days the reviews on sites like Cloudy Nights and YouTube videos started to show up. All of them were very good and said the device was doing what was advertised. The images that were published were also impressive, especially since the SeeStar uses a 50mm APO lens. In the meantime the DAS Board discussed acquiring one for member use. That decision was put on hold until we knew more about the device.

With reviews being very good in early January I decided to buy one. It arrived in a few days and while I waited I watched a number of videos explaining how to use it. The SeeStar is about the size of a shoe box and sits on a small tripod. I charged the unit via the USB port and waited for stars to come up.



When it was dark I sat it down on my back deck, leveled it using the simple routine in the App and told it to find the Orion Nebula. That took less than 10 minutes from the time it was placed on my deck. The app told me that M42 was found and I told it to start to take an image. The SeeStar took dark frames and started taking 10 second exposures. After each exposure it would stack it onto the last and enhance the image. So you watch in real time as the image is improving. The image it produced (*right*) after 3 minutes was excellent and I was just amazed at how easy it was to use. Next I told it to find the Horse Head. Within a minute it was found and after 20 seconds the Horse was clearly visible on my phone. I let it go for a number of minutes and again the image (*left*) was impressive with no processing. I was doing this sitting in my family room with a fire going and in comfort watching TV. Over the last two months I have used it a number of times and within 10



minutes of it coming out the case I'm taking images and doing it from the comfort of my house. When I'm done it takes 3 minutes to have it shut itself down, back in the house and back in its case. Besides Deep Sky imaging it will also do Solar imaging with the included solar filter, Lunar, Planetary and scenery mode. It also can take movies and do time lapse imaging.

The bottom line is that the SeeStar S50 does what it says it will do, does it well, and is very easy to use. If you're looking to get into introductory astrophotography you should look seriously into a SeeStar. —Dave Groski

Seestar images provided by Dave Groski.

These are unprocessed, but may be enhanced via AP software.

Due to copy and recopy from the originals, much detail was lost, but the originals as provided by Dave contained much more detail and were excellent! -MJ



