



## The President's Corner

mail to: [president@saguardoastro.org](mailto:president@saguardoastro.org)

Okay, crew, get ready to show us what you have achieved.

Traditionally August is the month when we reserve the guest speaker time in our meetings for presentations by our members. Therefore, I have not arranged for a guest speaker in August. We (the club) will be dependent upon volunteers to present their projects. The presentations should be about 10 minutes or so (if I recall the admonition I was given last year correctly). I'm flexible with the time limits so if you have a really good show then don't worry about running over a bit. Last year we had a "packed" program with many fine and interesting presentations. I look forward to another good meeting.

The Messier Marathon presentations are scheduled for August. Rick Tejera will present the awards. He has been "feeling under the weather" and it will be good to see him again. We appreciate the work he has done for the Messier Marathon over the years. Without the volunteer work of such members our club meetings would not be the rich and rewarding experience they are.

This brings me back to the reason I joined SAC. The meetings are a rewarding and entertaining experience. When I renewed my interest in astronomy back in 2015 it became apparent there is a steep learning curve to this hobby. I needed the guidance of those who have gone before else I would be wasting a LOT of time. What is especially important to me is the "bs-ing" time before, at break, and after our meetings. I have gotten a lot of good advice on how to improve my astrophotography. I very much appreciated the

advice I have been given and the generosity by which it was given.

Clear skies,

David



SAC President, David Dillmore at the Thunderbird Park Spring Public Star Party  
Photo: Rick Rotramel

Website: [saguardoastro.org](http://saguardoastro.org) Like SAC on Facebook



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©2018, By Former SAC President Fred Tietra

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©2018 By Guy Ottewill

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Header image © 2000-2013 Stellarium Developers  
Scorpius setting in the southwest.

## Quick Calendar

Friday, July 12: **SAC General Meeting**, 7:30 PM, Speaker: Jim Renn, Vatican Observatory Foundation Ambassador, Topic: "The Vatican Observatory and the Big Bang"  
Saturday, August 3: **Star Party**, Frederickson Meadow, weather permitting, see page 2  
Friday, August 9: **SAC Board Meeting**, 6:30 PM, in room near SAC general meeting room  
Friday, August 9: **SAC General Meeting**, 7:30 PM, SAC Members, Topics: 10 Minute Talks, **Contact Michael Popppe** about your presentation topic, Email: [popps@fastq.com](mailto:popps@fastq.com)  
Saturday, August 31 **Star Party**, Frederickson Meadow, weather permitting, see page 2  
Tuesday, September 10: **SAC ATM/Imaging Meeting**, Paul Lind's Shop, see page 2  
Friday, September 13: **SAC General Meeting**, 7:30 PM, Speaker: TBA, Topic: TBA



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# Editor Notes



Hi Folks,

Where were you **50 years ago** when Neil & Buzz set the LEM on the surface of the Moon? I was 14, at my grandma's house for a visit in Portland, Oregon watching the NBC coverage on her color (!) tv, sitting on the floor, eyes fixed on the screen. It was the great culmination of the USA Space Program's effort "...to set foot on the Moon," and beat the Russians to it. I was in glee, since I had watched every launch since Alan Shepard in the Redstone-Mercury flight, May 5, 1961. Wow, it was just amazing and bitchin'.

*Best of the NGC* features this month, NGC 6960, Supernova Remnant in Cygnus.

*Such-A-Deal* has five, long running ads.

*Bits & Pisces* has the minutes of the June SAC General Meeting and some SAC history.

The *SAC Observing* feature has sky info for July, courtesy of Guy Ottewell.

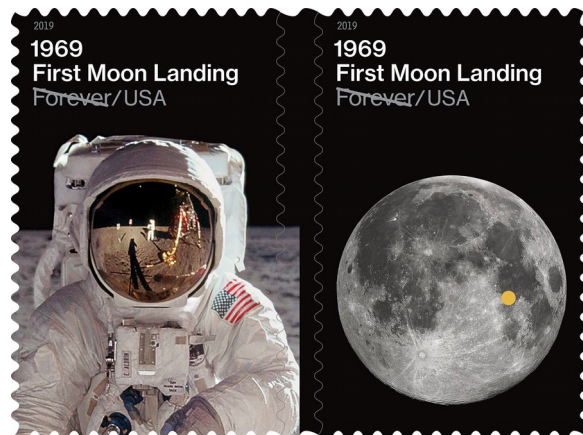
*SAC Outreach* has a fine report on the Grand Canyon North Rim Star Party this past June 22-29, with lots of photos. It was a blast!

Enjoy,

Rick Rotramel, Editor

## Spaceflight Trivia

Can you name the mission involved in this picture below? ([See answer on page 5](#))



NASA

## Schedule of Events 2019

### SAC General Meetings

Jan 25	Feb 22 plus Board Meeting	Mar 22	Apr 12
May 10 plus Board Meeting	June 14	<b>July 12</b>	Aug 9 plus Board Meeting
Sept 13	Oct 11	Nov 8 plus Board Meeting	Dec ? Holiday Party

Meetings held at Grand Canyon University  
3300 W. Camelback Rd. Phoenix, AZ  
Engineering Building 1-202, 7:30 to 10:00 PM

### ATMAstro Imaging Meetings

No meetings in the summer. Next meeting:  
Tuesday, September 10th, 6:30 PM @ Paul Lind's Shop  
210 W. Tierra Buena Lane, Phoenix, AZ

### Star Party, Fredericksen Meadow

Saturday, Aug. 3rd, Sunset \* Weather permitting  
Saturday, Aug. 3rd, Sunset \* Weather permitting  
<http://saguaroastro.org/meadow-directions/>

### Outreach:

### Thunderbird Park Fall Public Star Party

Date: Saturday, October 5, 2019  
Jack Jones, Coordinator

## 2019 SAC Officers

President: David Dillmore



Vice President: TBD

Treasurer: Paul Dickson



Secretary: Kevin Kozel



Properties Director & Webmaster: Robert Brewington  
Photos: Susan Trask (3) and Rick Rotramel (1, of Kevin Kozel)



## SAC Announcement

SAC Members:

Have you renewed for 2019?

Use the form on the last page of this issue or on the SAC website.



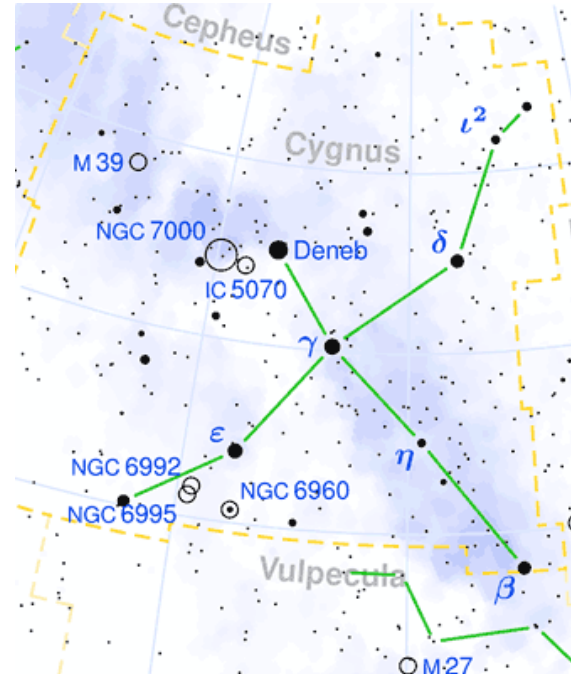
## Best of the NGC:

### NGC 6960, Supernova Remnant in Cygnus

By SAC Imagers, Observers & Sketchers



Left: Image by Robert Brewington, Image was taken on July 5, 2008, Takahashi Sky90 refractor mounted on a Losmandy G11/Gemini mount. SBIG ST2000XM camera, Lum, HAlpha, Green, and Blue filters. 15 minute subs, total of 5.25 hours exposures. Processed in Photoshop.



