Saguaro Skies

Saguaro Astronomy Club, Phoenix, AZ

Volume 42, Issue 3

March 2018

The President's Corner

mail to:president@saguaroastro.org

I wonder if the Messier Marathon could become an Olympic competition. It is an occasion for "stargazers" to compete in finding as many "fuzzy night-sky objects" as they can in a single night. Sounds like it could be "something of a rush" as I have yet to attend one (bad pun intended). It certainly seems to be an occasion for a party.

This month the Saguaro and East Valley clubs are going to have a party and everyone is invited. Sloppy Joe's are on the menu and "Brain Cell Stimulate" will be served late into the next day. There will be a chance to get some superfluous "astronomy stuff" (a raffle). It is also a chance for bragging rights on how good a "star spotter" you are. The party is also homage to one of the great 18th century astronomers, Charles Messier.

I encourage all the club members to bring a guest. It would be beneficial to our hobby/science if we could get high-school and college students to attend.

I would like to see some of the accomplishments of our members during the Messier Marathon. Bring an album or catalog of your observations. You may already be doing so but this will be my first attendance.

Regarding the laptop computer fiasco of last month's meeting, I have reinstalled the MicroSoft Office Suite (how-be-it a Windows XP version on Windows 7) and got a proper pointing device (mouse) so we hope the computer will not lock up again. Thanks to Lori for the rescue.

David

SAC President, David Dillmore

Photo: Susan Trask

Website: saguaroastro.org Follow SAC on Facebook

Quick Calendar

Tuesday, February 27: ***ATM/Astro Imaging Meeting***, 6:30 PM @ Paul Lind's home shop
Friday, March 2: ***SAC General Meeting***, 7:30 PM, Speaker: Tom Polakis, Saguaro Astronomy Club, Topic: "CCD Photometry and its uses." *See **new room** site (33-103) location, page 11.*
Saturday March 17: ***All Arizona Messier Marathon***, Salome Emergency Air Field,
- Swap Meet @ 2:30 PM, Dinner @ 5;00 PM & a Raffle; See the AAMM Event flier, page 12.
Tuesday, April 3: ***ATM/Astro Imaging Meeting***, 6:30 PM @ Paul Lind's home shop
Friday, April 6: ***SAC General Meeting***, 7:30 PM, Speaker: TBA, Topic: TBA
Saturday, April 21: ***T-Bird Park Spring Public Star Party***, Astronomy Day, see page 2
Sat. June 9 to Sat. June 16: ***Grand Canyon Star Party North Rim*** for details, see page 2

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

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Editor Notes

Hi Folks,

The 2018 All Arizona Messier Marathon is on Saturday, March 17. Again this year we will have a Swap Meet, Dinner & Raffle. See the flier in this issue for all the details. If you have never done a marathon, try it. You will be treated to the finest objects in the sky.

Best of the NGC features this month NGC 2261, Hubble's Variable Nebula, an nebula in Monoceros. It is a strange object that changes appearance in a matter of days or months.

Such A Deal has a new ad, take a look and see if there is something you want to purchase at a great price.

Bits & Pisces has minutes of the February SAC Board and General Meetings, some SAC history and a run down of the January 30th ATM/Astro-Imaging meeting.

SAC Observing features an invite to the 2018 Symposium of the *Society for Astronomical Sciences* meeting in June.

SAC Travel has an amazing story from Dean Ketelsen and Marjory Williams of their adventure last August to the Solar Eclipse.

Rick Rotramel, Editor

Schedule of Events 2018

SAC General Meetings

Jan 5	Feb 2 plus Board Meeting	Mar 2	Apr 6
May 4 plus Board Meeting	June 22	July 20	Aug 24 & Board Meeting?
Sept 21	Oct 19	Nov 16 plus Board Meeting	Dec ? Holiday Party

@ Grand Canyon University, Fleming Building, 7:30 PM
See page near back of this issue for location.

ATM/Astro Imaging Meeting
Tuesday, February 27th, 6:30 PM @ Paul Lind's Shop
210 W. Tierra Buena Lane, Phoenix, AZ

All Arizona Messier Marathon
Saturday, March 17, 2018, @ Salome Emergency Air Field Site
Click here for info:
http://www.saguaroastro.org/content/2018%20Messier%20Marathon/AllArizonaMessierMarathonAnnouncement.html

Star Party, Weather permitting
Saturday, April 14, 2018, Sunset, Antennas Site
http://www.saguaroastro.org/downloads/antennas-handout%20(REVISED).pdf

Outreach:

Thunderbird Park Spring Public Star Party
Saturday, April 21, 2018, Thunderbird Park, Glendale, AZ

Arrowhead Elementary, Family STEAM Night
May 3, 2018, Contact SAGE teacher, Danielle Sindelar
Contact me via email: danielle.sindelar@dvusd.org

Grand Canyon Star Party North Rim
Saturday June 9 to Saturday June 16, 2018
To volunteer, see details here:
http://www.saguaroastro.org/content/2018GrandCanyonStarParty.html

Spaceflight Trivia

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

Rest in peace, John

NASA

SAC Announcements

2018 SAC Officers

President: David Dillmore
Vice President: Michael Poppre
Treasurer: Lori Prause
Properties Director: Robert Brewington
Secretary: Andrew Perry
Photo: Susan Trask

It is time to renew your SAC membership!

