



FOCUS

Vol. 62, No. 6, JUNE, 2017



DELAWARE ASTRONOMICAL SOCIETY

Monthly Meeting – Tuesday, June 20th, 2017 at 8:00pm

Topic: “Eclipses”

Speakers: – DAS Members: If you have some eclipse info - general info, past cool eclipse trips, or a cool trip for the August eclipse, consider sharing your story with the club at the June meeting.

At the Mt. Cuba Astronomical Observatory

FROM THE PRESIDENT--Rob Lancaster

As we enter the summer months, the glorious summer Milky Way will become more and more prominent in the evening sky. The beautiful nebulae of the graceful swan Cygnus, the dense collection of stars and deep sky objects near the galactic core in Sagittarius, and the fascinating nebulous region near Antares in Scorpius are high on my list of things to observe this summer. The warm weather joins the plethora of deep sky objects in summer to make this an excellent time to observe. The only drawback is the shorter time that we have to take in these celestial wonders as we approach the summer solstice. Join us this summer at the Sawin on Tuesday nights, at our member star parties, at our numerous outreach events, and at the Woodside Farm Creamery this summer to enjoy evenings of camaraderie and to take in the summer sky.

In addition this summer, we will be making progress on a number of club projects including the installation of the decks to support the domes project, continued restoration of the old Sawin Telescope, continuing development of the new club telescope as a platform for both goto visual observing and beginner astrophotography, as well as work to make 17.5” telescope easier to roll out onto the pad for use. If you can help with any of these projects, please come out to our work-days when they are announced on the yahoo group, come out to our Tuesday night meetings, and/or contact one of our officers for details.

And finally, this past month we acquired both a 6” and an 8” dobsonian telescope that are great for beginners and outreach events. Please let Jack Goodwin know if you would like to check out one of these scopes to explore the night sky. Remember that the use of our club loaner equipment is one of the benefits of your membership!

Thank you and Happy Summer Observing,
Rob Lancaster
DAS President

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Each issue of FOCUS is full of useful hyperlinks. Just click on any graphic or telltale blue web address and your browser should take you to additional linked web resources.

Great Nebula in Andromeda: the Great Nebula in Andromeda (M31) may not be classified as a Nebula anymore, but it's still a great target for a wide-field photo. As it is rising into view in the east earlier each night, I thought I'd see what I could do to get an image of it with our club's 12" f/4 GSO and HDX110 mount. The image below shows the result. This REALLY deserves to be viewed full-screen.

Photo taken by DAS Member Bill Hanagan

Observing with the Delaware Astronomical Society

Astronomical Inventor Howie Glatter has Passed Away



Did you notice how the stars seemed to burn a little less brightly last night? I fear that it is due to the fact that the astronomical world has lost a great artisan as well as a vibrant spirit. It is with a heavy heart that I inform all of you of the passing away of Howie Glatter late last night after a short but intense battle with cancer. Howie's contributions to the field of astronomy and, in particular, to the art of collimation was priceless and he will be greatly missed by all of us. His attention to detail and his unswerving adherence to tolerances far beyond the norm allowed him to create a product that, to this very day, has seen no equal.

Howie truly was a great artist at his craft but that is not all that he was. He was a true independent thinker, a lover of Bach, an old hippie, and an ardent political activist. Irrespective of your political leanings, one had to admit that Howie was a passionate man: whether that be with his politics, his wide interests, or his friends and family. You could not help but admire his ardent devotion to everything in this world that he loved. There was, however, one strong and supportive force in Howie's life that kept in balance all of his fervent enthusiasm: his wife, Pok Sun. The love between these two people was everlasting and Pok Sun was the force that kept Howie's life in balance. Her devotion to him was extraordinary and he was very lucky to have had her throughout his journey here on earth. As it turns out, his time here on earth has been cut short by a hideous disease plaguing all too many people in this world.

So we must say goodbye to another legend in this business. One whose shoes will not easily be filled. Rest in eternal peace my dear friend and be sure to say hello to JFK for me when you see him. Too bad we will never know that you were right all along.

Indeed, I am sorry to tell you that the photons striking our eyes from now on will not be quite as parallel as they were when Howie was with us. But I suppose the universe will manage to be content with being a bit less collimated in the future..

Howie will be interred on Monday June 19. He is survived by his wife, Pok Sun Glatter.

By Jeffrey Norwood, Camera Concepts & Telescope Solutions

"PUBLIC NIGHTS" at the Mt. CUBA OBSERVATORY...

MCAO PUBLIC NIGHTS *Greg Weaver*



The Mt. Cuba Observatory Public Nights continue year round! In addition to learning about many aspects of the heavens, you'll have a chance to

visit and view our all-digital full-dome planetarium. You can pick up a schedule when you next come to a meeting or get the latest updated version off the website at: <http://>

MountCuba.org. Programs are presented on Monday nights at 8pm. Please check the website for full details and

updates on programs planned. Interested individuals or groups can apply by letter or call 654-6407 (preferably between the hours of 9 and 11 am, Monday through Friday) to the Observatory to obtain reservations for these "Public Nights".

Public Nights schedule for 2017:

Date	Speaker	Topic
16 June (Friday-8:30pm)	Greg Weaver	Family Night
19 June (Monday-8:30pm)	Amy Hornberger	What it's Like to be an Astronaut
10 July (Monday-8:00pm)	Greg Weaver	Family Night
24 July (Monday- 8:00pm)	Stan Owocki	TBD
7 Aug (Monday-8:00pm)	Greg Weaver	Family Night
28 Aug (Monday-8:00pm)	Greg Weaver	TBD
11 Sept (Monday-8:00pm)	Judi Provencal	Jupiter

Upcoming Events and Activities Extended

Check out the website at <http://www.delastro.org/> for ALL of the upcoming events and activities. There's PLENTY going on, so be sure you're informed and don't miss something that would interest you and your relation to the Heavens above!