SKETCH GALLERY

Sunspots by Chris Myers

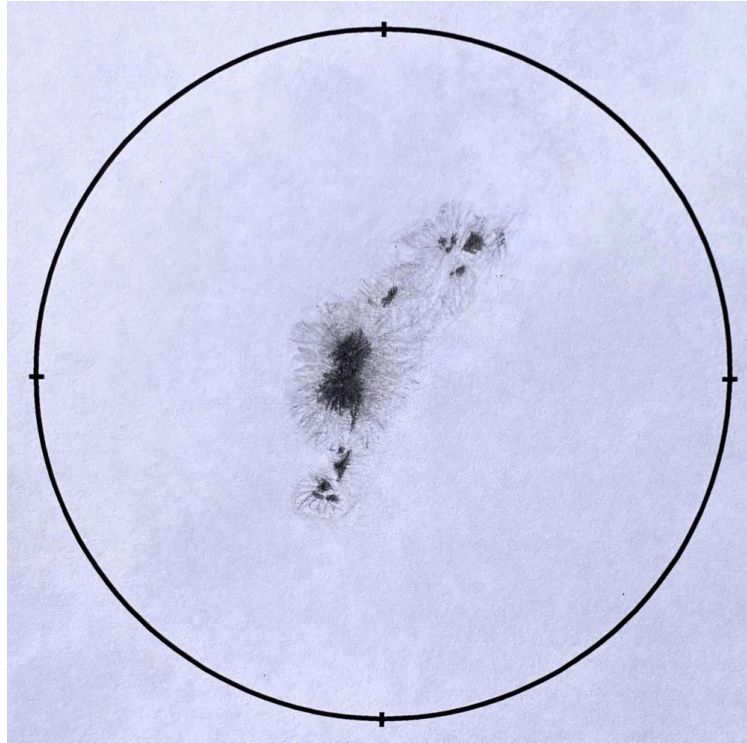
2/25/24

Sunspot region 3590

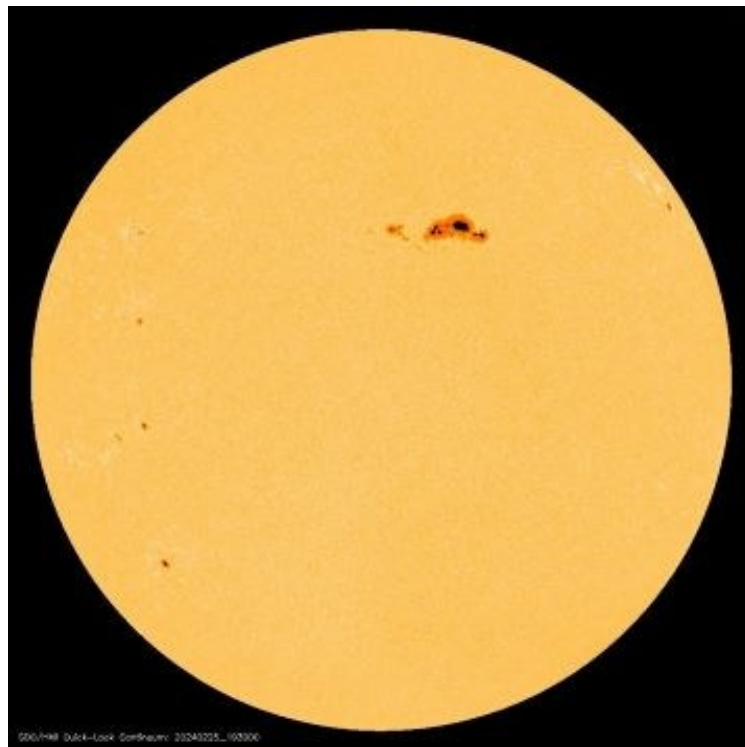
Celestron 8se, 12mm
eyepiece

Pencil and paper

**Using solar filter with
Baader film constructed
at recent DAS Solar Fil-
ter Workshop.**



For reference, SOHO/
NASA image of the sun
taken at approximately
the same time:



January 2024 AP-SIG Meeting Report

by Bill Hanagan, AP-SIG Founder

Elephant Trunk detail by
Mark Mitchell

On Saturday, February 24, the AP-SIG met on-line once again via Zoom.

We began by capturing the group photo below. Missing from the photo are Jeff Miller and Anthony Albence, who experienced a connection problem.

We continued with our usual presentation of astrophotos. I started off by showing HOO and HSHO versions of my latest image of the Soul nebula, which appear elsewhere in this issue of the FOCUS. I followed my photos up with a 6 minute video by NASA/Spitzer discussing aspects of star formation in the Soul nebula.

Dana Wright continued, showing a “work in progress” image of the Heart nebula. We also discussed Dana’s new QSI 683-wsg8 CCD camera which he used to acquire his data.

Lou Varvarezis showed an image of M1 “in progress” using data acquired by Agapios Elia from Agapios’ new observatory on the island of Crete. Lou also showed his own versions of the Witches Broom, the Horsehead, and Thor’s Helmet.

Following the presentation of astrophotos, I explained why it’s “proper” to use an H-alpha image as a substitute for the luminance in narrowband images. I also showed an example of the benefits this produces in terms of image sharpness and noise reduction.

The next meeting of the AP-SIG is scheduled for Saturday, May 11. We’re skipping both March and April due to preparations and travel before and after the April 8 Total Solar Eclipse.



Astrophotos by AP-SIG & DAS Members

Highlights of the Soul Nebula in HOO and HSHO, by Bill Hanagan

On the following three pages, you can see my first image of the Soul nebula (W5, SH2-199, IC 1848, LBN 667) in two different color mappings (HOO and HSHO), along with a crop from the HSHO image. Be sure to zoom in and take a close look for that space-walk feeling, even on the cropped image!

The Soul nebula spans more than 2 degrees. To capture the entire Soul nebula at a resolution limited by the long-exposure seeing, using my current equipment, I would need to create a 4-panel mosaic. Instead, I chose a single frame positioned to capture the part of the Soul nebula where I expected to see the most interesting details. The field of view I selected is shown by the red rectangle in the Stellarium view (right). In this orientation, North is to the left and the Soul nebula can be seen to have an upper and a lower section separated by a horizontal boundary that starts at the large dark gap on the left side of the nebula.

