



# FOCUS

Vol. 61, No. 3, March 2019



## DELAWARE ASTRONOMICAL SOCIETY

**Next Meeting – Tuesday, March 19th, 2019 at 8pm  
at the Mt. Cuba Astronomical Observatory**

### MEETING TOPIC:

### ***Rocket Science 101- Getting Into Space***

**John Conrad,  
DAS NASA Ambassador**

The first of two talks which take the mystery out of ‘rocket science.’ From a historical and insider’s perspective, you’ll understand how and why mankind embarked on the Space Age six decades ago. Then you’ll learn how modern rockets work, from their World War II / Cold War beginnings right through the global activities of today’s spacefaring nations – and into a future increasingly impacted by today’s visionary entrepreneurs.

### FROM THE FEBRUARY MEETING

I would like to thank Greg Lee for resurrecting the “What’s Up” segment and giving the club some tips on how they might star-hop to see Pluto. Thanks also to Rick Spencer for his follow-up talk on special relativity. It can be hard to convey an abstract concept in an approachable way! Finally it was great to bask in Nico Carver’s pride in having his amazing astrophoto published in *Sky & Telescope* Magazine.

Our April meeting will be our final round of member mini-talks for this season. Please let me know if you have something you would like to share with the club at that meeting.

Jeff Lawrence, DAS Programs Chair

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# From the President

Rob Lancaster

**T**

hank you very much to Greg Lee, Rick Spencer, and Nico Carver for excellent presentations last month! We always appreciate when members can give mini-talks about topics they are interested in or about projects they are working on. This is your club; the meetings are even more interesting when the presentations and topics are about things you are passionate about. Please consider giving a mini talk the next time they come around, we do appreciate it.



We are very excited for Nico Carver who will be moving on to an exciting new position at the library for the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. We appreciate everything he has done for our club as Publications chair over the past year, he really did a great job with the Focus and our other publications! Thank you Nico and we will miss you, but wish you the best of luck up north!

In the next month, we have a number of exciting events we will be running or participating in. On the weekend of April 6th – 7th, many of us will be travelling up to New York to attend the NorthEast Astronomy Forum (NEAF) to view interesting new products from different astronomy vendors, to view interesting presentations, and to do some solar observing. Please consider coming along! On April 8th, we will have another Bellevue outreach event. On either April 12th or April 13th, we will be holding the Astro-photography Special Interest Group (AP-SIG) meeting. In early April, we will be having a book club meeting on a date to be announced. And on April 24th, we will have the next Vernon Lecture which is about Pulsars. Also remember, we always have our regular Astronomy Workshops on every Tuesday that is not a main meeting night.

At our upcoming meeting this month, we will be hearing an exciting presentation by our local solar system ambassador John Conrad about Rocket Science and Getting to Space. If it is clear, we may also get a chance to do some outdoor observations after the meeting. Enjoy the night sky! It is galaxy season!

Thank you,

Rob Lancaster  
DAS President

# May Dinner Meeting

Jeff Lawrence

The May Dinner Meeting will take place on May 21st, 2019. It will be held again at [Christ Church](#) in Greenville, DE. You can find more information about the dinner meeting and pay/select meal preferences on the DAS website:

<http://delastro.org/16-event-reports/175-das-2019-dinner-meeting>

The Menu is:

Bread & butter

Salad

Meat or vegetarian main course served with potatoes and a vegetable:

- Meatloaf
- Roasted Vegetable Terrine

Dessert

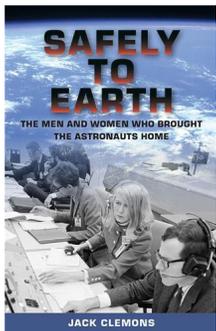
Water & soda

Beer & wine by free will donation

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

## Guest Speaker for the Dinner Meeting

Jack Clemons is a professional writer and consultant as well as a speaker and presenter on NASA's space programs. He has bachelor's and master's degrees in aerospace engineering and was formerly a Senior Vice President of Engineering for Lockheed Martin. Earlier in his career he was an engineering team leader for NASA's Apollo Program and senior engineering software manager for the NASA Space Shuttle Program. He appeared in the "Command Module" segment of Moon Machines, the Discovery Science Channel's six-part documentary about the Apollo Program.