SAWIN OBSERVATORY REMINDER AND DAS LOANER TELESCOPES AND EQUIPMENT *Bill Hanagan*

The DAS owns and maintains The Sawin Observatory on the grounds of the Mt. Cuba Astronomical Observatory. The Sawin Observatory houses the club's equatorially mounted 12.5" reflecting telescope. The Sawin is also currently home base for our 17.5" split-tube Dobsonian telescope.

DAS members can obtain a key for access to the Sawin Observatory by being checked out on these telescopes and the use of the observatory. Naturally, all DAS members are invited to look through these telescopes during our Member Star Parties (MSPs) at the Sawin. DAS members who are interested in becoming key holders of the Sawin Observatory should contact Greg Lee to receive training in the use of the facility and the telescopes. See more information on Page 24.

LOANER TELESCOPES and EQUIPMENT

80 mm Celestron Refractor (on loan from Bill McKibben)

The club currently has on loan from our Secretary, Bill McKibben, an 80 mm Celestron Refractor with a Nextar GOTO mount. Contact Bill McKibben if you would like to give this scope a try.

6" Orion Dobsonian Telescope

We have a 6" Orion Sky-Quest XT6 Dobsonian reflector, complete with eyepiece set, available for loan to members. You can keep the telescope out on loan for a month or more. However, we use this telescope heavily for outreach star parties at the Woodside Farm Creamery, so if you have it on loan from April through October you may be asked to bring it out to one or more of these events.

Meade 8" LX-10 Telescope

We also have an 8" Meade LX-10 Schmidt Cassegrain Telescope (SCT) available for loan. This telescope is equipped with an equatorial wedge and is driven in Right-Ascension only. If you have any thoughts about buying a telescope, especially an SCT, you are strongly advised to take this one out on loan so you can learn the advantages and disadvantages of this design.

Barlowed Laser Collimator Toolset

Also available for loan to DAS members is Howie Glatter's version of the Barlowed Laser Collimator. This is actually made up of a set of three very nice tools: 1) a 1.25" Glatter laser collimator (which is useful on its own for collimating the secondary mirror); 2) a 1.25" "TuBlug", which converts the straight beam laser collimator into a "Barlowed" laser collimator, complete with a target screen that's visible from the back end of your Newtonian telescope; and 3) an Orion 2" to 1.25" centering adapter for use with 2" focusers.

Along with the center donut or triangle on your Newtonian primary mirror, a Barlowed laser collimator is a very accurate and incredibly easy way to collimate your Newtonian or Dobsonian telescope. It may sound complicated, but using the Barlowed laser collimator is incredibly quick and easy compared to earlier generations of collimation tools. As one person noted "It's one of the handiest and most useful tools the club has ever offered for loan to the membership!" Obviously, no one DAS member can keep these collimation tools out on loan forever, but borrowing this set of tools is a great way to become familiar with the new "Barlowed Laser Collimator" approach to collimation without having to buy the tool set sight unseen.

If you're interested in borrowing any of the club's loaner telescopes or other items, please contact Bill Hanagan, Jeff Lawrence, or Greg Lee at one of our monthly meetings.

DAS FORUM / E-MAIL SITE ON YAHOO

This is a restricted e-mail service for use by DAS members for DAS purposes. To use this site, go to <http://groups.yahoo.com>; search for Delaware Astronomical Society; and click on the link that comes up. To join, you must have a Yahoo ID and password; if you don't, you can register at this time by following Yahoo's instructions. You will then be allowed to "Join the group" upon clicking in that box. You must then register for the DAS group and add your profile by clicking on "add new profile" and completing the form

When adding or editing your profile, you will need to enter your actual name in the "Real Name" box so you can be identified as a DAS member so Don Shedrick can approve your application to join the DAS group, and everyone will know to whom they are communicating.

Finally, specify your desired email address for delivery of messages. Note: You may choose to not have your name and email address displayed to any-one other than DAS members who are members of the Yahoo DAS email group.

For more detailed instructions, go to the DAS website under *DAS Resource Links*.



06/20/17 DAS Board Meeting Agenda

1. Review of Minutes from Last Meeting—Bill McKibben
2. Treasurer's Report—Diana Metzger
3. Report on the Foam from the AP Refractor box—Greg Lee
4. Update about possible donation for the new scope focuser—Bill Hanagan
5. Update on Paracorr Acquisition Progress—Jack Goodwin
6. Update on 17.5" shed—Bill McKibben
7. Update on smaller mount for SkyShed Pod—Bill Hanagan
8. Update on SkyShed Pods and Decks and Workdays—Jeff Lawrence
9. Discussion on a Refractor or similar scope for the Pod
10. Sawin security upgrade Research Report—Jeff Lawrence

May AP-SIG Meeting Reviews Deep-Sky Image Processing Using Deep-Sky Stacker and Photoshop, by Bill Hanagan

The Astro-Photography Special Interest Group (AP-SIG) met on May 20 at Mt. Cuba with 9 AP-SIG members and guests in attendance.

The special topic for the meeting was presented by Mark Mitchell on the Use of Deep-Sky Stacker and Photoshop as an alternative to PixInsight for Deep-Sky image processing. You may recall that the AP-SIG held a two-day workshop on deep-sky image processing using Pixinsight back in January and February. The Deep-Sky Stacker / Photoshop combination is an attractive option for anyone who is already highly experienced in the use of layers and other advanced Photoshop techniques. Nico Carver also gave us an update on plans for the August 21 total solar eclipse. For refreshments, Mark brought some excellent home-made oatmeal-raisin cookies and I brought an apple-cinnamon cake. Thanks Mark!

The June AP-SIG Meeting is tentatively scheduled for the Weekend of June 23 / 24 at Mt. Cuba by Bill Hanagan

If the weather is favorable, we may image Jupiter or Saturn using the club telescopes in the Sawin Observatory, so bring along your planetary imaging gear!

As always, the specific date and time of the meeting depend on the weather and 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.

Anyone interested in 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. If you are not an AP-SIG member you can always come to the meeting to see what goes on and sign up later.

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.



