



FOCUS

Vol. 63, No. 3, March 2018

DELAWARE ASTRONOMICAL SOCIETY

**Next Meeting – Tuesday, March 20th, 2018 at 8pm
at the Mt. Cuba Astronomical Observatory**

Traveling with a Telescope

Speaker: Preston Smith

Want to get away from the light pollution and observe under some dark skies? Perhaps you want to bring a small scope along with you on your next vacation or business trip?

This presentation will show you how to do it! You will learn:

1. What is a Travel Scope “Package” and what you REALLY need to bring with you
2. How to successfully pre-plan for a trip with a Travel Scope
3. Travel tips, concerns, suggestions and lessons learned from someone who has years of experience.
4. And enjoy some “military humor” throughout the presentation.



This evening’s guest speaker is a full-time Air Force Officer in the Air National Guard stationed at the Willow Grove Air Base in Horsham, Pa. He is a world traveler (it goes with the job) and always brings a telescope with him. He’s been from Hawaii to Baghdad with different telescopes and has learned a lot about how to observe while “on the road.”

He often presents at the annual Northeast Astronomy Forum (NEAF) and local astronomy associations whenever possible. He is also a collector of vintage telescopes.

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From the President **Rob Lancaster**

DAS Members,

It is with sad hearts that we mourn the passing of our Publications Chair and Focus editor Joe Neuberger. Joe officially took over the Focus in the fall of 2008, and for the past decade he has faithfully put out an issue every single month (Sept – June) until an unfortunate car accident in the fall of 2017. He even made sure the Focus got out every month in spite of any computer problems, medical issues, or other complications that might have prevented a less dedicated publications chair from fulfilling his duty. He published over 90 issues of the Focus during this time and really brought the Focus into the digital age with improved layouts, stories with multimedia components using hyperlinks, semi-transparent watermark backgrounds, and magazine quality graphics.

Joe was a strong advocate of our club activities, frequently featuring club members' projects such as building an observatory, member astrophotos, special interest groups, and visual observation projects. Joe

also did a great job of keeping us up to date with all the latest astronomy news and current events. Joe Neuberger took the Focus from a 2 – 6 page long club newsletter and turned it into an often 20 – 40 page long publication. This is an impressive achievement, and Joe did it every month! Thank you so much Joe for all that you did over the last decade for our club! You will be sorely missed!

More details about services and other information about Joe will be forthcoming as we learn more.

I hope that everyone was able to attend last month's meeting about Richard Feynman, John Wheeler and the Gravitational Wave Debate as presented by Paul Halpern, PhD. It gave us a fascinating glimpse into the mind and social life of two of the last century's greatest physicists. I hope you will be able to join us for this month's meeting about "Traveling with your scope" by speaker Preston Smith.

Thank you,

Rob Lancaster
DAS President



A Warm Up for Galaxy Season with a Few Nebulae Thrown In

Fred De Lucia

I'll jump right to the View of the Night... the Eskimo Nebula (NGC 2392) was an eye popper at 481x in my 18" f/4.3 StarStructure ServoCat driven Dob but when I pushed it to 904x it became a jaw dropper. The brightness of the Eskimo invites magnification and if the sky conditions can support it, then the higher the power the more striking the encounter. Well, up to certain limits, of course. This night's conditions weren't the best. The sky was plagued by a milky haze and the seeing conditions were below average which is why I didn't try going beyond 904x (stay with me). Under better conditions and much darker skies I've had this object's magnification up as high as 1808x and it held up very well. But this time out the bright inner region of the nebula outlined by the outer shell had only hints of the internal structure that tested even patient averted vision.

But before all that, Greg Lee and I met at Hank's Place in Chadds Ford for some pre-session eats for our trip to the ChesLen Preserve's Lenfest Center on Saturday March 10. While at Hank's we ran into John Conrad, NASA Solar System Ambassador, who has given talks at DAS' general meetings.

Greg brought his 16" Explore Scientific Dob and both of us spent a considerable amount of time on the Eskimo's view. We chattered back and forth describing what we were picking up with direct and averted vision as we took turns at the eyepiece. The accompanying APOD image from 2013 has NGC 2392 in its full glory. No telescope will display such a colorful array (the image's color is artificially introduced through image processing) but the immediacy of the bluish-gray contrasty image launching through the eyepiece excites an observer in a way that no photograph can.

Similarly, we spent quite a stretch on open cluster Messier 46 at 4600 light years away with the planetary



Eskimo Nebula. Image Credit: X-ray: NASA/CXC/IAA-CSIC/N. Ruiz et al.; Optical: NASA/STScI

nebula NGC 2348 that appears to be embedded in it but actually is only superimposed on it at 3700 light years distant. This nebula responds beautifully to an Oxygen III filter. It pops as an easy standout in the stellar cluster's mix and supports magnification very well engaging the observer for careful study.

I had some frustrating issues after setting up the scope. A forgotten dew heater connection to my upper assembly was partly responsible for a delay and newly installed larger alignment knobs on my Telrad had me seeing double stars where there were none before zeroing it in. But the main trouble was the lack of azimuth encoder registration. You see, my scope was idle since early December and it seems that a field mouse found its way in and disconnected a connector for my azimuth encoder that is tucked away in a corner of the rocker

box. (The next day I inspected the scope in daylight and discovered some droppings that confirmed its temporary quarters, right below the junction box of the encoder cable. Why the cold aircraft grade aluminum structure of my scope was a comfortable resting spot is beyond me... but I'm not a field mouse.) An hour's worth of troubleshooting ensued before I found the loose cable and completed a two star alignment in my NexusDSC so I could command the first GoTo; it was for Hubble's Variable Nebula (NGC 2261). Some may recall that I've written of my observation of this nebula in the past. It's bright, comet like and spreads out like fan.



Hubble's Variable Nebula. Image Credit: HST/ Judy Schmidt

Other highlights of the night were Messier 82, the Cigar Galaxy, which enamored us with the dark central "slash" of its starburst region. We grabbed two-thirds of the Leo Trio (M65 & M66) but again, the night's sky conditions made its third member, NGC 3628, a challenge in the milky background. And it was likewise with NGC 4631 (the Whale) that I barely made out. The sky appeared to be teasing us with some patches of good clarity and then torturing us with opaque high cirrus clouds. I saw only two of the four members of galaxy group Hickson

44 and the dimmed view of the Crab Nebula (Messier 1) was a disappointment. But then globular cluster Messier 3, at Greg's suggestion, showed magnificently. Messier 51, which at one point was just 2 cotton balls later showed some spirality. A brief view of Jupiter's roiling image, with all four Galilean moons in tow, as it rose just over the horizon ended the night.