In the HSHO image, the cavities of the two sections of the nebula appear blue in color thanks to OIII emission being strong there. Note that the dust columns at the periphery of the upper cavity near the top of my images point upward toward the star responsible for their formation, which is out of the field of view, while the dust columns in the lower section point toward the center of the lower cavity. This strongly suggests that different stars are responsible for the formation of the dust columns in each of the two main sections of the Soul nebula. Enjoy!









Soul Nebula (IC1848, SH2-199) Image Acquisition Details

- I acquired the data in Rick Spencer's Observatory using both his and my own equipment.
- Scope: 10" Takahashi CCA-250 with 0.72x reducer, at 890 mm and f/3.6 (unobstructed equivalent f/4.63).
- Mount: Astro-Physics 1100GTO with CP4.
- Imaging Camera: QSI-683wsg8, w OAG, @ -20C.
- Guide Camera: SX Ultrastar (monochrome).
- Computer: Self-built Windows 10 Small Form Factor (SFF) desktop optimized for observatory use.
- Windows Software: ASCOM, APCC Pro, Stellarium, Sequence Generator Pro (SGP), and PHD2.
- Sub-exposures: 10 minutes x 93 Ha, 60 OIII, and 59 SII, all binned 1x1.
- Total light frame integration time: 35 hours 20 minutes.

PixInsight Image Processing for the Soul Nebula—Preparation of Masters and Preliminary Processing

- A 2X DrizzleIntegration workflow was used to double the number of pixels in both dimensions of the image.
- This gives a very slight increase in resolution.
- More importantly, this prevents pixels from becoming visible after deconvolution with BlurXTerminator.
- Blink was used to screen images for bright satellite trails.
- ImageCalibration, CosmeticCorrection, StarAlignment, SubframeSelector, ImageIntegration, DrizzleIntegration, & Crop were used to produce Ha, SII, and OIII Masters in the usual way.
 - Note that SubframeSelector has been updated and is now recommended in place of Blink for rejecting low grade sub-exposures ahead of ImageIntegration.
- ChannelCombination was used to produce linear HOO and SHO images that were ready for further processing.

PixInsight Image Processing for the HOO Mapped Soul Nebula

- Spectrophotometric color calibration was applied to give the best color balance achievable with narrowband filters.
- BlurXTerminator and NoiseXTerminator were used for deconvolution and to reduce random noise.
- HistogramTransformation and CurvesTransformation were used for stretching in a color-neutral fashion to preserve the color balance of the linear HOO image.
- Background Neutralization was applied to remove a low level background tint, but produced no noticeable impact on the color balance in the bright areas of the image.
- StarXTerminator was applied to a copy of the finished HOO image to produce a “stars-only” HOO image for later use.

PixInsight Image Processing for the HSHO Mapped Soul Nebula

- BlurXTerminator was used on the H and SHO images.
- StarXTerminator was used to remove stars from both images.
- NoiseXTerminator was used to reduce noise in both images.
- The SHO image was stretched via HistogramTransformation.
- A Luminance image was extracted from the SHO image to prepare for luminance substitution.
- The H-alpha image was stretched to match the extracted luminance.
- LRGBCombination was used to insert the stretched H-alpha image into the SHO image as a substitute luminance. The improved S/N allows BlurXTerminator and NoiseXTerminator to work better. The leading H in the HSHO designates the use of H-alpha as the luminance in the image.
- CurvesTransformation was used to fine tune the stretch and aesthetic color balance of the starless HSHO image.
- The stars from the image were given an HOO color balance before “rescreening” via PixelMath, bringing them back into the HSHO image.

LRG3-757

By Mark Mitchell
My photo on next page

In 1704 Isaac Newton wondered if the force of gravity would deflect "light corpuscles". In 1912 Einstein had speculated that multiple images of a distant object might be seen as light passed around a star that was closer to us, but he thought that this would be a very unlikely occurrence. In 1937 Fritz Zwicky suggested that a cluster of galaxies might be massive enough to make this phenomenon more likely. Such a structure is now called an Einstein ring or a gravitational lens. The first gravitational lens was discovered in 1979. It looked like two identical quasars and was catalogued as SBS 0957+561. Since then, hundreds of these objects have been identified.