Photo by DAS Member Mark Mitchell

Target: **M104, the Sombrero Galaxy**, in constellation Virgo. (Mag 8, 8.7 x 3.5', 31 million ly away)

Date: 5-15-17

Location: Hockessin, Delaware

Telescope: ED 127, 5" refractor

Mount: Vixen SXP, guided, no dither. f7.5 (f5.25 with focal reducer)

Camera: Atik 383L+ one shot color

Temperature: 10 °C cooled to -10°C

Filter: None

Exposure: 10, 300 sec subs (50 minutes)

Software: Deep Sky Stacker. Photoshop CC 2017.

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



Next Book Club Meeting...

Hello, everyone! The next meeting of the DAS Book Club will take place at Mt. Cuba on Tuesday, July 11. We will be discussing **Galileo's Daughter**, a popular book by Dava Sobel, the author of *The Glass Universe*. Please join us.

Thanks,
Amy Hornberger

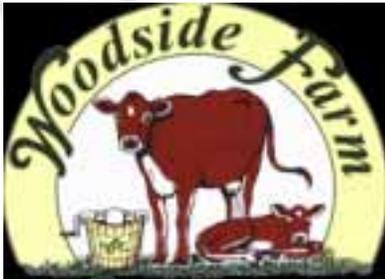
Results of DAS Board Members At Large Elections Nico Carver, Election Chair

Elections took place in May via the usual electronic voting method of the past several elections. Board Members At Large hold voting positions on the DAS Board of Directors and, essentially, represent the interests of the general membership in all matters brought before the Board for discussion. The terms are for two years and begin on July 1 of odd numbered years.

The following DAS members have been elected:

Dave Groski
Bill Hanagan
Amy Hornberger

These winning candidates will assume their offices on July 1, 2017.



Here are the dates for the Woodside Creamery events for this season:

COME and ENJOY
Some of the BEST
Ice Cream in all
of DELAWARE!!
And get a look at the
Stars Above Too!

All evening events to be held on Fridays,
with a rain / cloud date for Saturday

Saturday, July 15	2:00 – 4:00 (solar) – no rain date
August 18	7:00 – 9:00
September 29	6:00 – 8:00
October 27	6:00 - 8:00



WELCOME New Members
to the DAS!
We're GLAD to have
You on Board!

Warren Minix,
Jeanne Pakovits,
Robert Jensen and
Eric Stricko

Click
Below To

Sign up for
Science@NASA
News Alerts

Two cartoon astronauts in white suits are standing on either side of a blue rectangular sign. The sign contains the text "Sign up for Science@NASA News Alerts".



DELAWARE ASTRONOMICAL SOCIETY

*C/O Mount Cuba Astronomical Observatory
1610 Hillside Mill Road, Greenville, DE 19807
www.delastro.org email: dasmtcuba@gmail.com*

May 25, 2017

Dr. Shawn Domagal-Goldman
NASA Goddard Space Flight Center
Mail Stop 699.0
8800 Greenbelt Road
Greenbelt, MD 20771

Dear Dr. Domagal-Goldman,

On behalf of the Delaware Astronomical Society I want to thank you for your excellent talk on "The Next 30 Years in the Search for Life on Planets Around Other Stars". We have had many positive and enthusiastic comments about your presentation. You have certainly given us food for thought as we ponder the question about life in other parts of our universe. I hope that discovery of life in another place in the universe will happen in my lifetime!

Thank you again for an excellent presentation!

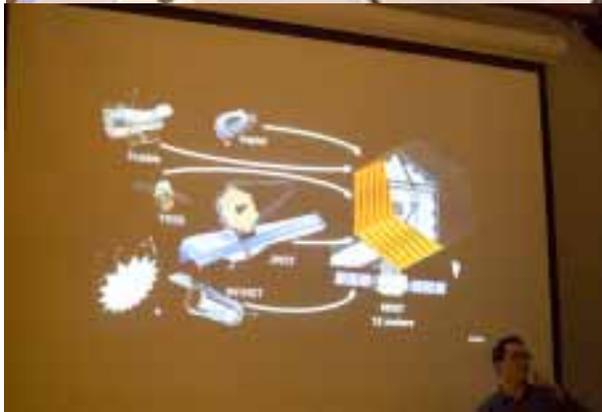
Sincerely,

Diana Metzger
Treasurer, DAS

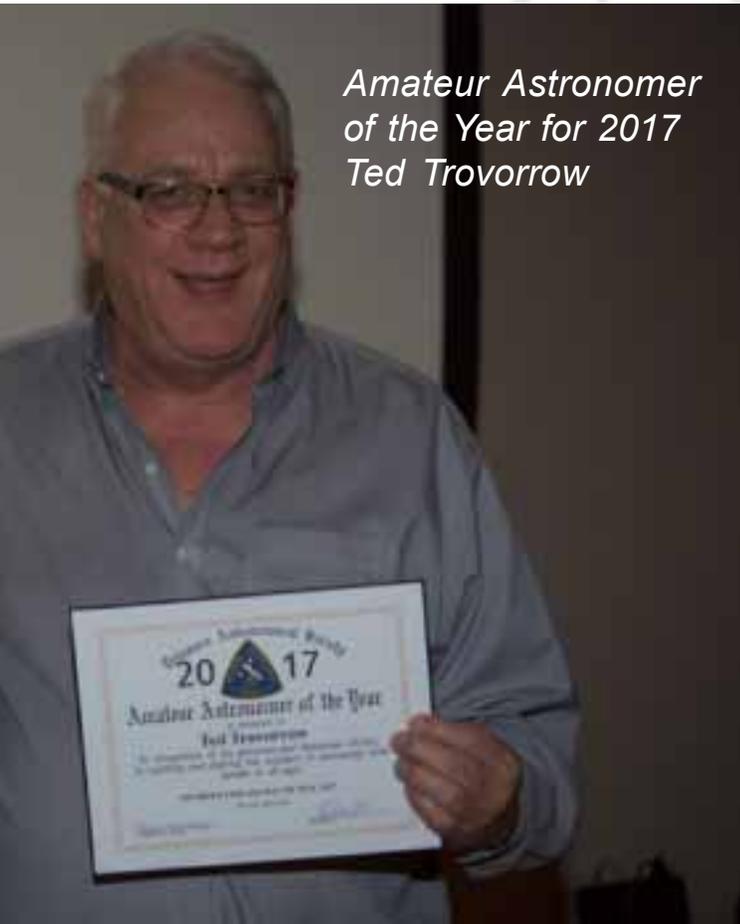
2017 DAS Annual Dinner

Dr. Shawn

Topic: "The Next 30 Years in the Search"