For our first deep sky session of 2018, Greg and I felt it was a worthwhile run, especially after so many false starts due to fickle weather forecasts and life getting in the way. The sub-freezing temperatures served as a tantalizing warm up for greater nights to come. We were off for home a little after 1 AM.

This article is dedicated to the memory of Joe Neuberger. He encouraged my contributions to the FOCUS and in doing so, gave voice to a passion.

AP-SIG Meeting Reports for January, February, & March 2018

Bill Hanagan

Detail from the
Flaming Star Nebula
Photo by Rob Lancaster

I'd like to briefly note here that February marks the start of the 17th year of continuous operation for the AP-SIG!
--Bill Hanagan, AP-SIG Founder

The January 20, 2018 AP-SIG Meeting

The January meeting was held in the library at Mt. Cuba. There were an unusually large number of people presenting astro-photos in January, a reflection of the broadening activity in astro-photography within the DAS. In addition to myself, Nico Carver, James Chang, Rob Greybill, Dave Hockenberry, Rob Lancaster, Bob Trebilcock, and Ron Worden participated.

I gave the special topic presentation for the evening on the subject of Computer Control of DAS Telescope Equipment, with the assistance of Nico Carver. Nico also provided some yummy cupcakes as refreshments.

The club's computer controllable equipment includes:

- 1) The Orion HDX-110 mount, an EQ-8 clone, on which we normally mount the club's GSO 12" f/4 Imaging Newtonian.
- 2) The new Skywatcher EQ6-R, which will have the club's newly acquired Stellarvue SV130, a 5" f/6.9 triplet APO refractor; and
- 3) The Starlight Instruments "True 3.0" Feather touch Focuser with PDMS Focusing Motor and Focuser Boss II Hub, soon to mounted on the GSO 12" f/4 Imaging Newtonian.

This equipment can all be controlled from an enormous range of Windows based astronomy applications, most of which support control through the Windows ASCOM driver. Some of the more notable Windows programs that can control our equipment include Backyard EOS, Cartes du Ciel, Elbrus, the EQMOD suite, FocusMAX, MaximDL, PEMPro, Pinpoint, Hyperion Prism, PHD2, Sequence Generator Pro (SGP), Skytools3, Starry Night Pro, and TheSkyX Pro. In addition, there is one Linux option called Ekos.

The EQMOD Suite is of paramount importance when using any "EQ" style mount because it includes EQASCOM, the Windows ASCOM driver for EQ mounts. Nearly everyone who uses an EQ mount for astro-photography does so by running the EQMOD suite in concert with other Windows software. EQMOD includes many of the same advanced features found in full-featured applications, including a sophisticated n-point alignment system, mosaic production, a wireless hand controller option, move limits, periodic error correction, guiding, parking options which automatically store and retrieve alignment data, and more.

To introduce the participants to computer control of the DAS equipment, Nico and I set up an EQ6 telescope mount and the Starlight Instruments Motorized Feather-Touch focuser and demonstrated their operation. We also helped everyone who was interested to connect their own Windows computers to the equipment and to get started using it. Several participants connected their computers to both the EQ6 and the Starlight Instruments Focuser.

The February 10, 2018 AP-SIG Meeting

The February meeting was held in the classroom at Mt. Cuba. We began with the usual Q&A session and review of astro-photos.

I brought along some Pecan Brownies for refreshments (yes, I made them myself). AP-SIG members An Anyu, Nico Carver, Rob Greybill, Bill Hanagan, Rob Lancaster, Bob Trebilcock, Ron Worden and Dana Wright attended.

Nico Carver then gave the special topic presentation for the evening on the subject of Deep-Sky Image Processing. This began with a brief refresher on the basics of deep-sky image processing using PixInsight, which included a review of:

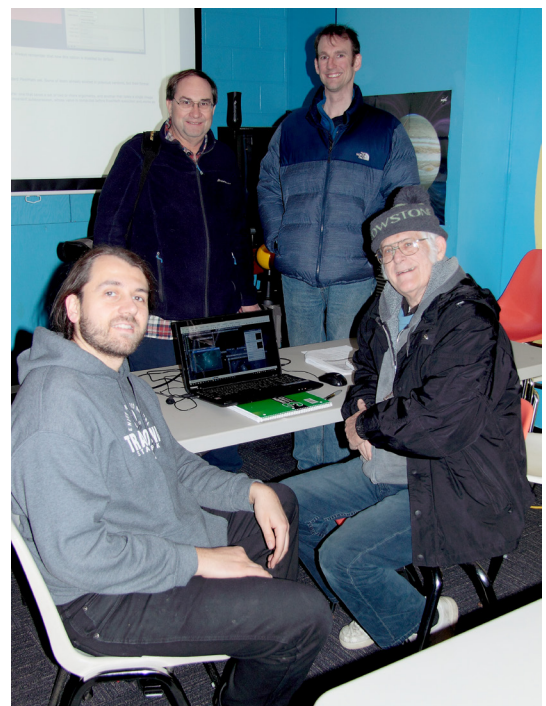
- 1) Calibrating images to correct for thermal noise, vignetting, and dust;
- 2) Registering and stacking images to improve the signal-to-noise ratio (S/N) and to reject artifacts like airplane and satellite trails;
- 3) Removing sky background gradients, which are especially common in wide-field images; and
- 4) Enhancing details through histogram stretching and other techniques.

We had previously setup tables and surge suppressing power strips to allow participants to bring in their laptops and follow along. This was basically a “lite” version of the two day workshop on Deep Sky Image Processing that we ran in January and February of the previous year.

Nico then went on to discuss two “new” approaches which we had not really touched on before:

- 1) Tone Mapping, and
- 2) Layering and blending in Photoshop (with “PixelMath” alternatives for use in PixInsight).

We wrapped up with a free-form discussion and practice session on image processing techniques. While I didn’t get my traditional group photo before everyone left, I did get a few of the attendees to hold still long enough for this photo. Nico Carver and Ron Worden appear in the front, with Bob Trebilcock and Rob Lancaster in the rear.



The March 10, 2018 AP-SIG Meeting

The March meeting was held on-site at Ron Worden's home and roll-off roof observatory in Bear, DE. We started the meeting in Ron's back yard at 5 PM, where we got a tour of his Amish-built observatory before sunset, as seen below.



The central part of the structure is the open-roof observatory (~10x10'), while the right section is the truss that holds the roof after rolling off. Just below the roof in the photo is a picturesque porch.

The left hand section of the structure is the (optional) warm room. Ron is developing a remote-controlled imaging system that can be operated from inside his home while he's watching TV with his wife Paula and thinks the warm room will eventually become storage. In the future, with totally remote controlled imaging, a warm room may be unnecessary. But, during the meeting the warm room provided a welcome respite from the cold when problem solving, as we discovered later that night. Ron removed a large number of trees from the lot before installing this observatory and he has plans to remove two more to the south, on the opposite side of the observatory, but he has more than 90 degrees of sky clear around the Zenith, which of course is the most important for deep-sky imaging.