Jack's works of fiction earned him a 2018 Established Artist Fellowship for Literary Fiction by the Delaware Division of the Arts and membership in the Science Fiction and Fantasy Writers of America. He also writes a space and science column for the new Amazing Stories Magazine print edition.

Jack's book *Safely to Earth: The Men and Women Who Brought the Astronauts Home*, a memoir of his time on NASA's Apollo and Space Shuttle programs, was published by University Press of Florida in September 2018. It was awarded first place for autobiography or memoir by the Delaware Press Association, and it was selected as one of the top twelve books for Christmas 2018 by BBC Sky at Night Magazine.

Jack Clemons will present: **CATCHING APOLLO**

Drawing from Jack's time on Apollo, is an insider's view of NASA's Apollo Moon Program, an account of Jack's responsibilities as one of the young engineers working on the greatest adventure of our times. Jack will include vintage photographs and anecdotes drawn from his time as a lead engineer supporting the Apollo astronauts during their return flight from the Moon. He'll also share some little known stories about the technologies and teamwork that made Apollo 11 a success and saved the Apollo 13 mission from near disaster.

# February 2019 AP-SIG Meeting Report

Bill Hanagan

During the February 15 AP-SIG meeting at Mt. Cuba, I started off by giving an in-depth demonstration and review of BackyardEOS, a very reliable and innovative Windows-only program for acquiring deep-sky and planetary images with Canon EOS DSLRs. There is a nearly identical version of the program for Nikon DSLR users as well.

For Deep-Sky imaging, BackyardEOS has a number of features, including several well-designed modes for enhancing the visibility of faint stars to allow you to focus and frame objects before you start acquiring light exposures. This gives you many more stars to use for focusing and framing than you can see on the camera's own Live View display. It also automates the acquisition and naming of deep-sky sub-exposures and calibration frames, including an ability to raise the reflex mirror to let vibrations die down before beginning each light exposure.

Backyard EOS can also capture Live View frames for planetary imaging at 5x magnification, which is essential for maintaining a 1:1 sensor pixel to image pixel ratio, a key requirement for acquiring planetary image data using nearly all DSLRs.

To demonstrate BackyardEOS, I set up an artificial star and a simulated deep-sky object in the darkened hallway as targets for my telephoto equipped EOS 6D and then mounted my camera atop a gearhead on a tripod for aiming at the targets.

After the BackyardEOS demonstration, we took a break in the Library for refreshments. In addition to the pecan brownies that I brought, Tom Fielding and Mark Phillips also brought a variety of refreshments. THANKS TOM and MARK! I took the group photo below just before we headed back to the lecture room. Appearing from left to right are Jarrod Bieber, Nico Carver, Sidney Ocampo, Mark Phillips, Erin Farmer, Mark Mitchell, Ron Worden, myself, Dana Wright (rear), and Tom Fielding.



After the break, I presented a roundup of computer programs for mount control and deep-sky image acquisition under Windows, MAC OS, and Linux. There are at least 4 times as many programs of this type available under Windows than for the MAC, but that's no surprise since there are more than 5 times as many laptops in use running Windows than run the MAC OS. FYI, this is revealed by Internet browsing statistics for 2018: 81.8% of laptops accessing the Internet run some version of Windows, mostly Windows 7 or 10, while only 13.5% run some version of the MAC OS and about 2% run Linux. Even so, one major deep-sky image acquisition program runs under all 3 operating systems: TheSkyX.

We went on to discuss a wide variety of useful gadgets brought out by the group, including the "Sockitbox", a \$20 waterproof plastic container for outdoor electronics sold by Amazon, and a Bahtinov mask for camera lenses. The group also had a look at the prototype auxiliary equipment mounting plate that I'm developing for the club's 12" f/4 imaging Newtonian, as well as a couple of 12V Anderson PowerPole equipped power distribution hubs, and a Pegasus Astro "Pocket PowerBox".