Meeting with NASA Speaker Domagal-Goldman for "Life on Planets Around Other Stars"



Amateur Astronomer
of the Year for 2017
Ted Trovorrow



NASA Speaker
Dr. Shawn
Domagal-Goldman





DELAWARE ASTRONOMICAL SOCIETY

Board of Directors Meeting Minutes

Meeting Date: 4/18/2017

Board Members in attendance:

<input checked="" type="checkbox"/> President:	Rob Lancaster	<input checked="" type="checkbox"/> Board Member at Large:	Bill Hanagan
<input checked="" type="checkbox"/> Vice-President	Jeff Lawrence	<input type="checkbox"/> Publications Chair:	Joe Neuberger
<input checked="" type="checkbox"/> Secretary:	Bill McKibben	<input checked="" type="checkbox"/> Education Chair:	Ted Trevorrow
<input checked="" type="checkbox"/> Treasurer:	Diana Metzger	<input checked="" type="checkbox"/> Observatory & Equipment Chair:	Jack Goodwin
<input checked="" type="checkbox"/> Board Member at Large:	Terry Lisansky	<input checked="" type="checkbox"/> Observing Chair:	Greg Lee
<input type="checkbox"/> Board Member at Large:	Glenn Bentley	<input checked="" type="checkbox"/> Library Chair:	Maria Lavalle and Sue Bebon

Meeting was called to order at: 7:02 PM

Meeting Minutes:

Vote was taken to approve the March 2017 board meeting minutes.

Treasurer's report highlights:

- \$565 has been received to date for the dinner meeting.
- Completed purchase of toolbox, e-Track and a computer cable

Treasurer's Report attached:



*The Treasurer's Report Can be Found
on the DAS Website*

Purchasing approvals can be made via:

- Regular meetings
- President's authority
- Fast Track approval – Procedure was reviewed. Rob to distribute the template for final approval.
- Jack recommended a test run of the process.

General business:

- Rob reported the computer control cable works properly.
- Tool chest has been received and is in place in the Sawin.
- Jack recommended putting reflectors on the toolbox to avoid bumping into it.
- Jack also recommended cutting a DAS logo out of the reflective tape. Jeff's sister has the tool to cut it.
- Jack and Fred put a list of monthly observing targets together to be placed in the Sawin.
- Jack setup a low profile eyepiece box for the top drawer of the new tool box.
- Need to stiffen up the support in the mirror cell in the 17.5" DOB.
- Jeff is working up drawings for a deck for the Pods and working with Dave Groski on the design.

Loaner Scopes:

- Discussed the merits of the 6" and 8" DOB's for loaners and outreach.
- Orion 6" DOB is \$270
- Orion 8" DOB is \$380
- Padded carrying bags cost was unclear.
- Voted to approve up to \$1,000 a 6" Orion DOB, 8" Orion DOB and 2 bags.

Observatory:

- Discussed the need for a Paracorr or Coma corrector.
- Discussed the need for a focuser for the 12" OPT.
- Discussed the need to replace the lock on the Sawin and potential high tech solutions.
- Ran out of time to discuss the observatory items.

Votes / resolutions:

For / Against / Abstain	Resolution
Approved 8 / 0 / 0	Vote to approve the March 2017 board meeting minutes.
Approved 9 / 1 / 0	Vote to approve up to \$1,000 a 6" Orion DOB, 8" Orion DOB and 2 bags.

Board Meeting was adjourned at 7:58 PM

Massive Turnout at CAS Starparty Due To Facebook Advertising

Fred DeLucia

Hey Folks,

Jack and I helped out at Chesmont's French Creek Star Party last night. It was the largest turnout there ever. Lou Berhman (2016 Luther Porter recipient) pushed it on Facebook and as you can see in this link (https://www.facebook.com/events/1600017003345787/?acontext=%7B%22action_history%22%3A%22null%22%7D) over 7000 were "interested" and 731 "went." Judging from the attendance last night I have little doubt of the numbers. There were at least 500 or more people there. The rangers told us that ALL parking lots were filled at the park and they had no intention to take the time to ticket cars parked on grass fields. I took the attached 2 pics before it got dark and more people were still arriving. The lines at the 7 or 8 telescopes were loooooonnnng. Tom and Amy Cavanaugh went, too. It was about as large as the average turnout as Chesmont's annual Starfest and confined to a much smaller area. I handed out all 200 CAS business cards I took with me. I even unwittingly handed out about 2 dozen DAS cards after I ran out of CAS'. It was too dark and I was too busy by then to see what I was doing.

I think if we want to increase attendance at DAS' public outreach then consideration should be given to a greater Facebook presence... by someone with the skills to handle it.

Fred

June meeting - the Great US Eclipse of August 2017

Hello,

Our topic for the June DAS meeting will be the great eclipse of August 2017. I would like to have a series of club members give mini-talks on different aspects of eclipses. Topics could include:

- your plans for viewing the eclipse in August (either local or travel within the path)
- past experiences in experiencing eclipses
- what to expect of an eclipse
- how to view an eclipse
- what equipment is worth and not worth having
- any other related topics

If you have something you would like to share, please let me know. Your contribution could be as short as 2-3 minutes or as long as 10-15 minutes. Currently, we have the following volunteers:

- Nico Carver on photographing an eclipse
- Ed McConnell - some eclipse photos and viewing an eclipse from a cruise ship
- Don Shedrick - chasing eclipses all over the world
- Jeff Lawrence & Bill McKibben - viewing the August eclipse out west
- Fred DeLucia - viewing the August eclipse with Special Interest Tours

There is room for several more talks, if you have something to share - especially if it compliments the talks listed above. It would be great to have a well-rounded set of talks.

best,

- Jeff Lawrence
DAS Programming Chair





If you aren't a bit groggy today... man oh man, did you miss a good time last night (June 1st)!