Here's a link to the manufacturer: <http://mysheds.com/products/outdoor-retreats/star-gazer/>



The photo to the right shows Ron seated next to his 10" Meade SCT mounted on a Losmandy G-11 Gemini mount. He plans to eventually install a concrete base and pier to isolate his G-11 from the floor, but he says he can get sharp images by starting image acquisition after leaving the observatory.

Attached to the main scope is Ron's SBIG ST4000XCM, a one-shot color camera with a 15x15mm sensor. Ron picked this up used on Astromart quite recently. He also acquired a used monochrome CCD camera, an SBIG ST2000XM equipped with the KAI-2020M CCD chip, which has both lower noise and higher Quantum Efficiency than the older KAI-2000M chip used in early versions of this camera.

The photo below shows the group just before heading inside for the indoor part of the meeting. Appearing from left to right are Rick Spencer, Rob Lancaster, Dana Wright, Nico Carver, Bob Trebilcock, Ron Worden, and myself (Bill Hanagan).



Next, we headed indoors to see everyone's photos and Ron's review of his equipment and control software. Ron provided Pizzas for dinner (thanks Ron!) and after dark we headed back to the observatory for some problem solving. Something in the ST4000XCM camera, or the software driving that camera, wasn't working right, which made focusing very difficult. After testing a variety of settings we eventually switched to the ST2000XM monochrome camera with filter wheel, lined up on Betelgeuse, and slewed to M81, during which a few plate solves were used to update the alignment. Ron later reported that the ST4000XCM camera works correctly with other software; the problem is evidently in the Ekos software or the Indi driver.

Once the image was well-centered on M81, the system was ready to take some images, which meant it was time for everyone to get out of the observatory to avoid vibrational blurring. It was a good time for the meeting to break up anyway, so most of us called it a night at that point. Ron Worden and Rob Lancaster kept on for a while until some images of M81 were acquired. Rob provided the photo to the right showing Ron seated at his basement control center with an image of M81 on the screen.



The Next AP-SIG Meeting will be Held at the Sawin / Sky-Shed POD / Mt. Cuba on April 13 or 14

Bill Hanagan

The fair-weather plan for the April meeting is to discuss the EQMOD suite in greater depth. Afterward, we'll go out to the Sawin and the SkyShed POD and get both the HDX-110 and the EQ6-R up and running. The aim here is to try to give everyone a little more hands-on experience using EQMOD to control the two DAS computer controllable mounts, as well as the Starlight Instruments motorized focuser. If the weather is poor we'll have an alternative special topic for the evening.

As usual, the specific details of the meeting, including directions, will be announced via DAS YAHOO GROUP EMAIL as well as by direct email to AP-SIG members, two days in advance of the meeting.

We always have a Q&A period in which we present and discuss all types of imaging gear including telescopes, auto guiders, CCD cameras, DSLRs, camera lenses, etc. We also take a look at everyone's most recent photos. When you come, be sure to bring a USB memory stick with your astrophotos and any related project materials that you would like to show the group. Even if some of your photos have imperfections, it's a good idea to bring them along to promote the discussion of image acquisition and processing techniques.

Anyone interested in doing astrophotography, from curious beginner to expert, is welcome to attend! But, if you're a visual observer, please note that while you're always welcome to come out to AP-SIG meetings to learn about imaging, the lighting conditions at our meetings are sometimes less than ideal for simultaneous visual observing because of the computers and cameras in use. Further, some telescopes may be configured for imaging during the meeting and it may not be convenient to reconfigure them for visual use until after the meeting.

The AP-SIG is very good at helping beginners improve their images, so don't be shy about bringing imperfect images along to get some advice on how to take even better images. Everyone in the group was a beginner at some point and just about everyone can give you good advice on how to get started yourself, even if you're starting with just a DSLR camera and a tripod. If you are not an AP-SIG member you can always come to the meeting to see what goes on and sign up later.

Woodside Farm Creamery Outreach Events in 2018

Jeff Lawrence



Friday, April 20:	6:30 – 8:00 (rain date Saturday)
Friday, May 25:	7:00- 8:00 (rain date Saturday)
Friday, June 22:	7:30 – 9:00 (rain date Saturday)
Saturday, July 21:	2:00 – 4:00 solar (no rain date)
Friday, August 17:	7:00 – 9:00 (no rain date)
Friday, September 14:	6:00 – 8:00 (rain date Saturday)
Friday, October 12:	6:00 - 8:00 (rain date Saturday)

HARCOURT C. "ACE" VERNON MEMORIAL LECTURE

Wed., April 11, 2018 | 7:30 P.M.
Clayton Hall Conference Center

Massive Stars: The Powerhouses of Our Galaxy



Veronique Petit

Assistant Professor of
Physics and Astronomy,
University of Delaware

Star power? So-called "massive stars" have got it. These stars—as big as 100 suns—are the powerhouses of our galaxy. With their intense radiation and winds, they trigger new stars to form.

When a massive star explodes and dies, other power-

ful things happen. From the collapsed core, a neutron star may arise and then collide violently with a black hole, producing gravitational waves, which recently were detected for the first time in Nobel Prize-winning work.

University of Delaware Professor Veronique Petit will highlight how massive stars evolve, including an important factor now under intense research at UD.

Some of the largest, hottest, most massive stars in the universe lie in the center of star-forming region 30 Doradus, located 170,000 light-years away in a neighbor galaxy to our Milky Way.

Image courtesy of NASA/ESA/STScI

Free and open to the public.
Please register at mountcuba.org

Sponsored by the Delaware Asteroseismic Research Center at the University of Delaware, Mount Cuba Astronomical Observatory & Mount Cuba Astronomical Foundation

DAS AMATEUR TELESCOPE MAKING SPECIAL INTEREST GROUP

Bill Hanagan

The DAS Amateur Telescope Making (ATM) Special Interest Group (SIG) is made up of DAS members who get together to work on their own as well as club related telescope making projects. We get together at times and locations appropriate for whatever projects are currently underway.

The general range of activities of the ATM SIG includes all manner of telescope making including Newtonian mirror making, the testing of complete telescopes as well as individual optics, and the making of telescope accessories. In the past, we have made several Newtonian telescope mirrors from scratch and completed some mirrors that members brought in as works in progress, including one that was started in the mid-1960's! We've also made new telescope tubes, made secondary mirror holders, tested numerous telescope objectives, made wire spiders for Newtonian secondaries, and made many solar filters for telescopes and binoculars. We also completed the refiguring of the DAS 17.5" Newtonian mirror used in the Big Dob currently housed in the Sawin Observatory.