Cygnus Star Chart  
© Torsten Bronger CC BY-SA 3.0

Observing Chart  
D. M. Douglass - Tempe, AZ

### NGC-6992 / 6960 (Veil Nebula Area) IC 1340 - and Pickering's Triangle (Wisp)

Observed and Imaged  
Date: Jun 25, 2014  
Time (Local): 23:00  
Site: DaHut, Tempe, AZ  
33-22-54(N) - 111-54-15(W)

**Other Names**

Observing Program:  
Astronomical League -  
Bright Nebulae

The AL Observing sheets list the size of this target as (vs) ArcMin. The image to the right is a "mosaic" of 4 separate images, and measures 210 x 160 ArcMin or 3.5 x 2.6 degrees.

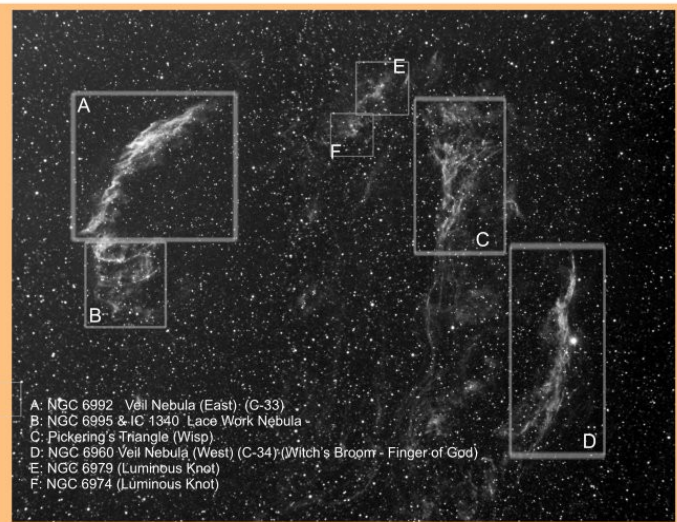
The image to the right matches web available "target" images that were obtained for comparison, as well as the Palomar Sky Survey image.

Estimated Brightness (Lynd's scale): 1

**Image Information:**

Total # of frames (subs): 12  
Frame exposure time: (min): 20  
Total exposure time (min): 240  
Camera: SBIG ST-8300-M  
Camera controlled by: TheSkyX Pro  
Preprocessing and stacking: CCDStack  
PostProcessing: Adobe Photoshop CS3

CGEM Mount Control: TheSkyX Pro  
All slews by "closed loop" (Plate Solved)  
Mount Guiding: PHD



Telescope:  
Meade 80mm ED APO f/6  
Mount: Celestron CGEM (EQ)  
  
Mag (SBIG): (480/22.5) = 21.8  
FOV = 129 x 96 Arc Min (2.1d x 1.5d)  
Filter: Baader Ha 7 nm BW

Type: Em Nebulae  
R.A. 20:56:19 / 20:45:58  
DEC 31:44.6 / 30:35.6  
Magnitude: na  
Size (Arc Min): Wide Field -  
See Above Comments

Weather:  
Temp: 95  
Wind: Calm  
Clouds: None  
  
Estimated Seeing:  
FWHM CCDInspector = 2.0

Sky Brightness  
Mags / sq ArcSec (v)  
18.5 or  
Bortle Scale: 6  
Moon Ill = 0%  
  
Estimated Transparency:  
Object = Little Dipper  
Value (Mag) = 5

Constellation: Cyg

David Douglass

Continued on next page...



# Best of the NGC:

## NGC 6960, Supernova Remnant in Cygnus

By SAC Imagers, Observers & Sketchers

### SAC Observer Steve Coe, 1949-2018

**6" f/6 Dobsonian;** Eagle Eye, S=6, T=7, last night for the RFT, I sold it back to Bill Anderson. NGC 6960 and 52 Cyg - the Pointy section stands out well with the UHC installed in the 22mm panoptic, the nebula is just seen without the filter. The Split section shows medium contrast with the UHC. Pickering's Triangle--just seen with UHC, not there without filter.

**13" f/5.6;** NGC 6960 and 6992 are the brighter parts of the Veil Nebula. These two nebulae were created by a supernova about 30,000 years ago and we just happen to be lucky enough to live while it is visible. 6960 passes behind 52 Cygni, a naked eye star off the western wing of the Swan. This section can be seen to split into forked branches. 6992 is about 2 degrees from 52 Cygni and is somewhat brighter than 6960. In my 17.5" with a 20mm Erfle and a UHC filter, the Veil is amazing. Only about one quarter of either loop can fit into the field of view and the scope must be scanned to see all that is available. 6992 has loops and swirls of nebulosity that give a three dimensional effect. There are other pieces to the Veil Nebula, most of them between the two main sections, much of what can be photographed in an 8" Schmidt Camera can be viewed by a persistent observer. This is the object on which the UHC filter does its best work.

**36" f/5;** @ The Ultimate Star Party, McDonald Obs, Oct. 95, S=7, T=9, - Veil, 27mm and OIII; WOW!!!! Giving up trying to come up with superlatives about this object in the 36". Primo view, my finest view of any object at any time in any telescope. Three dimensional taffy machine. Mottling, smooth sections with stars involved of a wide variety of magnitudes. There are several places where you can see small chunks of nebulae detached from the main body of the Veil.

### SAC Observer AJ Crayon

**8" f/6 Newtonian;** at 60X it is 10' longer to north than south where it tapers to a sharp point, one strand is brighter in 3 places on west side. With Lumicon UHC filter the difference is stark! The nebulosity is visible south of 52 Cygni for about 25' where it widens to about 10' where it splits into 2 thin strands or filaments and continues for another 10' before fading out. North of 52 it is only slightly longer and has 2 additional slightly brighter strands. At 80X, very faint and very extremely elongated; 30'X5' swings north from 52 Cygni with a slight arc east.

**8" f/10 SCT;** at 80X with UHC: From 52 Cygni panning north it is pretty faint and washed out. Panning south the nebula just isn't there and is rather disappointing. The visible dimensions are 5'X40'. With OIII filter it is a little better especially towards the south. Although it is extremely faint the bifurcation was seen about 30' south of 52.

**14" f/5.2 Dobsonian;** at 60X with UHC: Western Veil Nebula with 52 Cygni at west edge. It is extremely elongated in a northerly position, over 60'X5'. Going south from 52 contains the fainter part that eventually divides into two parts before fading to invisibility. The north part is brighter and gradually tapers to a point before fading out.

### SAC Observer Rick Rotramel

**16" f/4.4 Newtonian,** 90x, Fairly Bright (w/no filter), Large, filament nebulosity, starts skinny, grows slightly and then fades, and next to 52 Cygni.



60' x 60'



16" f/4.4, 90x, w/UHC Filter

### SAC Imager Paul Lind



Image: West Veil (NGC 6960) and Pickering's Triangle  
Site: Stoneman Lake Rd  
Date: 9/16/2017  
Exposure: RGB 35, 35, 35 min  
Scope: 12.5" f/3.6 Hyperbolic Astrograph  
Camera: Apogee F-16, KAF-16803 sensor



# Best of the NGC:

## NGC 6960, Supernova Remnant in Cygnus

By SAC Imagers, Observers & Sketchers

**SAC Observer Michael Poppre**

**SAC Imager David Dillmore**



10-inch Meade SCT with a 6.3 focal reducer. The camera was a Nikon D5600. No filters. The ISO was 1600. The image is eleven 5-minute exposures with Bias, Darks, and Flats. (Still need work on the Flats). Processing was with (the new to me) version 4.1 of Deep Sky Stacker and Pixinsight.

July 3, 2019, The "Witch's Broom" portion. Observed at the Pickett Post Trail Head parking lot. **10", f4.7 Dob mounted Newt**; 24mm 82 deg eyepiece (50x) with NPB filter. Showed a nice diaphanous stream of nebula crossing the field of view. Good detail of strands of nebula flowing to and around 52 Cyg. The shape does look like a broom that a witch would sit on. Could also see much of the adjacent remnant in the same field of view. September 5, 2012, NGC 6960, 6992, 6995 the Veil Nebula remnant. Observed at Fredrickson's Meadow. Used **10", f4.7 Dob**. Nice view of the whole remnant at low power with on OIII filter. Using 37mm at 32x. Nebula portions really jumped out against the dark background. Swept clockwise around from the Witch's Broom to complete the whole loop. August 27, 2005, Using **6" f8 Dynascope**, at Oak Creek Valley in central AZ. From my notes: Put the nebula filter on the Veil in Cygnus. What a difference. Even on a night that's not pitch black, the wispy filaments are visible around the star 52 Cyg. This is my first logging of the Veil (NGC 6960). The filaments are not visible without the filter. More like a "ghost" of a nebula. The filter really brings it out. Was using 40x (32mm). Interestingly, on June 2, 1995 I noted observing 52 cyg as a yellow-blue double at 70x but made no mention of seeing the Veil. This would have been with the **6" Dynascope** without filter. Same location as 8/27/05.