We also had our usual presentation of astro-photos, with several AP-SIG members presenting photos, particularly those from the recent total lunar eclipse on January 20 / 21. Most of those lunar eclipse photos appeared in the February issue of the FOCUS.

The March AP-SIG meeting was held on Saturday, March 9 and the corresponding report will appear in the April FOCUS.

## **Good Luck to Nico Carver in his New Job**

**Bill Hanagan**

Nico Carver joined the DAS a little over 3 years ago specifically to become a member of the AP-SIG and to do astro-imaging. Nico has proven to be a very talented and tireless astro-imager and has made many spectacular wide field deep-sky images, several of which have appeared in the FOCUS and most recently in *Sky and Telescope* magazine. He has also given presentations on numerous astro-imaging topics in support of our AP-SIG meetings and joined me in putting on the AP-SIG's 2 day workshop on using PixInsight for Deep-Sky Image Processing. He received the DAS Amateur Astronomer of the Year Award in 2018. For the last year, Nico has also been our publications chair, producing a clean and sharp version of the FOCUS.

Unfortunately for AP-SIG and DAS members, Nico will be moving to Boston to take a job with the Harvard-Smithsonian Center for Astrophysics. Nico, it's been great having you as a member of the AP-SIG and the DAS. Though we're all a bit sad that you'll be leaving us, I think I speak for everyone when I say we're glad to see you get a well-deserved opportunity for career advancement! Best of luck in the future!

## **Plans for the April 12 / 13 AP-SIG Meeting**

**Bill Hanagan**

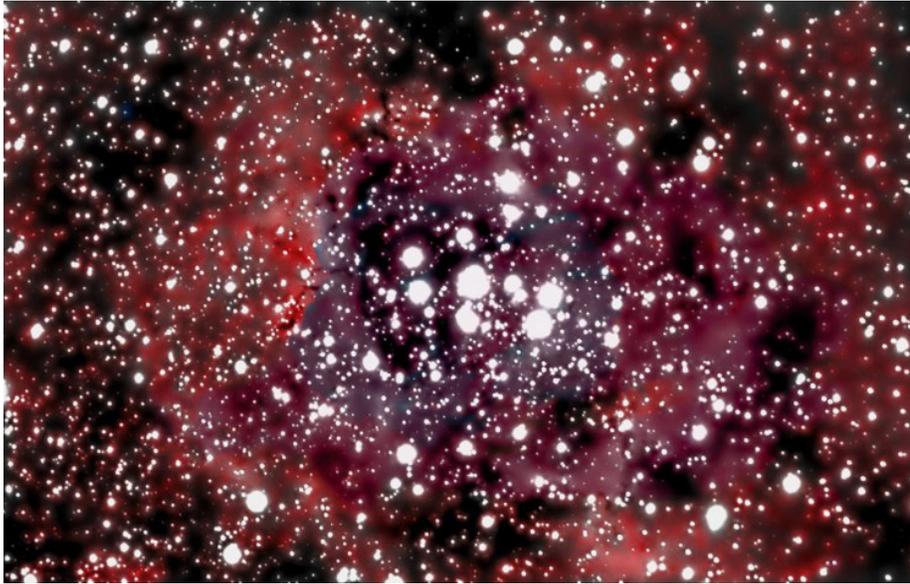
The April 12 / 13 AP-SIG meeting is tentatively scheduled to be held on site at Bob Trebilcock's, where we'll take a close look at the child's play house that Bob recently built, which just so happens to be equipped for astro-photography after you roll the roof off. Anyone interested in astrophotography, from curious beginner to expert, is welcome to attend!

The exact date and time of the meeting depends on the weather and will be announced via DAS@groups.io email and by direct email to the AP-SIG members.

As usual, we'll 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 with you to promote the discussion of image acquisition and processing techniques.