If you're interested in telescope making, feel free to email me and let me know what you're interested in doing at hanaganw@verizon.net and include your name, address, and phone number. I'm always glad to provide some guidance and information to other telescope makers.



**WELCOME
NEW MEMBER
Brian Pasternak
to the DAS!!**



Save the Date and Register for the May Dinner Meeting!

The 2018 Dinner Meeting will be at
Christ Church Parish Hall, in Greenville (NEW Location)

It's on **Tuesday, May 15 2018** and the price is still only \$20.00!!!

You can find more information on [how to register on the website](#)

Our 2018 Guest Speaker will be announced soon

The Menu:

Bread & butter

Salad

Meat or Vegetarian Ragu Bolognese served over pasta with a vegetable

** note -please contact Jeff (jeff@delastro.org) for any allergy concerns

Dessert to be announced soon

Water & soda

Beer & wine by free will donation



Christ Church. Photo by Diana Metzger

03/20/18 DAS Board Meeting Agenda

1. Review of Minutes from Last Meeting—Bill McKibben
2. Treasurer's Report—Diana Metzger
3. The Focus and Publications Chair—Rob Lancaster
4. Dinner Meeting updates—Jeff and Diana
5. Approval of Stellarvue Eyepiece Donation—Jeff Lawrence
6. Sawin Security, rekey and camera—Jack Goodwin
7. Possible NEAF items—Jack Goodwin

DAS Loaner Equipment

The DAS has several telescopes that are designated for loan to members. Our advice to new members is to take any of these telescope out on loan so you can learn the advantages and disadvantages of the various designs.

- 80mm Celestron Refractor with a NexStar GOTO mount. (On loan from Bill McKibben)
- Meade ETX 90mm Special Edition
- Bushnell Voyager 4" tabletop scope (AstroScan clone)
- Three Dobsonian scopes: two with 6" aperture, one with 8" aperture. This style scope is very easy for beginners.
- Meade 8" LX-10 Telescope: This 8" Meade LX-10 Schmidt Cassegrain Telescope (SCT) is a good loaner if you have any thoughts about buying an SCT telescope on a GoTo fork mount.



Procedure for DAS Members to Sign Out Loaner Equipment

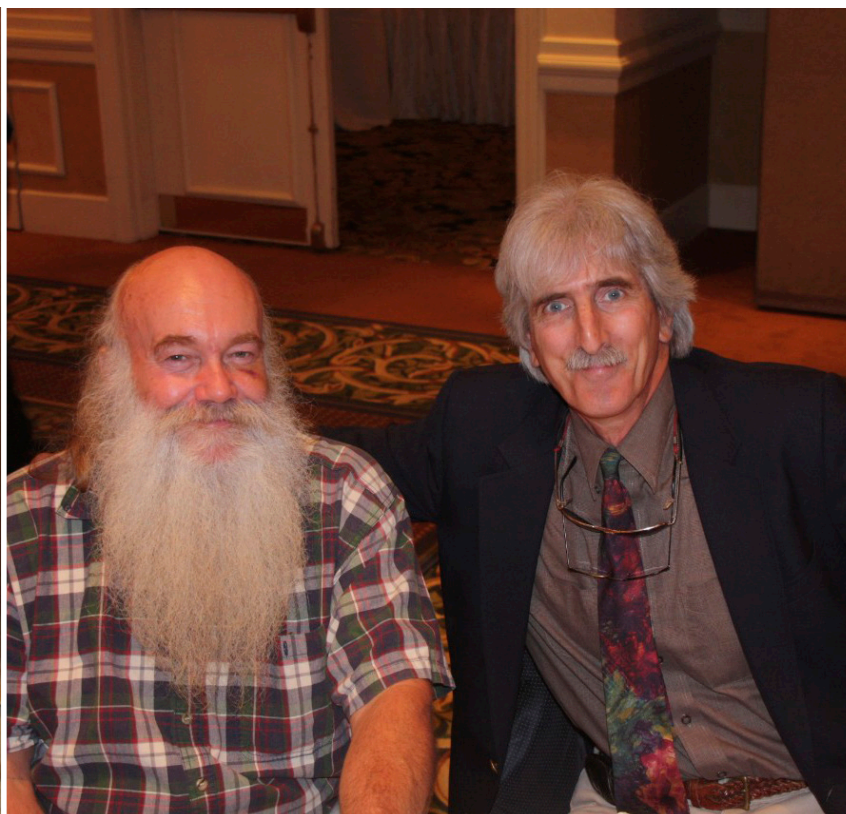
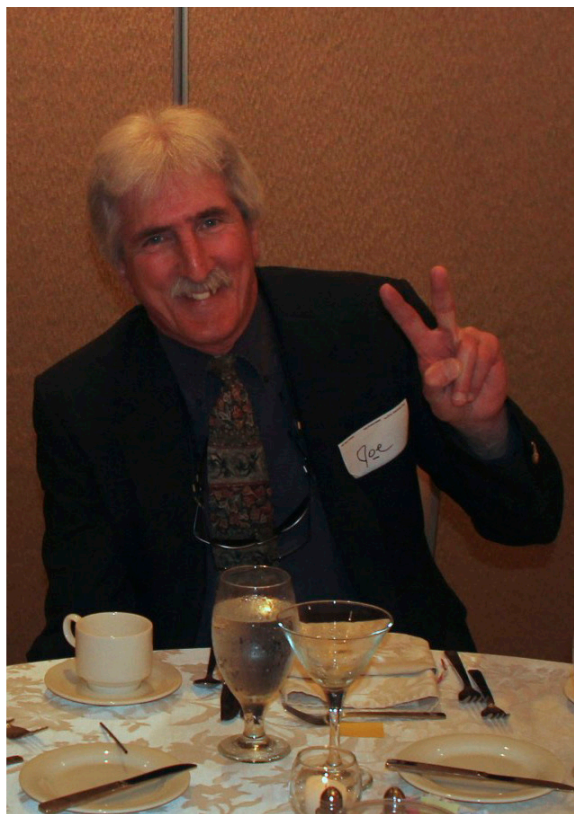
Jack Goodwin

1. **Inform:** Please inform DAS Observatory Chair via e-mail -- this is currently how all loaner equipment is being logged/tracked. (email below)
2. **Borrower email to include:**
 - a. Your name and contact information (cell #, email, home number, etc.)
 - b. Date equipment borrowed
 - c. Description of all equipment being borrowed
 - d. Estimated return date for each component borrowed
 - e. List any damaged/missing components (if applicable)
3. **Damage:** If the equipment is damaged while you are borrowing the equipment, please notify the DAS Observatory Chair in a timely manner.
4. **A sign out log** will be posted in the near term to compliment the email notification.