Greetings, fellow DAsonians!

Well, if you are one of the well-rested contingent of DAS today, man, did you miss out on a FANTASTIC time last night!

Fred did what he does best and threw up the "Astro Bat Signal" for last night and folks turned out in force at Cheslen. The entire circular parking lot was filled! Yes, you are reading that correctly, filled!

Today's tired astronomers include the usual Cheslen contingent of Fred (Arrgggg, you mean I missed another meteor) DeLucia, Lionel (why buy a 5 inch APO refractor when you can just win one) Sandell, Igor (my astro batteries are bigger than my car) Peshenko, me-- Jack (transmissions are waaay overrated) Goodwin, and Greg (SCUBA weights are awesome) Lee... but reinforcements turned out in force! They included Diana (me no afraid of no stinking ladders in the dark) Metzger, Scott (my God, that scope is huge) Jackson, Bill (I've got a tape measure for your scope) Hanagan, Ted (sure, Jack & Amy, just spell my last name however you want) TrEvorrow, and Jeff (collimation is way overrated) Lawrence.

Folks started arriving around 7:30. I was the last to arrive. But no worries; there was that stupid moon that was in the way. Which, coincidentally, we learned last night that the moon may be closer than Florida... you cannot see Florida but we could see the moon for several hours last night. (Long story, one of those you had to be there moments, but very funny). When I arrived, I was shocked at the number of people already there! My first thought was, man, this is going to be a fun night with all of these scopes. We will be able to bounce around to different scopes and see a ton of different objects. Let me see if I can recall all of the scopes that were set up... Fred 18 in Dob, Lionel 16 in Dob, Scott 10 in Dob, Diana 10 in Dob, Jeff 14 in Dob, Igor 8 in SCT, Greg's new 16 in Dob, Bill with the new 8 in club loaner scope, Ted 8 in SCT, and me with my 20 in Dob.

Don't know what the cumulative aperture is but there was a bunch of glass out to plunder the heavens, as soon as that stupid moon (which is apparently closer than Florida) set. While it was still "illuminating the field", we were able to look at a few of the brighter objects and socialize with friends. Then, it seemed that people got tired of waiting and started to go for it anyway. Several assaulted all things globular, while others went for Jupiter and the moon, many had galaxies on the menu, planetary nebulas were not overlooked, nor were the comets, and there was a healthy dose of other eye candy like the Swan in large scopes with the peanut butter and jelly filter (DGM NPB filter-- very highly recommended).

Additionally, we saw several very nice meteors, satellites, satellite flashes, satellites going directly through objects in the eyepiece like M51, and a few faux space station flybys (aka planes), and Fred taking it to "megaludicrous" power 1,800x on the Cat's Eye Nebula (with central star).

All in all, this was a great night. It was a great time with good friends, and many many scopes looking at objects all over the sky and sharing the incredible views. There were many many objects that we observed; I will let the others that were there fill in some of what I am missing but the hit list from last night includes: lunar standard, lunar binoviewing in a TV binoviewer (described as "kinda scary"), Veil (both sides), Ms 3, 4, 5, 8, 9, 11, 12, 13, 16, 17, 20, 22, 27, 31, 51, 57, 81, 82, 92, 101, double cluster (no, Fred, it is not the Pleiades), Cat's Eye, Little Gem, Crescent 6888, 5466, 5634, Cheeseburger, Saturn, Jupiter, 41P Tuttle-Giacobini Comet, C/2015/V2 Johnson Comet, Hickson 68, ARP 29, ARP 91, ARP 185, as well as other things that I hope others will fill in the blanks for me. We tried for NGC1296 and the Phantom Streak but struck out on them.

Folks trickled out throughout the night, as some had commitments in the morning. However, we were able to keep going until that big yellow thing wrecked the skies for us. Yes, we went until dawn! As Fred, Lionel, and I closed up for the night (dawn), Fred and I drove to a diner and waited for it to open and had a nice breakfast before we finally returned home and hit the rack (for the record, separately)!

All in all, it was a fantastic evening, as I am sit here writing up this observing summary at 2 in the afternoon sipping my "morning" coffee, using some of my vacation time the best way I can.

Fantastic times-- join us next time! Don't have a scope? No worries; you can either mooch views or you can borrow one of the club's loaner scopes (we have some newly acquired ones, too).

Jack Goodwin

8" Celestron For Sale by Bill Westerguard-- Contact Bill directly at 302-827-8099



FOR SALE: 8" CELESTRON TELESCOPE WITH CARRYING CASE, WEDGE, & TRIPOD. THE TELESCOPE WAS MODIFIED FOR EASY POLAR ALIGNMENT AND ADJUSTMENTS FOR LEVELING. ALSO INCLUDED ARE THE FOLLOWING ITEMS:
EYE PIECES, ALL 1 1/4" EXCEPT AS NOTED : 2" PLOSSL 55 mm, ORTHO 25,18, 12.5, & 6 mm. TELE VUE PLOSSL 26, 17, 10, & 7.4 mm. MEAD SUPER 20mm MULTI COATED PLOSSL. MEADE 2X-3X VARIABLE TELENEGATIVE MULTI COATED. UNIVERSITY KONIG 32 mm MULTI COATED. CELESTRON KELLNER 40 & 25 mm. TELE VUE 12 mm NAGLER TYPE 2. MEADE SUPER PLOSSL 32 & 6.4 mm MULTI COATED. MEADE 2X TELENEGATIVE AMPLIFIER AIR SPACED TRIPLET MULTI COATED MODEL 140. CELESTRON STAR DIAGONAL, CELESTRON 90 DEG. ADAPTER. ROUND CRAFTSMAN