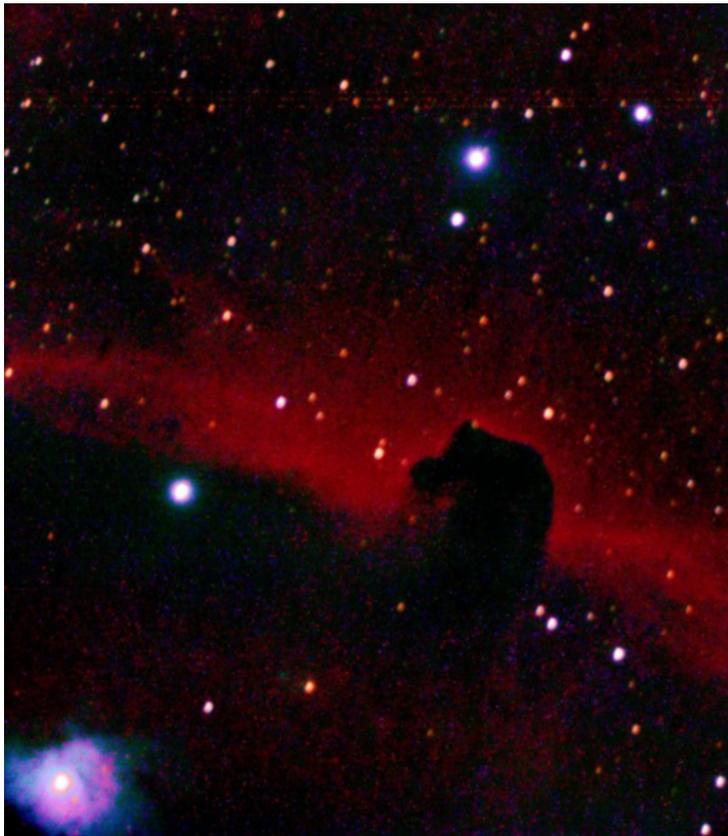
The AP-SIG is very good at helping beginners improve their images, so don't be shy about bringing imperfect images along to get some advice on how to take even better images. If you are not an AP-SIG member you can always come to the meeting to see what goes on and sign up later.

# Photos by AP-SIG Member Ron Worden



## Technical Information:

Target : Caldwell 49 (NGC2237)(Rosette Nebula)  
Date: 01/28/2019  
Location: Snobie Observatory/Lincoln Control Center. Bear, Delaware W75° 40' 43.04" N39° 34' 39.7"  
Telescope: Orion ShortTube 80mm refractor, 400mm FL  
Mount: Losmandy G11 Tracking  
Camera: ZWO174 B&W--Colorized  
Temperature: 28°F Ambient  
Exposure: 15-120sec sub frames (30min)  
Software: PixInsight/PaintShop Pro 6  
Frame: 60.5 x 96.4 arcmin  
Calibration with: Dark Frames  
Observer: Ron Worden



## Technical Information:

Target : Barnard 33(IC434) Horsehead Nebula  
Date: 1/28/2019  
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 w Dithering  
Camera: SBIG ST4000XCM + ZWO174 autoguider(+/-1arcsec)  
Filters: OneShotColor  
Temperature: 28°F Ambient cooled to 0°F  
Exposure: 3LF's -600sec subs(30min)  
Software: PixInsight  
Frame: 33' x 33' arcmin  
Calibration with: Master Dark Frame  
Observer: Ron Worden