## Call for *Best of the NGC* images, notes and sketches.

Hello SAC imagers, observers & sketchers:

For **August**, NGC 7129, Reflection Nebula, 21 41, +66 06, 11.5 mag, 7 x 7, faint reflection nebula in Cepheus

For submitting images, send your file as an attachment in an email to the editor. Please send caption details of the image: Optics, camera, main software used, exposure, location and date taken.

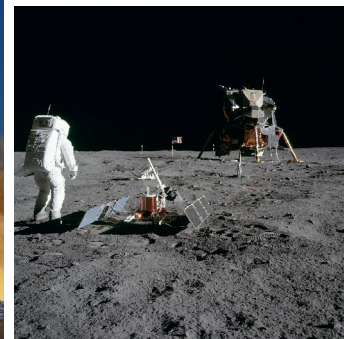
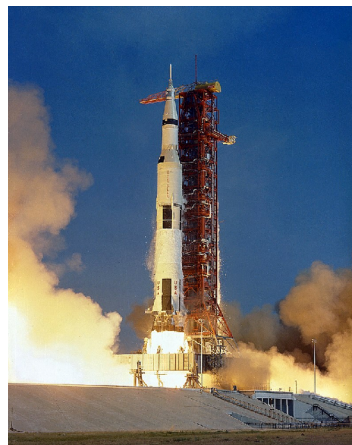
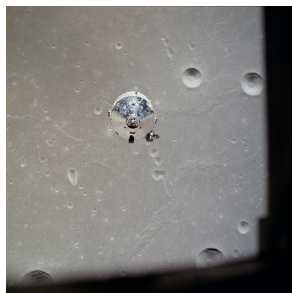
Observation notes are sent in the email text area or as an attached file.

For scanned sketches, send a file with caption details: optics and eyepiece power used.

Email to: [r.rotramel@cox.net](mailto:r.rotramel@cox.net)

For **September**, NGC 6939, OC, 20 31.4, +60 38, 7.8 mag, 8.0', rich, 80\*, near NGC 6946, in Cepheus.

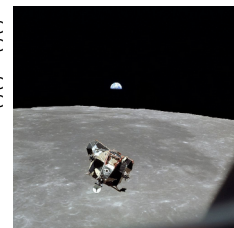
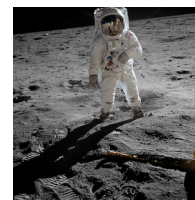
For **October**, NGC 6826, PN, 19 44.8, +50 31, 8.8 mag, 27"x24," Blinking PN, 10\*, in Cygnus.



## Spaceflight Trivia Answer

### Apollo 11

Mission type	Crewed lunar landing
Operator	NASA
Mission duration	8 days, 3 hours, 18 minutes, 35 seconds
Spacecraft	
Apollo CSM-107	
Apollo LM-5	
Manufacturer	
CSM: North American Rockwell	
LM: Grumman	
Launch mass	100,756 pounds (45,702 kg)
Landing mass	10,873 pounds (4,932 kg)
Crew size	3
Neil A. Armstrong, Edwin "Buzz" E. Aldrin, Jr. & Michael Collins	
Callsign	
CSM: Columbia	
LM: Eagle	
On surface: Tranquility Base	
Start of mission	
Launch date	July 16, 1969, 13:32:00 UTC
Rocket	Saturn V SA-506
Launch site	Kennedy Space Center LC-39A
End of mission	
Recovered by	USS Hornet
Landing date	July 24, 1969, 16:50:35 UTC
Landing site	North Pacific Ocean
13°19'N 169°9'W	
Orbital parameters	
Reference system	Selenocentric
Pericynthion altitude	100.9 kilometers (54.5 nmi)
Apocynthion altitude	122.4 kilometers (66.1 nmi)
Inclination	1.25 degrees
Period	2 hours
Epoch	July 19, 1969, 21:44 UTC
Lunar orbiter	
Spacecraft component	Command and service module
Orbital insertion	July 19, 1969, 17:21:50 UTC
Orbital departure	July 22, 1969, 04:55:42 UTC
Orbits	30
Lunar lander	
Spacecraft component	Apollo Lunar Module
Landing date	July 20, 1969, 20:17:40 UTC
Return launch	July 21, 1969, 17:54 UTC
Landing site	Mare Tranquillitatis
0.67408°N 23.47297°E[6]	
Sample mass	21.55 kilograms (47.51 lb)
Surface EVAs	1
EVA duration	2 hours, 31 minutes, 40 seconds
Docking with LM	
Docking date	July 16, 1969, 16:56:03 UTC
Undocking date	July 20, 1969, 17:44:00 UTC
Docking with LM ascent stage	
Docking date	July 21, 1969, 21:35:00 UTC
Undocking date	July 21, 1969, 23:41:31 UTC





## Such-A-Deal

### ITEMS FOR SALE

#### MEADE ETX-90EC 90mm Maksutov Telescope

- Includes the following:
- #07426 8 x 21mm Erect Image Viewfinder
- #07427/#825 8 x 25mm Right Angle Viewfinder
- Deluxe Tripod
- Eyepieces:
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  - Meade Super Plossl 26mm LP multi-coated
- Meade 2X telenegative multi-coated
- Meade remote controller
- #880 Table Tripod for Polar Alignment of the ETX-90EC Astro Telescope
- Manual
- Compass
- Carrying Case
- Allen wrenches



- Selling on behalf of a friend, Asking \$350.00 For all.
- Contact Rick Tejera: 623-203-4121
- Email: [Saguaroastro@cox.net](mailto:Saguaroastro@cox.net)

#### 16-inch Dobsonian & Observing Chair

Telescope: 16-inch f/4.5 Enterprise Optics mirror, excellent figure and performance.

- Truss-type Dobsonian, home-made of Baltic Birch structure, bearings of Ebony Star and Teflon.
- Black fabric light shield (not shown in photo)
- 'Scope disassembles and nests into approximately 3-foot cube, to fit into your van.
- Protective box for primary mirror.

Observing chair: stand or sit comfortably, even when viewing at the zenith!

**Asking:**

**\$1900**

Contact me to schedule a visit in Gold Canyon.

Bob Buchheim

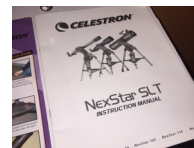
Email: [oca\\_bob@yahoo.com](mailto:oca_bob@yahoo.com)

480-646-1324



#### Celestron Nexstar 130 SLT

- Celestron Skyportal wifi module
- Orion Lasermate Collimator
- Celestron 2" Universal Digital Camera Adapter
- Meade 2X Barlow Lens
- 25mm & 9mm Eyepieces
- Nikon adapter ring
- Moon filter
- Original manuals and start up guides
- Original investment: over \$600
- Asking for all items: \$375.00
- Steve Scott, 602-502-4955
- [Mailto:steve@equitysigngroup.com](mailto:Mailto:steve@equitysigngroup.com)



**For Sale**

Orion Maksutov-Cassegrain Telescope - 127mm 5in

**\$300.00**

602-240-5421 or 602-499-9910

#### Sky-Watcher Star Adventurer Mini (Black)

I have too many toys and am selling my Star Adventurer Mini. It includes all components, manual and box. It's fully functional and in 'Like New' condition. You can control the SAM from an Android or iOS device. Details can be found on the Sky-Watcher website below.

Does not include DEC Bracket or Wedge.

- <https://www.skywatch...adventurer-mini>
- <https://www.youtube....h?v=qVSmHghQxbQ>
- <https://www.youtube....h?v=e4ecJOceRjY>
- <https://www.peterzel...rer-mini-course>



Cost new is \$299. I am asking \$180.