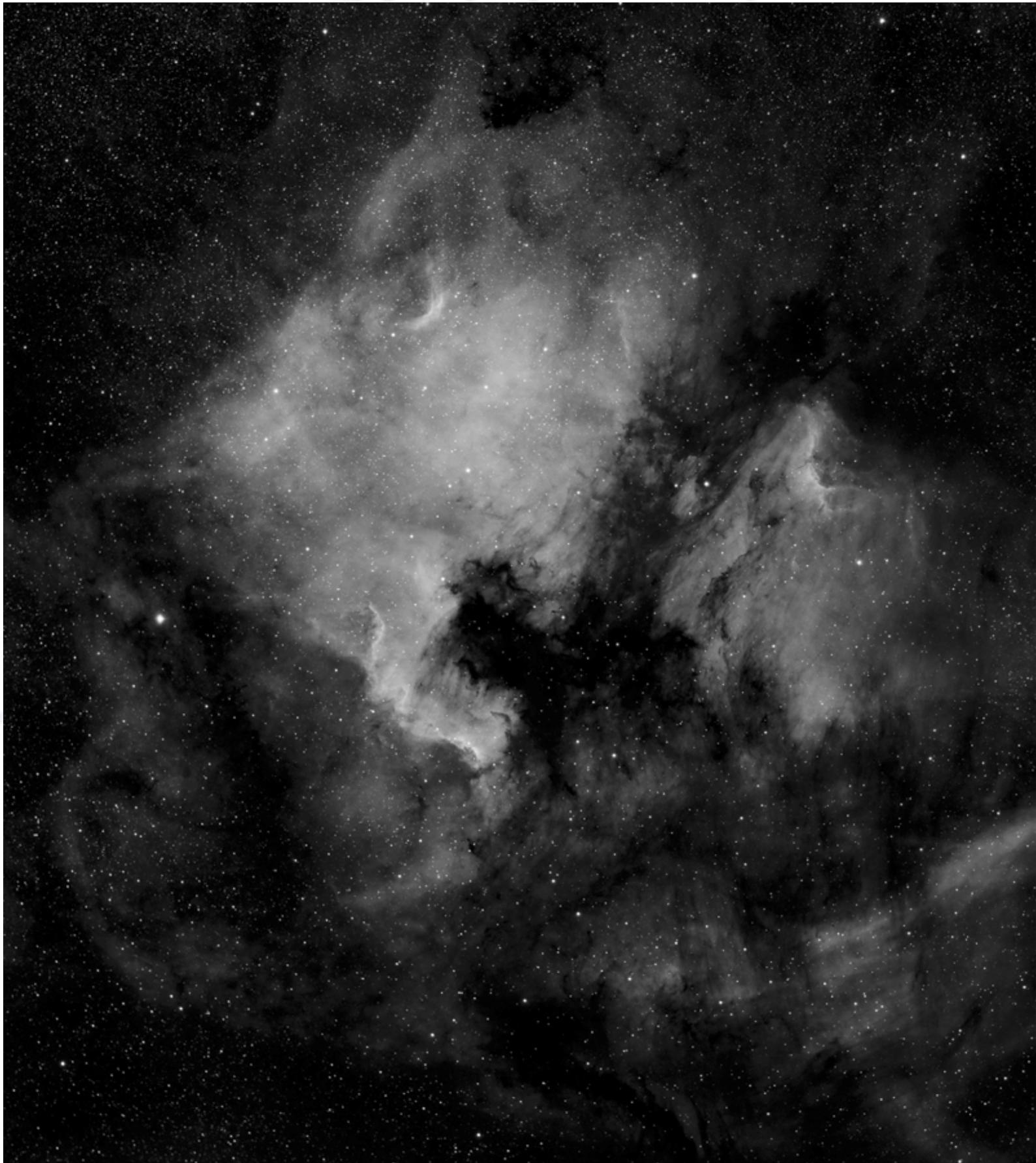
LEVEL. 2" ADAPTER FILTER. SET OF FIVE THREAD-IN FILTERS. ALL OF THE ABOVE 18 EYE PIECES AND EQUIPMENT COME IN TWO CARRYING CASES. IF INTERESTED, ALL ITEMS AND TELESCOPE LISTED ABOVE ARE CONSIDERED ONE ITEM AND WILL NOT BE SOLD SEPARATELY. **THE ASKING PRICE IS \$800.00**

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*Photo by DAS Member Nico Carver --
The Pelican Nebula*



May 23rd Solar Filter Making Session. . .



A VERY Special "Thank You"

goes out to Jeff Lawrence for being our Annual Dinner Meeting Coordinator and Gourmet Chef for the evening!

And of course his parents are included for their participation in the food preparation for the event! Thank You All!

Dinner Meeting Analysis Jeff Lawrence

	2017 - \$20		2016 - \$20		2015 - \$20		2014 - \$20		2013 - \$45	
	Income	Expense	Income	Expense	Income	Expense	Income	Expense		
meals	\$ 1,602.66	\$ 399.83	\$ 1,194.30	\$ 846.31	\$ 1,309.28	\$ 838.50	\$ 936.96	\$ 613.96		
equipment rental		\$ 193.41		\$ 149.34		\$ 191.58				
luther porter fund	\$ 200.00		\$ 290.00		\$ 240.00	\$ 200.00	\$ 140.00			
guest speaker	\$ 31.99	\$ 11.99	\$ 20.00		\$ 164.83	\$ 144.83	\$ 90.00	\$ 50.00		
facility		\$ 505.00		\$ 505.00		\$ 205.00		\$ 390.99		
awards		\$ 271.88		\$ 311.97		\$ 200.00		\$ 255.86		
donation	\$ 278.00	\$ 146.29	\$ 309.00		\$ 354.00		\$ 238.00			
TOTAL	\$ 2,112.66	\$ 1,528.40	\$ 1,813.30	\$ 1,812.62	\$ 2,128.11	\$ 1,759.91	\$ 1,404.96	\$ 1,250.81	\$ 1,584.20	\$ 1,530.00
gain:	\$	584.25	\$	0.68	\$	368.20	\$	154.15	\$	54.20
# members	46		37.5		34		32		24	
# spouses	24		17		17		11		12	
guests	13		9.5		21		9		1	
total	83		64		72		52		37	



Astronomy Picture of the Day, June 14, 2017
M89: Elliptical Galaxy with Outer Shells and Plumes
Image Credit & Copyright: Mark Hanson

DAS Now has a Discount Subscription Rate for
***Amateur Astronomy* Magazine**

Amateur Astronomy Magazine: DAS members must print, fill out and mail the form found in the "Files" section of our Yahoo email list website.