LRG3-757, also called the Cosmic Horseshoe, is a gravitational lens in the constellation Leo. It was discovered in 2007 using the Sloan Digital Sky Survey. The picture of it below was taken by the Hubble Space Telescope:



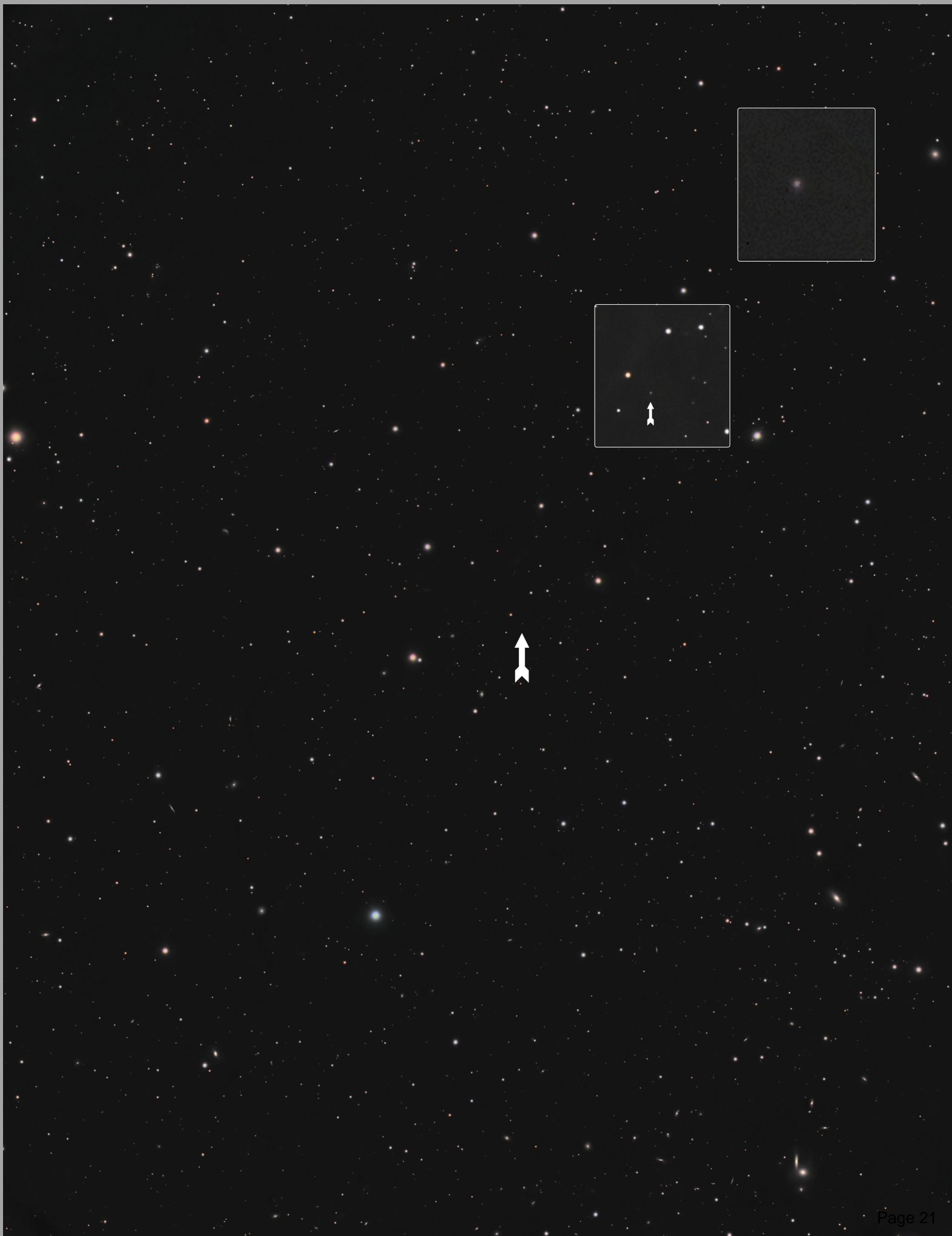
The massive red foreground galaxy is 5.6 Gly away (redshift $z = 0.4457$). The background lensed galaxy is 18.9 Gly away ($z = 2.379$) [!].