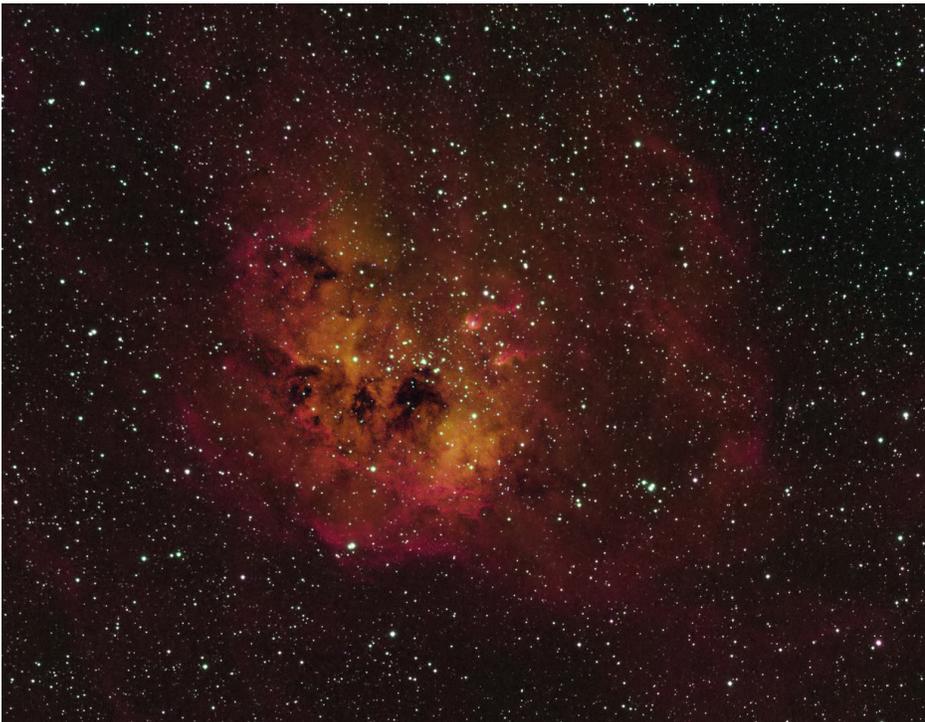
## Photo by AP-SIG Member Nico Carver



### Technical Information:

Target: IC2177 (Seagull or Parrot Nebula)  
Dates: January- February 2019  
Location: Newark, Delaware  
Telescope: Stellarvue SVQ86  
Mount: Orion Atlas EQ-G, guided, dither.  
Camera: ZWO ASI1600MM  
Temperature: Cooled to -15 °C  
Filter: Ha, OIII, S2  
Exposure: 18 S2, 32 Ha, 24 O3, 300 sec subs.  
Software: PixInsight, Photoshop  
Notes: This is "Hubble Palette" false color. SII is mapped to Red, Ha is mapped to Green, and OIII is mapped to Blue.

## Photo by AP-SIG Member Mark Mitchell



### Technical Information:

Target: IC-410, incl. the tadpoles (Sim 129 and Sim 130) in Auriga. Star cluster NGC 1893. (Mag ?, 41 x 47', 12,000 ly away, 100,000 ly across)  
Date: 02-25-19  
Location: Hockessin, Delaware  
Telescope: SV70T 0.8xFE, f6  
Mount: Vixen SXP, guided, no dither.  
Camera: Atik 460ex  
Temperature: Cooled to -15 °C  
Filter: Ha, OIII, S2  
Exposure: 14 Ha + 24 O3 + 18 S2, 300 sec subs.  
Software: PixInsight, Photoshop CC 2019.  
Notes: Gusty winds made guiding in RA a workout. I also processed this as SHO, but it was all green, and when I adjusted the color to my liking it came out the same as HOS. When I try to remove the stars from this, the tadpoles suffer also.

# 3/19/19 DAS Board Meeting Agenda

1. Review of Minutes from Last Meeting—Bill McKibben
2. Treasurer's Report—Bob Trebilcock
3. Groups.io transition—Rob Lancaster
4. Review revised DAS handout—Nico Carver
5. Several Board Member Transitions—Rob Lancaster
6. Dinner Meeting –Jeff Lawrence
  - a. Confirm details about venue and license
  - b. Discuss speaker
  - c. Promotion of the event
7. Project Planning for Spring/Summer

## MCAO Volunteers Needed

Hello. I would like to introduce myself. My name is Kim Green and I am the secretary at the Mount Cuba Astronomical Observatory. This year we have increased our field trip activity, we have added many additional Public and Family Nights and we added children's programs to our calendar. The community has requested these programs and we are doing our best to accommodate. With that being said, we are looking for volunteers to help out. We are desperately in need of people who are available to help during our day time led trips. But we would also love to have some evening help as well. So keep an eye out for future emails from me. If you are interesting in helping out please contact me at 302-654-6407 or email me at [KimGreenMCAO@gmail.com](mailto:KimGreenMCAO@gmail.com).