NOTE: Currently DAS Loaner equipment is **only available for loan to current DAS members.** (Which is a great excuse to join DAS)

Thank you,
Jack Goodwin,
DAS Observatory Chair
Jack_Goodwin@yahoo.com
610-457-2945 (cell)

In Memoriam: Joe Neuberger



Joseph R. Neuberger

WILMINGTON & ELKTON - Joseph Robert Neuberger, age 66, from Elkton, Maryland and Wilmington, Delaware, passed away on March 10, 2018, after succumbing to health complications caused by the injuries he received in a devastating car accident on Elkton Road on October 26, 2017. Joe, the son of the late Stephen M. and Louise Ciarmacone Neuberger, was born in Wilmington, Delaware on March 27, 1951. Joe graduated from St. Anthony's Grade School in 1965 where he excelled in track and basketball. Joe attended Salesianum High School for his freshman year before transferring to, and graduating from, Wilmington High School in 1969. While at WHS he played varsity basketball while also being involved as a co-editor of the school newspaper WHISP. Joe went on to attend Duquesne University on scholarship before transferring back to his home state and attending the University of Delaware. Joe's first job after college was at State Line Liquors and it was while working there closely with the Murray Family that his interest in wine and wine making flourished and he became quite a wine connoisseur, eventually taking that knowledge and experience and opening his own liquor store, The Wine Seller, at 1204 North Market Street in downtown Wilmington during the early 80's. As a store owner, Joe hosted monthly wine tastings at area restaurants. A few years later the building housing The Wine Seller was sold to a developer, so Joe took his knowledge and experience and went to work at Kreston's Liquor Mart for a few years, before eventually going into business with his then wife, Florence Barczewski, and opening Firenze and Company typography firm. Joe completed out his work career as the office manager of The Neuberger Firm for nearly six years, before eventually



kicking back and retiring in 2006. Joe led an active and fulfilling life. Joe loved to travel and among his favorite destinations were trips to Rome, Italy to spend time with his cousin Nino; trips to Nice, France to tour the wine vineyards; trips to Monaco to watch the Formula 1 Grand Prix; and he also was a season ticket holder to the Indianapolis 500 for many years. Through the years Joe was involved with Rotary International, the Diamond State Blues Society, The Skip Barber Racing School, and then The Sports Car Club of America where Joe was a member of the Mid-Atlantic Road Racing Series hosted by the Washington, D.C. Region of the SCCA, and from 1989 until 2005 Joe raced an IT/S Mazda, a Citation Formula Ford, and a VW Rabbit. More recently Joe was a Member of the Board and Chairman of Publications with the Delaware Astronomical Society, and he was Secretary of the Board of Directors and Newsletter Editor of the National Alliance for Medication Assisted Recovery "NAMA". In his retirement years Joe developed an expert green thumb and was proud of all the flowers that he nurtured and grew all around his home in Elkton. Joe also loved playing the drums and listening to Blues music. Joe is survived by his sister, Charlotte Neuberger, his brother Thomas (Judy), niece Dr. Deborah Kirk (Daniel), great-niece Natalie Kirk, and nephew Stephen Neuberger. Joe is also survived by his faithful dog Lucy, and numerous close friends, including his best friend Sonny Dill, close friends Nick and Vickie Maccari. Visitation will be held on Thursday evening, March 15, 2018, from 6 to 8pm at the Corleto Latina Family Center, 807 North Union Street Wilmington, DE. Funeral Services and Burial will be held privately. In lieu of flowers and gifts, donations can be made in Joe's memory to the charity of your choice.

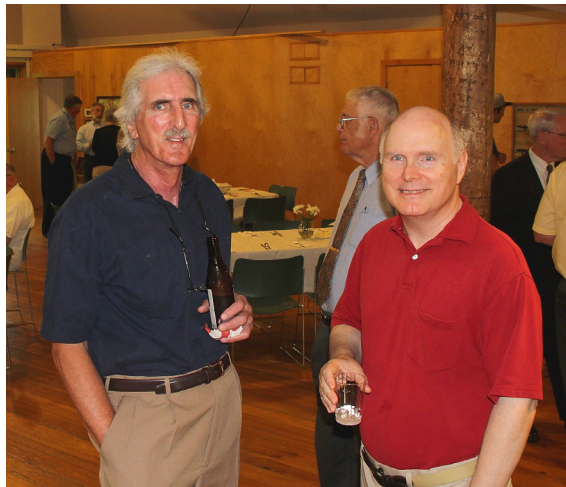


A "Last Word" Salute to Joe Neuberger

Bill Hanagan

It saddens me greatly that a true friend, Joe Neuberger, has passed away. I've known Joe for several years and he was a great help to me during my years as President, so I wanted to write a few remarks about him for the FOCUS.

Joe worked very hard to make each issue of the FOCUS the best it could be. He received the DAS Amateur Astronomer of the Year Award in 2012 for his work on the FOCUS, as described in the June 2012 issue which you can view at this link: <http://delastro.org/files/focus/2012-06-Focus.pdf>. This is one of a just a few issues of the FOCUS where Joe himself can be seen in the photos. Joe also received a DAS "Distinguished Service Award" in 2014, but left the dinner meeting and couldn't receive the award due to some back trouble. Rob Lancaster took this photo of Joe earlier that evening.



Joe Edited the FOCUS from September 2008 through October 2017, a full 9 years. Joe was not the first to publish the FOCUS online, but he took far greater advantage of the new medium than anyone before him, expanding the FOCUS and spicing up our articles with attention-grabbing graphical enhancements. He also included numerous science-based articles on space exploration. I, for one, learned a lot about NASA and European space missions from the supplementary articles that Joe included in the FOCUS.

Joe promoted all DAS activities in the FOCUS, as you can see from the May 2012 issue at this link <http://delastro.org/files/focus/2012-05-Focus.pdf>. This support is also evident in many other issues of the FOCUS, all of which can be viewed on-line at our club's web page at delastro.org (thanks to the efforts of our web site creator, Rob Lancaster).

On the DAS governing board, Joe encouraged and supported modernization. In particular, Joe was a stalwart supporter of the astro-photography special interest group (AP-SIG) and encouraged the practice of astro-photography in the DAS. He was also a staunch proponent for improving the club's equipment so that it could be used not just for occasional visual observing, but also for imaging. He supported the inclusion of astro-photos in the FOCUS from the outset and for many years dedicated the November issue of the FOCUS to show-casing the many astro-photos sent in by DAS members. The first such issue of the FOCUS was in November 2011 and can be seen here: <http://delastro.org/files/focus/2011-11-Focus.pdf>.

Joe also produced a number of attractive posters to publicize NASA speakers at our dinner meetings, such as this one promoting Ed Rezac's Talk on Servicing the Hubble Space Telescope given at the 2012 Dinner Meeting.