So, I wondered if it would be possible for me to image one of these things.

LRG3-757 is visible in my 5h 42

minute LRGB exposure shown on the next page. It is a magnitude 20.3 target. This image was made with a 5 inch refractor telescope, in a light polluted sky (Bortle 6), with my neighbor's new LED flood light shining on me (I blocked it with a piece of cardboard).

The arrow points to LRG3-757. The first inset is magnified 2x. The second inset is magnified about 8x. The target has a different appearance from other dim stars showing some outline complexity. The actual gravitational lens appearance is not detectable here.



M1

By Ron Worden

Pictures on the next page

From the Snobie Observatory at the Lincoln Control Center in Bear, DE
M1, NGC 1952, Taurus A is a supernova remnant and pulsar wind nebula in
the constellation of Taurus.

Technical Information:

Target: M1, NGC 1952, Taurus A

Constellation: Taurus

Right Ascension: 05h 34m 31.94s

Declination: +22° 00' 52.2"

Distance: ~6500ly

Apparent magnitude: 8.4

Absolute magnitude: -3.1

Apparent size: 420" × 290"

Radius: ~5.5ly

Date: 12/13/2023

Location: Snobie Observatory/Lincoln Control Center.

Bear, Delaware W75° 40' 43.04" N39° 34' 39.7"

Telescope: Sharpstar SCA260 260mm f/5 "Super" Aspherical Cassegrain

Astrograph FL 1300mm

Mount: Losmandy G11 Guided w Dithering

Camera: ZWO ASI071MCPro

Filters: OneShotColor

Guider: 60mm PrimeLuce Lab F4 240mm FL w ZWO174 as autoguider(+/-1arcsec)

Temperature: 35°F Ambient cooled to 0°F

Exposure: 18LF's 300sec subs(1.5hrs)

Software: PixInsight, PaintshopPro

Frame: 41.5' x 62.4' arcmin

Calibration with: Master Dark

Observer: Ron Worden



Copyright Ron Worden



Copyright Ron Worden

M51

By Ron Worden

Pictures on the next page

From the Snobie Observatory at the Lincoln Control Center in Bear, DE
M51 (NGC 5194) Also known as the Whirlpool Galaxy is an interactive
spiral galaxy in the constellation Canes Venatici. Small companion NGC
5195

Technical Information:

Target : M51 (NGC 5194) The Whirlpool Galaxy. Small companion NGC 5195

Constellation: Canes Venatici

Right Ascension: 13h 29m 52.7s

Declination: +47° 11' 43"

Distance: ~23 mly

Apparent magnitude 8.4

Apparent size: 11'.2 x 6'.9

Diameter: 60,000 ly

Date: 02/8/2024

Location: Snobie Observatory/Lincoln Control Center.

Bear, Delaware W75° 40' 43.04" N39° 34' 39.7"

Telescope: Sharpstar SCA260 260mm f/5 "Super" Asphdserical Cassegrain Astrograph FL
1300mm