The magazine is issued quarterly. <http://www.amateurastronomy.com/index.htm>.

DAS ASTROPHOTOGRAPHY SPECIAL INTEREST GROUP *Bill Hanagan*

The DAS astro-photography special interest group (DAS AP-SIG) meets monthly at Mt. Cuba and at our members' homes. The AP SIG sometimes meets regardless of the weather, but some meetings are planned around specific imaging demonstrations and are "Flex-Scheduled" using email on 1-2 day notice to synchronize with the weather. AP-SIG meetings are regularly announced via the DAS Yahoo Group as well as by email to AP-SIG members. See the sidebar for a brief rundown on how to get started taking astro-photos. To join the AP-SIG, send me an email at hanaganw@verizon.net with your name, address, and phone number and tell me that you want to join the AP-SIG.

AP-SIG meetings are informal and typically include the presentation of astrophotos taken by the members along with an extended question and answer period. The topics discussed during our Q&A sessions have covered the entire gamut of astrophotography, from how to get started with a minimum of equipment, to polar aligning your telescope, to the fine points of using auto-guiders and post-processing digital images.

Even if you aren't an AP-SIG member, you're welcome to attend the AP-SIG meetings to learn more.

The specific date will be announced a day or two ahead of the meeting via DAS Yahoo Group email.



The Astro-Photography Special Interest Group (AP SIG):
*One of the GREAT Benefits of Belonging to the Delaware Astronomical Society.
So Join or Re-Join and get involved In the Hobby's Most Advanced Element in Astronomy Today.
And get a Look at what the Heavens REALLY look like --Something that can only be Found in Modern Astro-Photography!*

And the DAS Has The Equipment and Expertise Needed for YOU to Get Started in Astro-Photography!

Celebrating 15 Years!

2017 Marks the Astro-Photography SIG's **15th Anniversary!! WOW!!**

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. The ATM SIG meets 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've made several Newtonian telescope mirrors from scratch and completed some that members brought in as works in progress, including one that was started in the mid-60's! We've also made new telescope tubes, made secondary mirror holders, tested numerous telescope objectives, manufactured spiders, and made many solar filters for telescopes and binoculars. We recently completed the refiguring of the DAS 17.5" Newtonian mirror.

Anyone interested in joining the ATM SIG should email their name, address, and phone number to me at hanaganw@verizon.net.



FOCUS uses plenty of photos in banners & elsewhere each issue, and **we want to use YOURS...not Hubble's!!**

Photos need NOT be current.

So how about you?? HAVE ANY OLD or NEW ASTROPHOTOS??

PLEASE email to **FOCUS** editor

(or tell us where they can be found on the web if your photos reside there!)

Astronomical League

Reminder. Astronomical League dues are due. For those who like the challenges of observing and learning more about the night sky, there is an observing program for you. Dues to AL are only \$7.50. If you have any questions, please contact me at klynking@verizon.net.

Lynn King

Mid May opens our newest Dark Sky Viewing Site

REMINDER: We will be observing at our newest "dark" site in the Fair Hill Preserve in Newark, DE. The theme will be "Mini-Messier Marathon" but the whole sky is still there for viewing. Here are instructions:

The observing spot is tucked away back in the fields so we will rendezvous at Parking Lot 3 at the intersection of Appleton Road and Black Bridge Road:

<https://www.google.com/maps/di r//39.7141962,-75.8226214/@39.7138242,-75.8223028,18.5z>

I will plan to be at the parking lot around 7:30pm. For those who have not been there before we will caravan to the observing site at 7:45pm. If you've been there before you will know the way.

The Park wants a rough vehicle count so please let me know by email if you plan to come: greglee288@gmail.com or cell 302-252-7806.

We'll be using the yahoo email system to announce viewing nights and "go" "no go" advisories, so be sure that you are logged into that system. Instructions are at the bottom of page 3 of the FOCUS.

Greg

7th annual Friday Night Lights is July 14

Hi everyone,

I was on a conference call with the National Lands Trust event organizers recently. **The 7th annual Friday Night Lights is July 14.**

Same place as last year, same set-up area. Mostly everything will be the same except we'll probably have an extra trash can or two. Victory Brewing won't be there but other vendors will. Different this year is that Food Trucks are planned to be there for purchasing food. I don't know which ones. I'll have more details as we get closer to the event. The event is 8-11PM, doors open at 7:30PM, but the NLT asks that all scope volunteers be on site no later than 7PM to avoid traffic congestion.

Notably, the planners are making it bigger this year and expecting about 800+ people. Again, all telescope volunteers can bring 1 adult guest for free admission and will receive 2 drink tickets. Because alcoholic beverages are served no one under-aged will be admitted.

A 68% illuminated Moon rises that night at almost midnight, but anyone can stay observing if they like to do so after the event ends.

For those new to DAS here is a link from our website describing a prior Friday Night Lights: <http://delastro.org/16-event-reports/90-friday-night-lights-at-cheslen-preserve> There are also write-ups with pictures in the September 2016 and September 2015 FOCUS newsletters accessible through the Focus archives on the DAS website.

If anyone can commit this early, that'd be great. Let me know. I'll keep a list of volunteers as usual. Feel free to spread the word among our club members and contact me off line if there are any questions.

Thanks for your help.