I'll wrap this up with "The Last Word", as Joe would have it: Joe's tireless effort to promote the DAS through the FOCUS helped us to be a better astronomy club, and it helped the DAS to grow at a time when other astronomy clubs are shrinking. Joe was a true friend to both me and the DAS and I will most certainly miss him.

Join with the Delaware Astronomical Society for an Exciting Speaking Event
on Tuesday, May 15th, 2012, 8:30 p.m.,
at the Hilton Wilmington/Christiana Hotel

Hear a presentation by **Edward J. Rezac**
from NASA's Goddard Space Flight Center.
Topic: Behind the Scenes of Hubble Space Telescope Servicing

Ed Rezac has enjoyed thirty-six exciting years of active participation in NASA's Space Shuttle, Life & Microgravity Sciences, and Extravehicular Activity (EVA) programs. His career parallels the modern manned-space era, with personal milestones that include spacecraft development and test support for STS-1, the first Space Shuttle launch; astronaut training and flight support for the first Space Shuttle EVA – or "spacewalk" – and astronaut training and procedure development for many other NASA "firsts".

Over the last fifteen years Ed has supported four consecutive Hubble Space Telescope (HST) EVA-intensive servicing missions as EVA Point of Contact for critical repair and refurbishment tasks. He contributed to the historical final HST Servicing mission in May 2009 in part by developing procedures and training NASA's astronauts to repair the Advanced Camera for Surveys, an extremely delicate and critical task described by the STS-125 Payload Commander, astronaut John M. Grunsfeld (Ph.D.), as "performing brain surgery in space."

Attendance at the Talk is Free, Though a Donation of \$5 per Adult is Welcomed.
A dinner with the lecturer and members of the DAS will take place ahead of the talk and costs \$38 per person.
SEATING IS LIMITED, so please call 410-392-3444 at least 48 hours ahead of the event to confirm space at the talk or to make dinner reservations.

Directions to the Hilton Wilmington/Christiana Hotel

From the North: Follow I-95 South. Take Delaware exit #48 (Churchman's Road/Route 58). Bear right at the top of the exit ramp and proceed on Churchman's Road to the fourth traffic light. Make a left onto Continental Drive. The Hotel will be the first driveway on the left.

From the South: Follow I-95 North. Take Delaware exit #48 (Churchman's Road/Route 58). Bear right at the top of the exit ramp and proceed to exit #166 (Churchman's Road/Churchman's Crossing/Route 58). Turn right at the bottom of the exit ramp, yielding onto Churchman's Road. Follow to the second traffic light, and make a left onto Continental Drive. The Hotel is the first driveway on the left.



Photos by DAS Member Ron Worden



Technical Information:

Target : M109 (NGC 3992)
Constellation: Ursa Major
Right Ascension: 11h 57m 36.0s “
Declination: +53° 22 28
Distance: ~83.5 mly
Apparent magnitude: 10.6
Apparent size: 7.6' x 4.7'
Date: 2/12/2018
Location: Snobie Observatory/Lincoln Control Center
Bear, Delaware W75° 40' 43.04” N39° 34' 39.7”
Telescope: Meade 10” SCT + Meade 6.3 Focal Reducer.
1575mm FL
Mount: Losmandy G11, Guided Dithering
Camera: SBIG ST7 + SSAG autoguider(+5 arcsec)
Temperature: 35° F cooled to -20°C
Filters: LRGBHa
Exposure: 17LFs - 300sec subs (85min).
Software: PixInsight
Frame: 17x25 arcmin
Calibration with: 50 bias frames, 10 dark frames
Observer: Ron Worden wordenrj@magpage.com

Technical Information:

Target : M81 (NGC3031)
Constellation: Ursa Major
Right Ascension: 09h 55m 33.2s
Declination: +69° 3' 55”
Distance: ~12 mly
Apparent magnitude: 6.94
Apparent size: 26.9 x 14.1' minutes or arc
Date: 2/18/2018
Location: Snobie Observatory/Lincoln Control Center
Bear, Delaware W75° 40' 43.04” N39° 34' 39.7”
Telescope: Meade 10” SCT + Meade 6.3 Focal Reducer. 1575mm FL
Mount: Losmandy G11, Guided
Camera: SBIG ST7 + SSAG autoguider(+1 arcsec)
Temperature: 20° F cooled to -20°C
Filters: LRGB
Exposure: 18LFs - 300sec subs (1.5hr).
Software: PixInsight
Frame: 10x15 arcmin
Calibration with: 50 bias frames, 10 dark frames
Observer: Ron Worden wordenrj@magpage.com



Photos by AP-SIG Member Ron Worden



From the Snobie Observatory at the Lincoln Control Center in Bear, DE

NGC2024 The Flame with Alnitak left in for effect. Telescope: Meade 10" SCT + Meade 3.3 Focal Reducer. 966mm FL, Mount: Losmandy G11, Tracking, Camera: SBIG ST7, Temperature: 21°F cooled to -20°C, Colorized, Exposure: 120sec; Software: PixInsight

M42 Telescope: Meade 10" SCT + Meade 6.3 Focal Reducer. 1575mm FL; Mount: Losmandy G11, Guided; Camera: Canon 40D DSLR + SSAG autoguider(+1 arcsec); Temperature: 21°F -20°C; Filters: OSC Cannon 40D; Exposure: 15LFs – 330 sec total exp; Software: PixInsight

M100 with NGC4322 in lower 3rd quadrant. Telescope: Meade 10" SCT + Meade 6.3 Focal Reducer. 1575mm FL; Mount: Losmandy G11, Guiding, Dithering; Camera: SBIG ST7+ SSAG autoguider(+5 arcsec); Temperature: 40°F cooled to -20°C; Filters: L,Ha,G,B; Exposure: 300sec subs total time 50min; Software: PixInsight

M43 Telescope: Meade 10" SCT + Meade 6.3 Focal Reducer. 1575mm FL; Mount: Losmandy G11, Guided; Camera: Canon 40D DSLR + SSAG autoguider(+1 arcsec); Temperature: 21°F -20°C; Filters: OSC Cannon 40D; Exposure: 15LFs – 330 sec total exp; Software: PixInsight

M2903 Telescope: Meade 10" SCT + Meade 3.3 Focal Reducer. 966mm FL, Mount: Losmandy G11, Tracking; Camera: SBIG ST7; Temperature: 21°F cooled to -20°C; Filters: L,Ha,B; Exposure: 660sec; Software: PixInsight

NGC891 Telescope: Meade 10" SCT + Meade 6.3 Focal Reducer. 1575mm FL; Mount: Losmandy G11, Guided, Dithering; Camera: SBIG ST7 + SSAG autoguider(+1 arcsec); Temperature: 7.2°F cooled to -20°C; Filters: RGB; Exposure: 24LFs - 300sec subs (2hs); Software: PixInsight

Photos by DAS member Lewis W. (Willis) Greiner, Jr.