Jim Waters: [jimwaters@cox.net](mailto:jimwaters@cox.net)



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# Such-A-Deal

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The store is closing and we would like to sell the remaining inventory. The store is called Photon instruments. Open Wed. - Sat. 10:30 to 3:00

The store is closing and we would like to sell the remaining inventory. The store is called Photon instruments. Open Wed. - Sat. 10:30 to 3:00

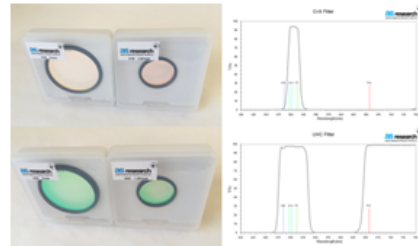
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**The HyperStar-equipped ISERV telescope is now installed on the ISS!**

The HyperStar-equipped Celestron 9.25" telescope (and its backup) that is now installed on the ISS. The scope also features a Starizona MicroTouch Autofocuser. With the Starizona gang: Steve, Scott, Dean, and Donna. (Steve has since had to move to NY because he was dressing too much like Scott.)

Call Us: (520) 292-5010

<http://starizona.com/acb/index.aspx>  
[dean@starizona.com](mailto:dean@starizona.com)





# Bits & Pisces

## Minutes of the June 14, 2019 SAC Meeting

By Kevin Kozel, SAC Secretary

The president, David Dillmore, called the meeting to order at 7:35 pm after fighting with his computer for a while, and asked for visitors or new members. Srividhya Siraman and Adhitya Chandra were our visitors tonight. There are 25 members here tonight plus our guest speaker and visitors. David stated that the members who wish to join each other after the meeting will meet at the Denny's on 35<sup>th</sup> Avenue and Bethany Home Road.

David also mentioned that the June star party will be at the Stoneman Lake site the first weekend in June. Please check the online web chat lines for details. There will be folks up there observing the night sky. We all hope for clear skies! He also asked for member announcements.

Steve Dodder told the members that the annual Grand Canyon North Rim Star Party will be held at the North Rim Lodge from June 22 to June 29. Next year the Star Party will be held from June 13 through June 20, 2020. This year is the 100<sup>th</sup> year anniversary of the founding of the Grand Canyon National Park, signed into law by President Woodrow Wilson. Steve also invited folks to his home observatory, Stone Haven Observatory in Maricopa, Arizona.

Our Treasurer, Paul Dickson, told the members that we had \$2,627.00 in expenses this year and only \$2,602.00 in income. We had a \$25.00 loss in paying for the Messier Marathon. We currently have a bank balance of \$3,667.00. Folks, please pay your dues.

There was no ATM meeting at Paul Lind's shop this month. It's the summer break, Paul goes on vacation this time of year.

### Member Presentations:

Tom Polakis showed members his Solar Activity video he shot recently. The solar flares have been greatly reduced in the past number of years and we are having a solar minimum at this time. Tom also showed an asteroid moving in front of a star field taken from his backyard observatory in Tempe. Tom Always presents a very good show! Thank you very much, Tom!

David Dillmore showed us a number of his photos taken during the Messier Marathon this past March. His shots are very nice and thanks for sharing them with all of us, David. He used a Nikon 33D DSLR camera attached to his 10" Newtonian reflector. He photographed 108 of the Messier objects that night.

Our guest speaker for the night was Jenny Patience from the ASU School of Earth and Space Exploration. She gave a talk on using BIG telescopes to measure "Direct Detection and Characterization of Exoplanets." She analyzed data from various observatories to produce photos and other information showing the actual exoplanets. She presented photos of single and multiple exoplanet systems. Her display was incredible! Thanks much to you, Dr. Patience.

The 50/50 raffle was won by Tom Curry. He netted \$25.00.

The meeting was adjourned at 9:50 pm. See you all next month or at the different star parties.



### The June SAC Meeting Speaker

Jenny Patience, ASU School of Earth and Space Exploration

Topic: "Direct Detection and Characterization of Exoplanets"

Photo: David Dillmore



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# Bits & Pisces

## Reminder: Pay Your Dues for 2019!

New SAC Meeting Location:

Engineering Building 1 – Room 202, second floor.  
It is just north of the parking garage.

*(Old room location, Building 33)*

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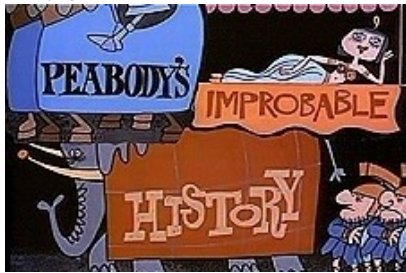
Parking Garage

New Meeting Room, note: this building has elevators.

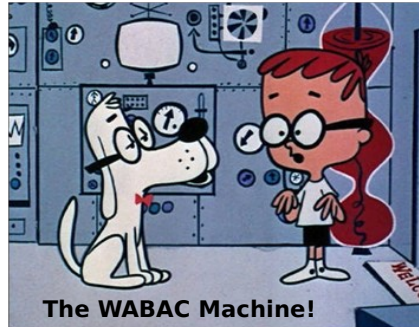




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© Peabody and Sherman, 'Rocky and Bullwinkle' Pictures



Where we going today Mr. Peabody?

# 25 Years Ago in SAC

Saguaro Astronomy Club

Metro Phoenix, Arizona

SACNEWS



September 1994 — Issue #212

## Minutes of the July Meeting

Immediately after opening the meeting, President Bob Gardner asked for visitors to identify themselves. After which, as acting treasurer, he gave a partial treasurer's report.

Nominations were opened for filling the vacant treasurer position for the remainder of this year. Adam Sunshine was the only volunteer. Previously, he made the mailing labels for the Newsletter for the August issue. There was no debate and as a result is a natural for this position. The club breathed a sigh of relief at filling this most important position so fast.

Deep Sky Chairman AJ Crayon announced the next meeting and indicated where the objects for discussion would be found. He also mentioned his drawings of Comet Shoemaker-Levy 9 colliding with Jupiter.

Paul Dickson announced the EVAC site would be available for viewing the Perseid Meteor shower.

Steve Coe showed diskettes that had GIF's (Graphic Information Files) from the Hubble Space Telescope of SL-9 impacts on Jupiter.

Rich Walker, Public Events, announced the next Public Star Party for October 8th at Thunderbird Park. He also requested volunteers for supporting school Star Parties. If you are interested in showing kids and their parents the delights of the night sky, see Rich. He'd love more volunteers.

While discussing Star Parties the question was posed about Buckeye Hills being closed due to budget cut backs by Maricopa County. It was felt that the park was not in eminent danger of being gated shut.

For Show and Tell Pierre Schwaar showed a magnificent video of, what else, SL9 impact sites on Jupiter. The impact sites showed signs of umbra and penumbra effects left by some of the fragments.

Brian Vorndam followed with a video of the solar eclipse earlier this year.

At break time there were 35 in attendance.

After the break Susan Morse introduced our speaker, Jeff Hopkins, from Hopkins Phoenix Observatory. Jeff spoke about astrology (yes astrology) and astronomy. As we all know, astronomy is a science; astrology isn't. Surprisingly though, astrology was the foundation for astronomy (gulp).

—A.J. Crayon, SAC Secretary

# 10 Years Ago in SAC

Saguaro Astronomy Club



# SACnews

Volume 33 Issue 7

August 2009

## Bits & Pisces, Minutes of the July 10th, 2009 General Meeting by AJ Crayon, Secretary

At the beginning of the meeting first time visitors introduced themselves and there were 52 in attendance.

Charlie Whiting, our treasurer, announced we had \$4485 in bank, \$60 cash-on-hand and the two 50/50 Raffles deposited \$115.