# 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](mailto:Jack_Goodwin@yahoo.com)  
610-457-2945 (cell)

## 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](mailto: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.

## How to Join the DAS Groups.io Group

### DAS FORUM / E-MAIL SITE ON GROUPS.IO

This is an e-mail service, online forum, and information sharing service for use by DAS members and our astronomy enthusiast friends. To Subscribe to the service, just send an email to: **DAS+subscribe <at> groups.io**. Then we will compare your name/email to our lists to make sure that we know you, and if so, we will approve your subscription. If you are not currently a member of the DAS, we strongly encourage you to join.

That is all that you need to do to get into the system. You don't even need to setup an account. But if you want to have more control over how you receive messages from the group or if you want to use the more advanced features, then head over to the website <https://groups.io/login> after you are approved for the DAS Group and you can log in to make any changes you like.

For More information about our group click this link:

<https://groups.io/g/DAS>

# New Members Form

Please make checks payable to DAS, print out the following form and mail to:

**Robert Trebilcock, DAS Treasurer, 3823 Rotherfield Lane, Chadds Ford, PA 19317**

DAS Membership costs \$30 per year, which renews November 1st. We pro-rate membership based on when you join, as follows:

MONTH JOINED	COST	RENEWAL DUE
Jan-Feb	\$30	This November
March-May	\$20	This November
June-Aug	\$10	This November
Sept-Dec.	\$30	Next November

## NEW MEMBERSHIP FORM

ITEM	COST	SUB-TOTAL
Membership	\$30/20/10	
Astronomy Magazine	\$34	
	TOTAL:	

Name \_\_\_\_\_

Email Address \_\_\_\_\_

Street Address \_\_\_\_\_

Phone Number \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Zip \_\_\_\_\_

How did you hear about DAS? \_\_\_\_\_

\_\_\_\_\_

For questions or concerns, contact Robert Trebilcock, DAS Treasurer at (610) 558-1637 (leave message) or by email to [Trebilcock@aol.com](mailto:Trebilcock@aol.com)



# DAS CONTACTS

Please Call or Email Us with any Questions or for More Information about the DAS

## Officers:

President: Rob Lancaster, rlancaste AT gmail DOT com

Vice-President: Jeff Lawrence, (302) 668-8277, jeff AT delastro DOT org

Secretary: Bill McKibben, billmck21921 AT gmail DOT com

Treasurer: Bob Trebilcock, trebilcock AT aol DOT com

## Board Members at Large:

Bill Hanagan, (302) 239-0949, hanaganw AT verizon DOT net

Amy Hornberger, aehornberger AT gmail DOT com

Dave Groski, groski AT udel DOT edu

## Standing Committee Chairs:

Observatory: Jack Goodwin, (610) 457-2945, Jack\_Goodwin AT yahoo DOT com

Education: Ted Trevorow, (302) 593-7949, edt750 AT verizon DOT com

Library: Maria Lavallo and Sue Bebon

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

Publications: Nico Carver, (302)353-2448, nicocarver AT gmail DOT com

## Other Positions:

Amateur Telescope Making Special Interest Group: Bill Hanagan, hanaganw AT verizon DOT net

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

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

Awards Chair: Amy Hornberger, aehornberger AT gmail DOT com

DAS Book Club Leader: Amy Hornberger, aehornberger AT gmail DOT com

Elections Chair: Nico Carver, nicocarver AT gmail DOT com

Programs Chair: Jeff Lawrence, jeff AT delastro DOT org

Webmaster: Rob Lancaster, rlancaste AT gmail DOT com

## 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!**