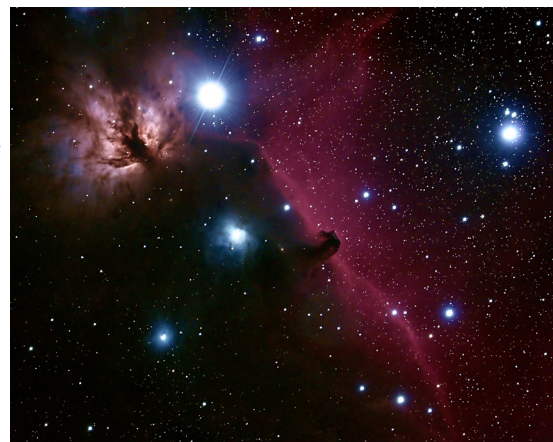


Horsehead (B33) and Flame (NGC2024) Nebulae, Orion Constellation February 26-27, 2017

Image obtained February 26-27, 2017 through RVO's Explore Scientific's 127mm ES127ED APO refractor with Explore Scientific's .7 reducer/flattener lens resulting in an $f/5.25$ optical system -- using a Baader-modified Canon XSi DSLR and BackyardEOS image-acquisition software -- 23 of 26 carefully selected and stacked 240-second RGB frames combined with multiple dark, flat and bias calibration frames shot at ISO 800 and totaling more than 240 minutes (92 minutes effective luminance) were used to create this image; optics driven by the Losmandy G-11 mount equipped with Ovision's precision RA worm gear, guided with a ZWO ASI 120MM Monochrome CCD camera through a 60mm guidescope using PhD2 guiding software and post-processed with DeepSkyStacker, CCDStack2 (DDP and deconvolution) and Photoshop CS3 s/w

This was shot last year, and after various post-processing, converted to .jpg from the native .tif, and then to a b&w image, which I believe suits the subject nicely. I'll attach a down-sized color image as well. Same data.

I'm about ready to reset my observatory after some (hopefully) improvements — so next month I would anticipate a newer image with the now hyper-tuned G-11 (it was a very vintage model, one of the first off the production block, when it was actually called a CG11) -- I recently added the RA and Dec extensions, having previously improved the mount with the Ovision precision worm (really a measurable improvement in PEC/hence guiding). I recently sent the mount off to Arizona for hyper-tuning. Very smooth. My general frustration is that there really are no astrophotographers around to discuss all of this with, and frankly the various message boards, although sometimes helpful, often depreciate quite a bit during any/all discussion(s). One idea I have found to be outstanding, and something I think the DAS astrophotography group would welcome (if it hasn't already been discussed, of course!) is to use the very excellent SharpCap virtually automatic plate-solving polar alignment routine. I'll link Uncle Rod's discussion, which is highly informative. It is a simple routine, does not require any go-to slewing tech and takes minimal time, which is especially attractive for mobile observers.



<http://uncle-rods.blogspot.com/2017/03/issue-533-new-way-to-polar-align.html>

Photo by AP-SIG member Mark Mitchell



Technical information

Target: M81/M82. Bode's Nebula and the Cigar Galaxy in Ursa Major (Mag 6.9/8.4, 26.9/11.2', c.12 million light years)

Date: 2-26-18

Location: Hockessin, Delaware

Telescope: SV70T + 0.8xFE, f6.0(f4.8)

Mount: Vixen SXP, guided, no dither.

Camera: Atik 383L+ one shot color

Temperature: 40°C cooled to -15 °C

Filter: V4

Exposure: 36LFs, 300 sec subs (3 h).

Software: Deep Sky Stacker. Photoshop CC 2018.

Notes:

FWHM: 3.18 (focus)

HF total (RMS): 0.43 arc-secs

PAE: 3.9 arc min (polar alignment error)

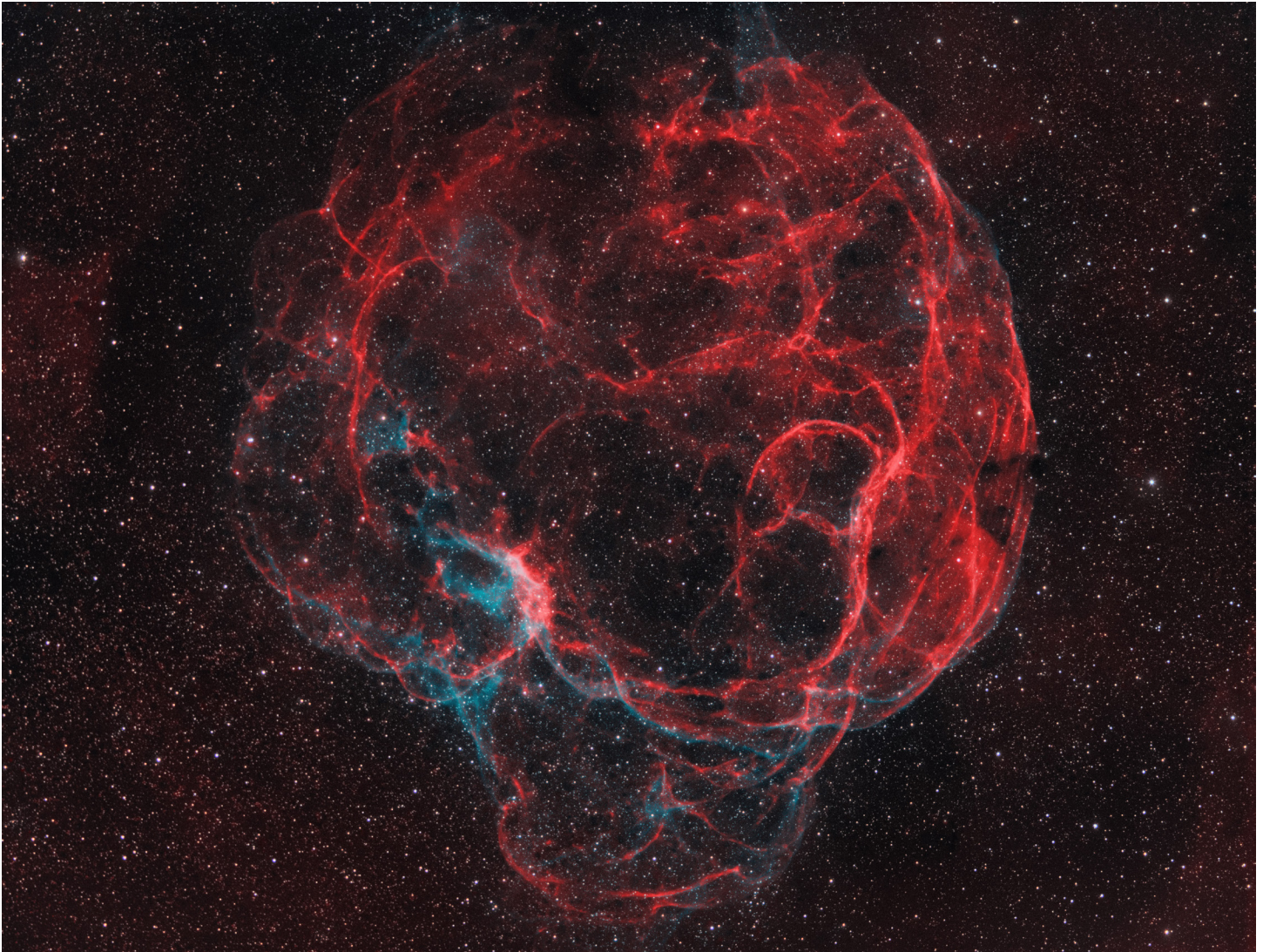
Total Guide Error (RMS): 1.19"