Mount: Losmandy G11, Guided with Dithering

Cameras: : ZWO ASI071MCPro

Temperature: 30°F cooled to 0°C

Filters: OneShotColor

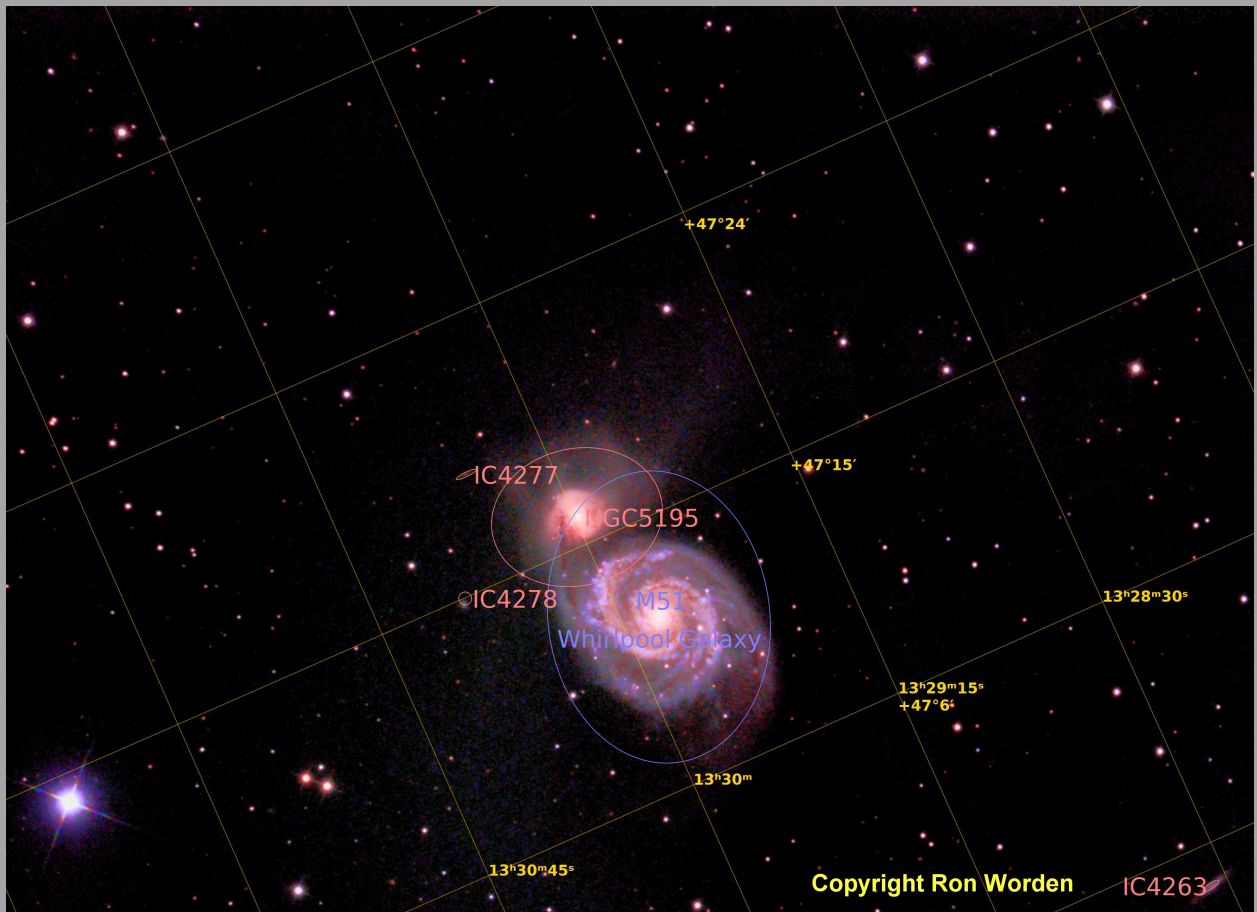
Exposure: 15LFs 300sec(1.25hrs)

Software: PixInsight, PaintshopPro

Frame: 19.4x25.8 arcmin

Calibration with: Master Dark

Observer: Ron Worden



3/19/24 DAS Board Meeting Agenda

- Review of Minutes from Last Meeting – Bill McKibben
- Treasurer’s Report – Bob Trebilcock
- DAS Dinner Meeting Planning - Jeff Lawrence
- Sawin Observatory Preparations for Member Use - Chris Horrocks

DAS CONTACTS

OFFICERS:

President: Rob Lancaster, Rlancaste AT gmail DOT com

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Secretary: Bill McKibben, BillMcK21921 AT gmail DOT com

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Dave Groski, groski AT udel DOT edu

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STANDING COMMITTEE CHAIRS:

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Education: Jim Kerschen Kerschen AT Verizon.net

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Observing: Greg Lee, (302)252-7806, greglee288 AT gmail DOT com

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OTHER POSITIONS:

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Astronomical League Coordinator: K Lynn King, klynnking AT verizon DOT net

Astro-Photography Special Interest Group (AP-SIG): Bill Hanagan, hanaganw AT verizon DOT net