For the evening's announcements, Deep Sky Chairman AJ Crayon presented Steve McAllister an observing award for observing 110 objects in the Urban List. Congratulations to Steve. Walt Thomas displayed and discussed a professional looking poster and carrying case along with some business cards that introduces people to SAC. It will be displayed at all public gatherings. Steve Dodder, Novice Group Chairman and Grand Canyon Star Part North Rim Coordinator, announced his availability for new folks that may have astronomy related questions. See the SAC website for contact information: (<http://www.saguaroastro.org/content/2010GrandCanyonStarPartyNorthRim.htm>). He also reported the GCSPNR was a great success, despite the inclement weather. This event is fast becoming full to capacity if you are wanting to bring a telescope so, if you are interested in attending, get your reservations in as soon as possible. The next GCSPNR is scheduled for June 5<sup>th</sup> through 12<sup>th</sup> 2010. Gene Lucas discussed and displayed some Apollo era Moon charts done at Lowell Observatory.

After the break Chris Hanrahan took over the meeting to introduce several SAC members who discussed their current area

of interest. First up was new member Chico (sorry I didn't get his last name) enthusiastically discussed his Celestron Sky Scout. For a new member it does a terrific job identifying celestial objects. Just turn it on and aim. It has 2 programs, one for beginner and one for advanced.

Darrell Spencer had some slides and discussed some refractors that were made before apochromats. Essentially they were small, had long skinny tubes mounted on tripods. Surprisingly you could get some nice views of the moon and planets.

Next, author of several books, Jeff Hopkins discussed his investigations from his observatory - Hopkins Phoenix Observatory. And they are impressive. In addition the 4 books he has authored, there are about 50 papers, presentations and work shops to his credit. His main area of interest is ♄ Aurigae and its dark companion.

Dick Harshaw discussed how to calibrate and use Celestron's micro-guide eye piece for measuring position angle and separation of double stars. He, also, has several publications to his credit.

Finally, Paul Lind, has slides to explain how his 12.5" f3.6 Hyperbolic Astrograph works, which is a photographic telescope. It will use a film that is about the size of a CCD image and is considerably less expensive. For appetizers he had a beautiful image of the Rosette and the Markarian Chain of galaxies.



# **SAC History**

## **The Beginnings of the Saguaro Astronomy Club**

© 2019 by former SAC President, Fred Tretta

I won't pretend to recall all the details of the SAC beginnings, but let me share what I DO recall.

### **Things started to form in 1976.**

The dominant astronomy club in the Phoenix area at that time was the Phoenix Astronomical Society and it centered around lectures and meetings. A number of us had a far greater interest in using our telescopes to do some observing and attempted to stir up some PAS effort in that direction, but it didn't seem to get much traction. Interestingly, I can recall discussions amongst those of us that ended up leaving PAS about the different expectations one might have from a group that saw themselves as a society versus one that might consider itself more as a club. And I feel that difference really did have a bearing because I think deep down most people did see the title and functional difference between a society and a club as real, and tended to function accordingly.

In any case, the talk started to turn into action. I think the failed effort to try and create a section within PAS that was more associated with astronomical observing stimulated a rebellious attitude by those who wanted to go play with their scopes, that attitude pointed toward those who preferred to discuss things. The division became increasingly obvious as time went by. And because the observing ideas failed to get traction, we finally began meeting in parallel with PAS meetings, the emphasis being on getting out and using our telescopes. While others joined in shortly after we started to go out on our own, I think the earliest members were Gene Lucas, Pete Yurka, Bob Latterman, Lynn Blackburn, Kent Hepburn, Paul Maxson, Tom Muggleton, George Kohl, John Adair and myself.

### **Some scattered facts:**

- The original membership, before there was even a membership, was seven people.
- We originally met at ASU but never really felt that was the right place for us. For a time, we met at members' homes.
- It was my assignment to find us a new place to meet. Why I talked to Grand Canyon College is no longer clear to me, but thank goodness we did. The Club has been there ever since.
- We were very closely associated with a downtown camera shop called Wilson Camera where much of our equipment and membership came from. At that time they were located around 2<sup>nd</sup> Ave and maybe Campbell?
- The name, Saguaro Astronomy Club, came out of a group séance and was put together a word at a time, first CLUB, then ASTRONOMY and lastly, SAGUARO.
- The logo was created either by Bob Latterman or Pete Yurka.
- Because I missed some meetings I was punished by being elected the first, second and 4<sup>th</sup> president. Slim pickings, I guess.

### **Fessler's Ranch**

George Fessler worked for me at Honeywell and had both an interest in astronomy and some acreage slightly south of what is now Anthem. He was delighted to let us "claim" an acre of that land and so we busied ourselves clearing it of brush and leveling it. George let us run some power out there and we kind of set things up into pads. One of the guys knew of an old 14' trailer that we could have and so we moved that out to Fessler's, wired it up, and sunk it into the ground aways. It barely made it out there, but it became the club storage facility and our warming tent. There were times when there would be 15 or more people sitting on the floor in there warming up, drinking hot chocolate and telling stories. Outside, there were discussions about how to avoid getting beamed up.

### **RTMC**

One of the very special attractions each year was RTMC, held at Big Bear Lake, CA. Back then, there were certainly as many built scopes as bought scopes. One year we teamed up with the Tucson club to go together. I called the Riverside Club that puts on RTMC and asked if they would allow us to take over one of the big second story rooms in the building over near that small lake which is now only one story. They agreed and what a ball we had that year! I still try to attend every year.





## SAC Observing

### Astronomical Calendar for July 2019

© 2018 by Guy Ottewell

The left column gives **Julian Dates** (number of days from 4713 B.C. Jan. 1 noon), useful for finding time spans between events by subtraction. The first 3 digits of the Julian date (245) are omitted.

Hours and minutes, where given, are in Universal Time.

Occasions such as "Moon 1.25° N.N.E. of Venus" are **appulses**: closest apparent approaches. They are slightly different from **conjunctions**, when one passes north of the other as measured in right ascension or in ecliptic longitude. A **quasi-conjunction** is an appulse without a conjunction, and typically happens when a planet is near its stationary moment.

For **meteor showers**: ZHR (zenithal hourly rate) is an estimate of the number to be seen under ideal conditions at the peak time if the radiant were overhead; actual rates may be very different. Peak times (predicted from where the center of the stream seems to cross Earth's orbit) are

uncertain; best to start watching the night before. Meteor are usually most abundant in the morning hours.

Tell me of errors you notice. They're inevitable, but more easily corrected here than in the former printed *Astronomical Calendars!*

[universalworkshop.com/contact](http://universalworkshop.com/contact)  
This calendar may be subject to improvement. Come back to it!

Explanation of terms can be found in our glossary book *Albedo to Zodiac*. There is more about each topic in *The Astronomical Companion*. And events in this list can be traced in the large *Zodiac Wavy Chart* for the year. For all these, see

[universalworkshop.com](http://universalworkshop.com)



8666.438	Jul	1 Mon	23	Moon 1.64° S.S.E. of Venus; 12° from the Sun in the morning sky
8667.303		2 Tue	19:16	<b>New Moon</b> ; beginning of lunation 1194. Total eclipse of the Sun
8667.788		3 wed	7	Moon at ascending node; longitude 107.6°
8668.229			18	Moon 6.1° S. of Pollux; 13° from the Sun in the evening sky
8668.750		4 Thu	6	Moon 0.19° E.N.E. of Mars; 20° and 19° from the Sun in the evening sky
8668.917			10	Moon 3.3° N.N.E. of Mercury; 22° from the Sun in the evening sky
8669.458			23	<b>Earth at aphelion</b> ; 1.0167 AU from the Sunom the Sun