Clear, dark and steady skies to all.

Fred deLucia

Sawin Certification Program

The Sawin is the major centerpiece of DAS. In the past it was in use much more often and by a number of members on every clear Friday night. It has been largely underutilized for a number of reasons. One reason, I believe, is that newer members or members who do not own a telescope might feel intimidated by the equipment and the observatory's layout. We hope to address this by instituting the Sawin Certification Program. With the new upgrades installed, its use will be more inviting and user friendly to both new and experienced members. Certified Key Holders of the Sawin have access to its use at any time without supervision



The Program will consist of a minimum of 2 sessions, scheduled at the Sawin, to obtain the necessary knowledge and experience in using the Sawin equipment. These sessions will be supervised by a current Sawin Key Holder.

The first session, likely set for a weekend in the daylight (even if it's cloudy), will familiarize learners with the layout of the Sawin and overall operation, including opening the roof, uncovering and covering the telescopes, handling eyepieces and pointing the telescopes, etc.

If the supervising Sawin Key Holder determines that progression during the first session is acceptable, then the second session will be scheduled for a clear sky night session to address night time use of the equipment.

The Sawin Certification Program is for DAS members only who are in good standing and 16 years of age or older. Participants in the program who are under 18 years of age must be accompanied by a parent or guardian.

For information or sign-up, please contact Rob Lancaster, DAS President at RLancaste@gmail.com.

ASTRONOMICAL LEAGUE MEMBERSHIP

- The DAS offers an optional membership in the Astronomical League (AL) at a discounted rate.
- AL membership dues are \$7.50 per year and are due on June 1 for all members.
- Prorated discounts for new memberships starting mid-year are as follows:

April 16 - July 15: \$7.50 per member

July 16 - Oct 15: \$5.62 per member

Oct 16 - Jan 15: \$3.75 per member

Jan 16 - April 15: \$1.87 per member

For questions regarding Astronomical League, its observing programs and to sign off on completed observing programs before being submitted to the Astronomical League, contact Lynn King at klynking@verizon.net.

Members should make their check out to DAS and mail it to the Treasurer whose information is below:

Diana Metzger, Treasurer, 604 Baldwin Lane, Wilmington, DE 19803

Call for DAS AstroImages for Display in Mt. Cuba Lobby

MCAO is asking for any DAS members to submit their astroimages for display in the Observatory. It would like to display the club member's talents and update some of the images currently on display in the lobby of the Observatory.

Images will be displayed for up to a year and replaced as new images are submitted. Full credits to the imager will be included. Please include all technical information with the image (date, telescope and camera used, exposure time, image processing software, etc.). You may email digital images to the Mt. Cuba website. Photos may be sent to the Observatory or brought to a DAS meeting.

The Observatory looks forward to displaying your beautiful images! Contact Greg at mtcuba@physics.udel.edu.



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INFORMATION ON DAS MEMBERSHIPS AND MAGAZINE SUBSCRIPTIONS

DAS MEMBERSHIP

- DAS membership dues are \$30.00 per year and due on November 1 for all members.
- There is no need to renew membership until the treasurer contacts you during the membership renewal drive starting in mid-October.
- New members joining at various times of the year may be eligible for a prorated dues amount.
 - \$20 when joining March-May
 - \$10 when joining June-August
 - \$30 for joining September-October through November 1 of the following year.

SKY & TELESCOPE MAGAZINE

- The DAS offers subscriptions to *Sky & Telescope* at a discounted rate of \$32.95 per year.
- Call S&T magazine at 800-253-0245 and mention the club's name to receive the discount

ASTRONOMY MAGAZINE

- The DAS offers subscriptions to Astronomy magazine at a discounted rate of \$34.00 per year.
- Subscriptions to Astronomy will be processed by the club for the first subscription year only.
- Your subscription expiration date should be displayed on the mailing label on your magazine.
- Renewals can be handled by all club members on the Astronomy.com website using the following steps:
 - a. go to www.astronomy.com
 - b. select the 'customer service' link in the upper right corner
 - c. select the 'renew your subscriptions' link
 - d. enter your customer number (found on the mailing label), postal code, and the renewal code of 'RCLUB040' and click 'continue'
 - e. follow the remaining steps from there.

NEW MEMBERSHIP FORM

- Please review the membership and magazine information above carefully.
- PLEASE fill out the membership form below completely.

NEW MEMBERSHIP FORM

Please be sure to review the **Membership** and **Magazine** information above **carefully**.

Please make checks payable to DAS and forward to:

Diana Metzger, Treasurer, 604 Baldwin Lane, Wilmington, DE 19803



Membership	\$30.00/20.00/10.00	<input type="text"/>
Astronomy Magazine	\$34.00	<input type="text"/>
Total:		<input type="text"/>

Name _____ Email Address _____

Street Address _____ Phone Number _____

City _____ State _____ Zip _____

Notes _____

For questions or concerns, contact Diana Metzger, DAS Treasurer at (302) 290-2108 dmetzgermd@gmail.com

DAS CONTACTS Please Call Any of Us With Your Concerns or Problems

Board Members

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:

Terry Lisansky -- Terry@terry.cx

Glenn Bentley -- (610) 869-0706 -- GBentley@chesco.org

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

Standing Chairs:

Publications: Joe Neuberger -- JRNeuberger@gmail.com -- (302) 723-2734 -- also *FOCUS* Newsletter, articles & Photo Contributions & Submissions

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

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

Library: Maria Lavalley 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



See Preceding Page for New Membership Form

If you have any questions call any of the member representatives listed. Otherwise, just check the appropriate boxes and complete the form on the preceding page. Print it or cut it off and send it with your check to Diana Metzger at her address on the form. The magazine prices are group rates to DAS members.

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!

The Last
Word. . .



FOCUS Editor
Joe Neuberger

It's time for the Summer break--

We'll be back with the FOCUS in September.

There's PLENTY going on this Summer with the club

So stay tuned to the email Forum for notices!

AND HAVE A GREAT SUMMER!