Awards Chair: Chris Horrocks bettysmithers AT verizon DOT net

DAS Book Club Leader: Mary Webb, librarian AT delaastro DOT org

Elections Chair: Sidney Ocampo, gegocampo AT gmail DOT com

Programs Chair: Jeff Lawrence, Jeff AT DelAstro DOT org

Webmaster: Rob Lancaster, Rlancaste AT gmail DOT com

Refreshments Diana Metzger, (302) 290-2108, DmetzgerMD AT gmail DOT com



IMPORTANT INFORMATION FOR NEW DAS MEMBERS

www.DelAstro.org

MONTHLY GENERAL MEETING

We meet on the 3rd Tuesday of the Month, September through June, at 8pm. The meetings are held at the Mt. Cuba Astronomical Observatory located at 1610 Hillside Mill Road in Greenville, DE. In May, we have a special Awards Dinner Meeting, held off-site.



JOIN THE DAS GROUP EMAIL LIST

We rely on a group email service at groups.io for announcements such as Member Star Parties, monthly meeting topics, Special Interest meetings and other communication among members. To subscribe to the service check [the DAS website](http://theDASwebsite) for how to join so you don't miss out on important events or just send an email to: DAS+subscribe <at> groups.io.

OUTREACH

We like to share our passion for astronomy with the public. It is a lot of fun to witness someone's first view of the craters of the moon, the rings of Saturn, or the moons of Jupiter. We hold events with school groups, different clubs and the general public.

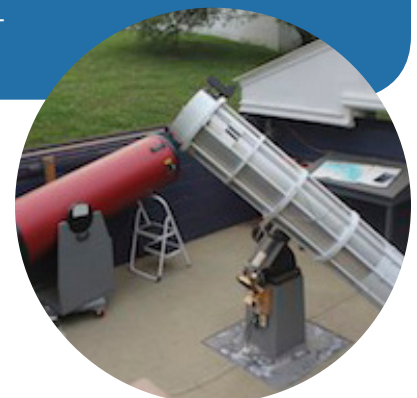


LOANER TELESCOPES

DAS members can take home and borrow any one of the club's loaner telescopes for a month at a time. Current equipment includes two 6" dobsonions, two 8" dobsonians, and an 8" Schmidt-Cassegrain

SAWIN OBSERVATORY

On the grounds of the Mt. Cuba Astronomical Observatory DAS maintains The Sawin Observatory that houses the club's telescopes. DAS members can obtain certification for use of these and other telescopes and the observatory. After certification, club members will be issued a key to the Sawin to use it any time.



ASTRONOMY WORKSHOPS

Take advantage of the club's collective experience to accelerate your knowledge to the next level. Members meet at Mt. Cuba every Tuesday night all year long (weather permitting) and are very willing to share their knowledge of astronomy and related equipment.



THE FOCUS NEWSLETTER

The DAS produces a newsletter 10 months out of the year. It posts to the website's [FOCUS page](#) with notice to members via email. It highlights news about DAS activities, members' projects, upcoming events and more. Members submit articles for publication by email to the publications chair. The newsletter is accessed through the DAS website by following the "[FOCUS](#)" link at www.DelAstro.org.

ASTROPHOTOGRAPHY (AP-SIG)

Astrophotography Special Interest Group (AP-SIG) Meetings are informal and held monthly at various sites conducive to the meeting's topics. Some are held at members' homes, imaging sites, or at Mt. Cuba. Non-members are welcome to attend AP-SIG meetings to experience it and decide before joining. For details on upcoming meetings, please subscribe to the [DAS group email list](#).



BOOK CLUB

The DAS Book Club reads and discusses an Astronomy-related book each month. DAS members and their friends are encouraged to attend book club meetings. For details on upcoming meetings, please check the calendar on the DAS website.



TELESCOPE MAKING

If you are the hands-on type, you can try some telescope making. Polish your own mirror or build a complete telescope. Or, join in on any of the on-going club construction projects.

DAS LIBRARY

We maintain a library of astronomy-related books, covering many different subjects. Feel free to borrow some, or donate books you may have on hand.

OTHER BENEFITS

As a club member, you receive discounts on *Astronomy* and *Sky & Telescope* magazines, along with observers' hand-books, Membership to the Astronomical League along with its quarterly magazine, *Reflector*. Also, as weather permits, club "Clear Sky Sessions" are organized to dark sites for imaging and observing.



For more about the Delaware Astronomical Society go to www.DelAstro.org