*Continued next page...*



8669.708	5 Fri	4:60	Moon at perigee; distance 57.03 Earth-radii
8670.032		13	Venus at ascending node through the ecliptic plane
8670.458		23	Mercury 3.8° S.S.E. of Mars; 21° and 19° from the Sun in the evening sky; magnitudes 1.7 and 1.8
8670.688	6 SAT	5	Moon 3.1° N.N.E. of Regulus; 46° from the Sun in the evening sky
8671.695	7 SUN	5	Venus at northernmost declination, 23.43°
8673.955	9 Tue	10:55	<b>First Quarter Moon</b>
8674.479		24	Moon 7.3° N.N.E. of Spica; 97° and 96° from the Sun in the evening sky
8674.512	10 wed	0	Middle of eclipse season: Sun is at same longitude as Moon's ascending node, 107.5°
8677.938	13 SAT	11	Moon 7.8° N.N.E. of Antares; 140° and 139° from the Sun in the evening sky
8678.375		21	Moon 2.31° N.N.E. of Jupiter; 145° from the Sun in the evening sky
8680.833	16 Tue	8	Moon 0.44° E.S.E. of Saturn; 174° and 173° from the Sun in the midnight sky
8680.880		9	Moon at descending node; longitude 287.7°
8681.402		21:38	<b>Full Moon. Partial eclipse of the Moon</b>
8685.510	21 SUN	0	Moon at apogee; distance 63.58 Earth-radii
8685.795		7	Sun enters Cancer, at longitude 118.26° on the ecliptic
8685.958		11	Moon 3.6° S.S.E. of Neptune; 130° from the Sun in the morning sky
8687.208	22 Mon	17	Venus 6.0° S. of Pollux; 6° and 9° from the Sun in the morning sky; magnitudes -3.9 and 1.2
8687.620	23 Tue	3	Sun enters the astrological sign Leo, i.e. its longitude is 120°
8689.555	25 Thu	1:19	<b>Last Quarter Moon</b>
8689.604		3	Mercury 5.6° S.S.W. of Venus; 7° and 6° from the Sun in the morning sky; magnitudes 4.1 and -3.9
8689.958		11	Moon 4.5° S.S.E. of Uranus; 85° and 86° from the Sun in the morning sky
8690.994	26 Fri	12	The equation of time is at a minimum of -6.55 minutes.
8691.833	27 SAT	8	Moon 7.9° S.S.E. of the Pleiades; 63° and 64° from the Sun in the morning sky
8692.500	28 SUN		Piscid Austrinid meteors; ZHR 5; 4 days before New Moon
8692.521		1	Moon 2.25° N. of Aldebaran; 55° from the Sun in the morning sky
8694.500	30 Tue		<b>Southern Delta Aquarid meteors</b> ; ZHR 25; 2 days before New
8694.500			Alpha Capricornid meteors; ZHR 5; 2 days before New
8695.211		17	Moon at ascending node; longitude 107.6°
8695.646	31 wed	4	Moon 4.5° N. of Mercury; 14° from the Sun in the morning sky
8695.646		4	Moon 6.1° S. of Pollux; 14° and 16° from the Sun in the morning sky
8696.396		22	Moon 0.71° N.E. of Venus; 4° from the Sun in the morning sky



## SAC Outreach

# Grand Canyon North Rim Star Party Report June 21-30, 2019

### Report by Coordinator, Steve Dodder

Friday we hit the road earlier than usual, due to the fact our “new” travel trailer was being prepared over the course of a few weeks rather than just Thursday night, Friday morning. This is our second trip up the hill with it, and we’re starting to get the hang of it. The stops along the way were kept short and we reached the North Rim gate just before 5:00 pm. Plenty of light left, so we made camp complete with the awning on the camper and the easy-up shelter over the picnic table. The camping kiosk wasn’t open when we arrived, so we just set up camp and left check-in for morning.

I had been asked by the rangers if I’d take a look at their 1970’s orange tube Celestron 8” SCT to repair or buff up for public outreach after we’d gone. I’d seen this scope in use a couple times before with a volunteer from the past, George Varga. Since he retired in 2011, the scope sat in storage until this year when a young ranger, Kensie Stallings, expressed interest in continuing the program. More on this later.

Saturday morning, after breakfast I went to the camping kiosk to check in. As has been the case for many previous years, they couldn’t find our reservations. As I was explaining the difference between a regular reservation and an “administrative hold” to the ranger there, our attending ranger Jesse Barden strolled up. Try as we might as a tag team, the attendant couldn’t figure it out. So, I left without signing in, hoping to remedy it later in the day. (Later in the day came when Jesse caught up with me and said they’d called the south rim and straightened it out. Unfortunately, a couple volunteers had already showed up and taken their site tags, but that’s another story.)

So, we got everyone setup with camping and lodging, set up the scopes on the veranda and all was well. For a while. Micki Killoran showed up with a dead battery. I lent her mine, which I’d intended to run Kensie’s scope, but we’ll cover that in full later. A few others required info and help, so there was that. I’ve made up some red solar lights in flower pots for the stairs and entries, so I set those up, unloaded and setup my scope.

I gave the talk on Saturday, “*What’s To See In The Sky Tonight?*” and it went very well. I had a couple “new” targets I wanted to show this year, M64, The Black Eye Galaxy and M3, a fantastic globular cluster in Canes Venatici, along with more views of M5 in



A view of the South Rim in Kevin Kozel's scope, Monday  
Photo: Kevin Kozel

Serpens. Both worked out great, as well as M51 and a few favorites later on such as M22, M23, M8 and so on. Left the field after some of the staff were attended to around 1:15 am.

Sunday was full of the usual running around touching base with everyone, both from the volunteer side and the NPS side. Mark Johnston’s talk was fantastic, “*Space Exploration: Past and Future.*” He brought the house down with a story of cosmonaut Yuri Gagarin peeing on the right rear tire of the bus before boarding his historic flight. It’s now a tradition with pretty much anyone boarding the ISS.

Once again, the sky was amazing, and even better than Saturday night. I showed M51 most of the night because it just “popped” out of the eyepiece. Even the kids could easily see the spiral structure. Later on I showed a few other objects and was packing up when 2 young men came up and started talking to me. Eric Hoag and I were talking, but he disappeared after a while. (No hard feelings, Eric.) I hadn’t finished covering the scope and after a few questions I decided to take the covers off and show them a few things, as before, even though the Moon was rising. They stayed until 1:15 after the moon came up with a vengeance and totally washed out the sky. Jupiter and Saturn were all that were left, so we did those for a bit. Their accent sounded Dutch, but I think they were Austrian.

*Continued next page...*

## SAC Outreach

I'd been wondering about our batteries in the camper since we left Maricopa. The generator we brought didn't seem to be charging them all that well for some reason. After the charge session on Monday, I left for a moment and when I came back, Rosie pointed out the power panel was indicating low battery condition, only moments after charging. Not good. There was only one thing to do, go into Kanab and find a new one. We've been running on 4 six volt golf cart batteries since I refurbished the trailer, but my poor maintenance skills had caused them to croak early. Also not good. The drive up to Kanab takes about an hour and a quarter, so almost 3 hours round trip. It was early afternoon when we left, so I was thinking I'd have to assign someone to take my place for the talk intro, etc. Tim Straub stepped up, just in case, and I gave him some rudimentary instruction on how to proceed. Rosie and I "flew" up to Kanab, got the batteries and flew back. The guy at Napa gave us a break on the core charges, as long as we promised to bring the old batteries in within a couple days, which we did on Tuesday making for quite an adventurous couple days.

Moving on, Monday's talk was Jessica Townsend's turn at the stage. Her talk was titled, "*Searching for signs of life: The Mars Exploration Program.*" It covered a LOT of ground as background, but once on subject, was great and very informative. Jessica has a way of bringing fun to even some very dry subjects, like chemistry and the origin of life.



Jessica Townsend's turn at the stage. Photo: Tiare Welch

The sky wasn't as steady as the first two, but the public didn't notice. The Stargate, M51 and M104 were crowd pleasing, as usual. I was the last one on the veranda again, as some staff from the night before asked if we'd be around when they got up around 12:30. Fortunately, the moon was coming up later and later, so we got to see a bunch of globulars and bright stuff in the Milky Way. They stuck around and were thoroughly amazed until after 1:30 am.



Preparing for another evening Photo: Tiare Welch

Tuesday night was cloudy and didn't look good at all. Clouds had been springing up all day long, but we've seen this before where they threaten us, dissipate just after the talk for a couple hours, then resume just as everyone is going home anyway. Not so much tonight. It stayed cloudy after the talk, given by newcomer Jeff McKibben on the *The Mars Insight Mission*. Nine o'clock came and went, and approaching 9:30 the clouds started to thin a bit overhead. I don't recall hearing so many astronomers describing Arcturus at the same time, ever before. Daniel Sinotte's 18" was seeing Jupiter punch through the clouds, but it still looked a little bleak. True to form though, if maybe a little later than usual, the clearing began to spread toward the south, and heading north, too. I quickly put M51 in the eyepiece and a string of visitors sidled up to the eyepiece for a peek. That went cloudy after a while but M57 was then clear, so over we went. By 11:30 most of the crowd was gone, so most of us packed up and went. I stayed just in case, but no one else showed. I got back to the campground around 12:15 or so with another non-skunk under my belt.