Mounting screws loosen as night progresses, due to USB hub?

Process: Ken Crawford type mask of galaxies + Neil Heacock selective color enhancement

Observer: Mark L. Mitchell. markm2315@comcast.net

Photo by AP-SIG member Nico Carver



Technical Information

Object: Sh2-240; Simeis 147; "Spaghetti Nebula"

Description: Simeis 147 is a very large supernova remnant (about 3 degrees across in apparent diameter) that I captured here with various filters, a monochrome camera, and a camera lens with a focal length of 200mm. Very challenging and also very fun object to try with a wide field setup. It was mostly shot from my light polluted backyard in Newark, DE. Tone mapped following J-P Metsavainio's procedure. The OIII signal was stronger than I thought, but tricky to incorporate.

Acquisition Dates: 2018-01-05, 2018-01-06, 2018-01-09, 2018-01-13, 2018-01-18, 2018-01-25, 2018-02-02, 2018-02-05, 2018-02-08, 2018-02-12

Locations: Mostly Backyard, Newark, DE. Some OIII data captured at ChesLen Preserve in Chester Co., PA.

Optics: Canon EF 200mm f/2.8L II USM; f/2.8 for narrowband; f/4.5 for broadband

Mount: Orion Atlas EQ-G

Camera: ZWO ASI-1600 MM-Cool (v3)

Filters: Astrodon Ha (5nm), OIII (3nm), RGB (E-series)

Guiding : QHY 5Lii Mono and Orion 50mm guidescope

Gain: 200 for narrowband, 75 for broadband

Cooling: -25C

Integration: Total: 18.7 hours; Ha: 68x300" and 33x600"; OIII: 36x600"; R: 40x45", G: 40x45"; B:40x45"

Software: Mount Control: EQMOD; Planetarium: Cartes Du Ciel; Acquisition: Sequence Generator Pro; Guiding: PHD2; Polar Alignment: QHY Polemaster; Processing: PixInsight 1.8.5 and Photoshop CS6

RA/DEC Center: 85.252 degrees; 27.968 degrees

Orientation (E of N): 82.018 degrees

Call for Nominations

Nico Carver

Horsehead Nebula
Photo by Nico Carver

This year, as with all DAS “even-numbered” years, the elections will be held for President, Vice-President, Treasurer, and Secretary (odd-numbered years are for the Board Members at Large elections). The ballots will be emailed to all active (dues paid) members on May 1st and must be completed/returned by May 31st. Those elected will effectively assume their roles on July 1, 2018 and will preside at meetings beginning in September until the 2020 elections. At the April meeting, I will submit the slate of nominees, whoever they may be, and will open up the floor at the general meeting for any nominations not yet submitted. Between now and the April 17, 2018 meeting, you can nominate yourself, or nominate a fellow member who is in good standing.

All members in good standing, whose dues were paid, are eligible for nomination for President, Vice-President, Treasurer, and Secretary. Collectively, with input from the Board Members at Large, the Officers provide the primary drive and direction for club events, activities and meetings as it has done since its inception in 1956.

The primary qualification for nomination is a desire to contribute some of your energy and time to DAS for the benefit of all members and 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 to help make it better?

Here are the essential duties of President, Vice-President, Treasurer and Secretary:

- The President is the chief executive officer and presides at meetings of the Society, appoints chairpersons of any and all standing committees, acts as ex officio member of standing committees, implements all decisions voted by the Board of Directors and the general membership.
- The Vice-President assists the President in all duties and, in the President's absence, assumes such duties as President.
- The Secretary takes minutes of all meetings of the Board of Directors for review at the next following Board of Directors' meeting, carries on all business correspondence on behalf of the Society.
- The Treasurer collects, disburses, and keeps records of the funds of the Society, reports the financial status of the Society at each Board of Directors' meeting.

Nominees' names should be emailed to me: Nico Carver, nicocarver@gmail.com. If there are any questions, feel free to email or call me at 302-353-2448.

DAS CONTACTS

Please Call Any of Us With Your Concerns or Problems

Officers:

President: Rob Lancaster -- RLancaste@gmail.com -- also, Webmaster

Vice-President: Jeff Lawrence -- Jeff@DelAstro.org -- (302) 668-8277 -- also, Program Chair

Secretary: Bill McKibben -- BillMcK21921@comcast.net

Treasurer: Diana Metzger -- (302) 290-2108 -- DMetzgerMD@gmail.com

Board Members at Large:

Bill Hanagan -- (302) 239-0949 -- hanaganw@verizon.net -- also, Astro-Photography Special Interest Group (AP-SIG) -- Amateur Telescope Making Special Interest Group (ATM-SIG)

Amy Hornberger

Dave Groski

Standing Chairs:

Observatory: Jack Goodwin -- (610) 457-2945 -- Jack_Goodwin@yahoo.com

Education: Ted Trevorrow -- (302) 593-7949 -- edt750@verizon.net

Library: Maria Lavallo and Sue Bebon

Astronomical League Coordinator: K Lynn King -- klynking@verizon.net

Observing Chair: Greg Lee

Nominations Chair: Amy Hornberger -- aehornberger@gmail.com

Elections Chair: Nico Carver -- (302)353-2448 -- nicocarver@gmail.com -- also, interim FOCUS editor

New Members

Please see the [How to Join page](#) on our website for methods to become a dues-paying member.

If you have any questions call any of the member representatives listed.

If you're just joining us for the first time, THANK YOU VERY MUCH, and WELCOME to the DAS! It's GREAT to have you with us!