Wednesday dawned beautiful, with the sky a wonderful deep, dark blue, as it gets at the NRim. I was to meet with Ranger Kensie to finally talk face to face about what they wanted with their classic C8. Turns out the NPS wanted to fix the old scope, but if that wasn't possible, only then would they consider a new scope for the program. Kensie and I had had several email exchanges on the subject, but I still wasn't sure what, if any, budget she'd been extended. I sent some recommendations for a C8 NexStarSE and or the 9.25" version and put her in touch with Dean from Starizona. Dean recommended the same OTA and gave her a very nice price, but with the more robust Evolution mount.

Wednesday afternoon I stopped by the Naturalists Office, toolbox in hand to take a look. The main problem we knew about was the old power cord. It was a Swiss arrangement that did not fit the current

*Continued next page...*



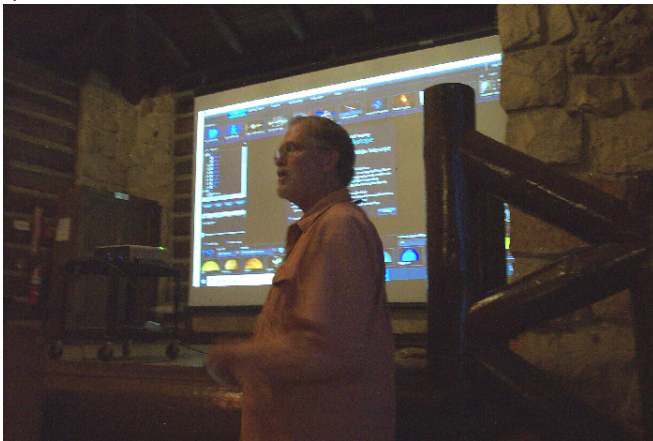
## SAC Outreach



Ranger Kensie Stallings with the C8 Photo: Tiare Welch

power cords. I'd bought an extender for a PC with the male end to connect in as a pigtail for a new, standard PC connector. The procedure went smoothly. Plugged it in and the motors started to whir. A beautiful sound! After 5 minutes, the forks had moved the prescribed amount, so we were in business. She'd bring it out to the veranda and we'd set it up after the star party for a while to collimate and she could learn about polar alignment.

Kevin Kozel gave his talk about the *World Wide Telescope*, an online observing tool. Navigate to an object or region of the sky and one can rotate the image, collect data from various satellites or ground based telescopes and so forth. It went over well with the crowd and there were several very good questions at the end.



Kevin Kozel gives his talk in the auditorium Photo: Rick Rotramel

Coming out to the veranda I found that Kensie had set up her telescope close to mine and was happily showing stars and other objects to visitors. She hadn't brought power out, but was quite engaged

in public outreach nonetheless. She seemed to be having fun, and wasn't in the way, so I just did my thing with the 20" for a couple hours. We'd agreed I'd close up shop around 10:30 pm so we could fire up her scope and see what we had.

When we moved the scope out from the shadow of the lodge to polar align and put power to it, we found that the scope was a bit out of collimation. I figured the OTA was more important at the moment than polar alignment, so we went after that. After tweaking it a bit, and letting her tweak it a bit, I determined that all the screws were in too tight, which prevents any from making progress. When this happens, you just have to loosen all the screws and basically start from scratch. So that's what we did. I explained the process as I went, but it took a good hour, maybe an hour and a half to get the scope collimated. Once that was done, the images were much improved. She moved the scope for a view of The Lagoon nebula, but when she got there, the telescope was wobbling and unstable for some reason. I tried it myself and found the same. With red flashlights, we discovered the main hub bearing was loose and the forks were in danger of falling off. It was ugly. I ended up taking the telescope back to the campground so I could troubleshoot it in the morning. It was not a good ending to the day.

Thursday morning, after coffee, I started taking the base apart. The old C8 bases have a rather complex drive system, with concentric rings of drive gears, RA dial and central hubs clutched to turn as needed. There's a bolt from the bottom that holds the whole thing together, but as the old drive turned, the older grease was sticking and actually loosened the whole mechanism as it turned. But this was the least of the problems. There are 4 stainless steel screws holding the drive clutch to the aluminum fork hub and 3 of them were stripped and bouncing around in the bottom case! It was only a matter of time before the whole thing would come apart. I had to recommend they buy a new telescope. So, Kensie is taking this up the chain of command to see what floats. Kind of a bad outcome, as she won't have a telescope during our star party, but good in that the NPS should get an upgraded, more modern instrument for outreach. I am at their service for more advice and instruction if needed. Best of luck!

Thursday night, the speaker is Micki Killoran on "*Astronomy On A Budget - Galileo's Journey*." It's a variation on her usual talk, outlining low-cost astronomy and telescopes through history. She gives it well, but some folks weren't that into it, unfortunately.

After the talk, the veranda was hopping. The sky was clear, if not real steady. I showed globular clusters for most of the night, teaching them the technique for pulling the most detail out of them. When you first look in, you see the fuzzy ball of course. But what you want to do is look around the outside edges of the cluster and just keep at it until

*Continued next page...*

## SAC Outreach

you see individual stars. (Stop me if you've heard this before...No one? Then I'll continue...) Once you see individuals around the edges, move in a little toward the core and do it again, looking for individual stars. It'll get a bit more dense as you go, but stay with it, moving slowly in until you reach the center. Bring your gaze back to see the whole cluster again, and what was once a fuzzy ball, turns into 100's of 1,000's of stars. Most people saw it tonight, and I got more "Wow!'s" and "Amazing!'s!" than any one night I can recall. Fantastic technique and someone else, (whose name escapes me unfortunately) taught me that one. I ended up with 248 views, so it was a very good night.



Tim Straub on the stage Photo: Susan Trask

Friday the speaker was Tim Straub, a pioneer of the North Rim star party. He was one of the first to set up at Kaibab Lodge, weathering 3 nights with hardly any visitors, camping at the North Rim campground and commuting each night to Kaibab. He gave many great suggestions for improvement, along with his wife Tammy, and they were invaluable for the eventual success of that party. While I'm on the subject of Kaibab, there have been some changes in that establishment. Ellen and Tom Winchester have sold the place. They're still there in a management roll, but it belongs to someone else and is overseen by the National Forest Service. It seems they had an extreme snow season this year, which overloaded the roof of some of the cabins and the lodge itself, so they closed for the season. DeMotte campground remained open, and I have no numbers for their attendance, but they still showed the sky, as evidenced by the scopes setup in the meadow as we drove by to Kanab. Twice.

Anyway, Tim's talk went over as well as Micki's. Folks just aren't that into the equipment side of it for some reason. I guess they figure, that's why we're



A sign for the party at the Lodge Photo: Susan Trask

here. Still, it was well attended enough. I shouldn't have scheduled the 3 Solar System Ambassadors in a row, then 2 equipment talks in a row. I'll pay more attention next year.

When we got outside, the clouds were blocking just about all of the good stuff in the Milky Way, including Saturn, but Jupiter was in and out and some other targets were available for the bigger scopes. Smaller scopes had to look for double stars or clusters as they appeared. As usual, these conditions were fluid, so targets were eventually found all over. Views of M64, M5 and M3 passed through as they cleared. The Black Eye in M64 works pretty well in the 20", to many delights.

Saturday I gave the talk. I did a roundup of a talk and pretty pictures of Jupiter as seen from the Juno mission. A talk on *YouTube* by Dr. Steve Levin called "*Juno and The New Jupiter: What We've Learned So Far.*" I highly recommend you check it out on *YouTube* or JPL's Juno site. The images, I downloaded from the *Citizen Scientist* site for the Juno Mission. The room was standing room only. The ranger counted 145 visitors. There were lots of great questions, too. Most of them came from a young man around 8 or 9 years old. He was sitting in the front row and showed a level of understanding that was impressive for his age. Or, anyone several times his age. It was really encouraging to see that kind of engagement. Perhaps there's hope for the next generation after all!

Out on the veranda, the clouds were considerable, but areas north and at the zenith were pretty open. The Milky Way was covered again, and most of my targets came and went, but we managed to keep the visitors happy until almost 11:00 pm when I had to call it and pack up. There weren't many folks left by then anyway, so it wasn't too bad. I'd had 3 nights I was up until well after 1:00 am, and a couple more after midnight, so I was ready to break it down.

This year, it seemed there was more enthusiasm than most years from the visitors. Some I met on Friday, even before the party started, told me they were excited to attend. *Continued next page...*



## SAC Outreach



A pretty view of the canyon Photo: Tiare Welch

Others later, saying they couldn't wait for the evening program. Our rangers were fantastic, helping with the crowds and putting up signs and everything with a special shout out to Jessie Barden, our Lead Ranger and Mandi Toy for letting us come up. We had 11,822 views through our scopes at the end. Not a record, but better than the last 2 years.

So, another great year at the Grand Canyon Star Party North Rim. Next year's event is June 13<sup>th</sup> through the 20<sup>th</sup>. Keep an eye on the SAC website for details, and thanks to the volunteers which made this all possible!

*Steve Dodder, Coordinator*

### Gallery of the Volunteers & Telescopes



Bill Dellings Photo: Susan Trask



Steve Dodder Photo: Susan Trask



Eric Hoag Photo: Rick Rotramel

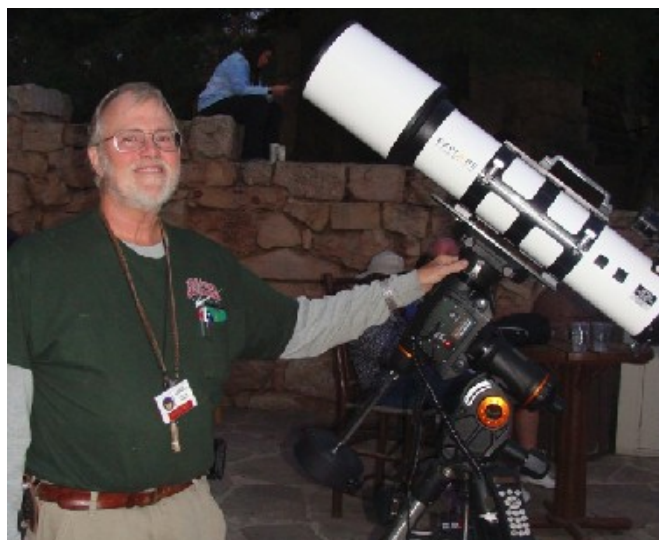


Bill Dellings Photo: Tiare Welch

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## SAC Outreach



Kevin Kozel Photo: Susan Trask



Micki Killoran Photo: Tiare Welch



Mark Johnston Photo: Rick Rotramel



Jeff McKibben Photo: Tiare Welch



Rick Rotramel Photo: Susan Trask

*Continued next page...*



## SAC Outreach



Daniel Sinotte Photo: Susan Trask



Tim Straub Photo: Tiare Welch



Tammy & Tim Straub Photo: Tiare Welch



The Sunday Meeting Photo: Kevin Kozel



Photo: Susan Trask



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## 2019 SAC Officers and Contacts

### Board Members

President David Dillmore ([mail to:president@saguaroastro.org](mailto:president@saguaroastro.org))  
 Vice-President Officer Position Vacant  
 Treasurer Paul Dickson ([mail to:treasurer@saguaroastro.org](mailto:treasurer@saguaroastro.org))  
 Secretary Kevin Kozel (<mailto:secretary@saguaroastro.org>)  
 Properties Robert Brewington([mail to:properties@saguaroastro.org](mailto:properties@saguaroastro.org))

### Non-board Positions

Novice Leader Steve Dodder ([mail to:fester00@hotmail.com](mailto:fester00@hotmail.com))  
 Newsletter Rick Rotramel ([mail to:r.rotramel@cox.net](mailto:r.rotramel@cox.net))  
 Webmaster Robert Brewington ([mail to:webmaster@saguaroastro.org](mailto:webmaster@saguaroastro.org))  
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 Public Outreach Tom Curry ([canyonhiker2@cox.net](mailto:canyonhiker2@cox.net))

### Mail Address

SAC, 7720 N. 36th Ave, Phoenix, AZ 85051-6401

## 2019 Board Mtgs:

February 22, 6:30 pm  
 May 10, 6:30 pm  
 August 9, 6:30 pm  
 November 8, 6:30 pm

## Occultation Info

Wayne Thomas has asteroid occultation info for the greater Phoenix Area:

[Mail to:tomwaymas@gmail.com](mailto:tomwaymas@gmail.com)

**Meeting Location:** Grand Canyon University is located at 3300 W. Camelback Rd, Phoenix, AZ. We meet in Engineering Building 1-202, 7:30 to 10:00 PM.



**Parking:** Turn into the campus from Camelback Road at 33<sup>rd</sup> Ave. and drive straight and stop at the guard station. Tell the guard you are attending the astronomy club meeting. Then, drive into parking garage and park.

## Saguaro Astronomy Club

Saguaro Astronomy Club (SAC), Phoenix, Arizona, was formed in 1977 to promote fellowship and the exchange of scientific information among its members-amateur astronomers. SAC meets monthly for both general meetings and star parties, and regularly conducts and supports public programs on astronomy. Membership is open to anyone with these interests.

Saguaro Skies is posted as a pdf file monthly on the SAC website,

[www.saguaroastro.org/content/SACNEWS/newsindex.htm](http://www.saguaroastro.org/content/SACNEWS/newsindex.htm)

for browsing or downloading for SAC members and friends of SAC. A email announcement of the monthly newsletter release is included with membership.

Direct all membership inquiries to the SAC Treasurer by using the membership form found in this newsletter. For editorial and SUCH-A-DEAL advertising inquiries, contact the Saguaro Skies Editor.

## Contacting This Issue's Authors

If you wish to write to an author in this month's issue, contact them by sending your message to the editor of Saguaro Skies, Rick Rotramel, at: [r.rotramel@cox.net](mailto:r.rotramel@cox.net)

I will then forward your questions or comments to the author.

## Saguaro Skies Staff

Editor: Rick Rotramel

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2013-2019 Contributors: Bob Christ, Mike Collins, AJ Crayon, Paul Dickson, David Dillmore, Steve Dodder, Richard Harshaw, Dean Ketelsen, Kevin Kozel, Joan McGue, Andrew Perry, Tom & Jennifer Polakis, Michael Poppre, Jimmy Ray, Rick Rotramel, SAC Imagers & Observers, Darrell Spencer & Rick Tejera.





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## Saguaro Astronomy Club Membership Services

**Membership** -- Memberships are for the calendar year and are pro-rated for new members as follows:  
Jan - Mar: 100%; Apr - Jun: 75%; Jul - Sep: 50%; Oct - Dec 25%.

- \$32.00 Individual Membership
- \$36.00 Family Membership



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State: \_\_\_\_\_

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### Make check payable to: SAC

Please bring your completed form to a meeting or mail it with payment to:

**SAC Treasurer  
Paul Dickson  
7720 N. 36th Ave.  
Phoenix, AZ 85051-6401**

## Saguaro Astronomy Club

### SAC on the Internet

*SAC has several email lists. To subscribe, simply send an email to the list address with **Subscribe** on the subject line.*

**SAC-Announce@freelists.org** - Sac Announce is a list used for club announcements. Traffic is usually less than six messages per month.

**SAC-Forum@freelists.org** - SAC Forum is a general discussion list for members to discuss the club or astronomy in general.

**SAC-Board@freelists.org** - SAC Board is a list for discussions of club business. If you'd like to see how the club is being run, this is the list for you.

**AZ-Observing@freelists.org** - AZ-Observing is not a SAC list, but many members participate. This is the list for discussions on observing around the state.

Please download the PDF version of the monthly newsletter from our website. When the newsletter is published a message will be sent to the email address provided above containing a URL to the current newsletter.

<http://saguaroastro.org/newsletter/>