Mail in your SAC 2018 dues today

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

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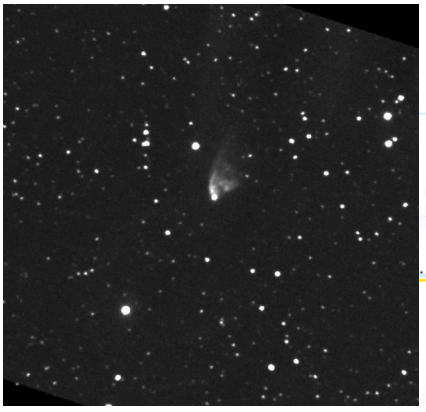
Best Of The NGC:

NGC 2261, Hubble's Variable Nebula in Monoceros

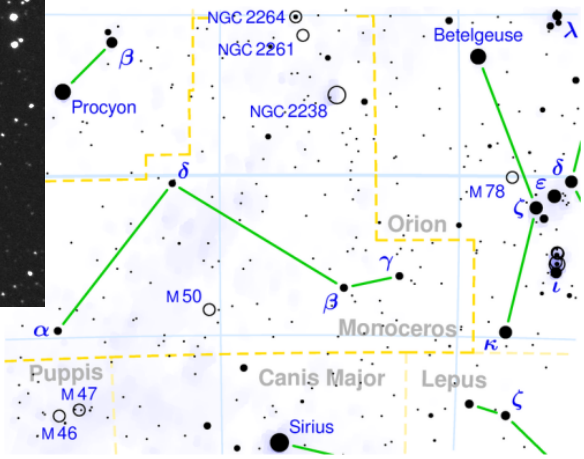
By SAC Imagers, Observers & Sketchers

UT 2005-12-30



UT 2006-11-19

Images by Bob Buchheim, C11 with 0.63 focal reducer (FL≈ 1760mm), Camera: SBIG ST-8XE @-10C, Exposure: "2005-12-30" image was 10 - 3min. exp, "2006-11-19" image was 16 - 2 min. exp. (32 min.), "V-band" filter, CCDSoft, Maxim-DL, Surburban Southern California back yard observatory.



Monoceros Star Chart

Observing Chart
D. M. Douglass - Tempe, AZ

C-046

Observed and Imaged
Date: Jan 05, 2017
Site: DaHut, Tempe, AZ
Elevation at Site: 1200 ft
Local Time: 19:00

Other Names: Hubble's Variable Nebulae; NGC 2261

Observing Program:
EVAC and Astronomical League and General Observations

Telescope and Mount:
Celestron EdgeHD 8" SCT
Mount: Celestron CGEM (EQ)

CGEM Mount Control: TheSkyX Pro
All slews by "closed loop" (Plate Solved)
Mount Guiding: TheSkyX Pro
Guide Camera: Starlight Express Lodestar X2

Image Capture Information:
Mag (SBig): (2000/22.5) = 88
FOV = 32 x 24 Arc Min
Filter: Lumicon Deep Sky (UHC/LPR) w/ Baader IR/UV Cut

Total # of frames (subs): 06
Frame exposure time: (min): 05
Total exposure time (min): 30
Camera: SBig ST-8300-M
Camera controlled by: TheSkyX Pro
Plate Solved by: TheSkyX Pro
Preprocessing and stacking: CCDStack
PostProcessing: Adobe Photoshop CS3

Type: Br Nebulae
R.A. 06:39:12
DEC 08:44.0
Magnitude: na
Size (Arc Min): 2 x 1
Constellation: Mon

Sky Brightness and Weather
Mags / sq ArcSec (v)18.5 or Bortle Scale: 6
Moon III = 53% - 58F - Calm

David Douglass

Continued on next page...

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Best Of The NGC:

NGC 2261, Hubble's Variable Nebula in Monoceros

By SAC Imagers, Observers & Sketchers

SAC Observer: Steve Coe

6" f/6 Maksutov-Newtonian, Sentinel, Az. S=6 T=8 NGC 2261 Hubble's Variable Nebula, 14mm, easily seen as the wedge shape so familiar in photos from Mt. Palomar. Raising the power with a 6.7mm EP shows it as pretty bright, pretty small and has a star at the tip of the triangular or comet shape. At the higher power the comet shape is easy and the western side of the nebula extends further away from the star at the tip.

Nexstar 11, Sentinel, S+T=7, 200X-pretty bright, pretty large, irregular figure, stellar nucleus at the apex of the comet shaped nebula. There is a dark lane that almost cuts across the nebula.

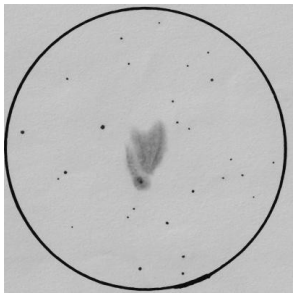
13" f/5.6, Sentinel, S=6, T=8, 135X, bright, pretty large, much elongated and has a much brighter star involved. It appears as a small comet and the star R Mon is very obvious at the tip. The south side is brighter and the west side is more elongated. At 200X there are some dark markings within the nebulosity. I have inspected this object at high power several times and I believe that I have seen changes but there are differences in seeing, transparency, observing site and telescope from time to time.

13" f/5.6, Granite Wash Mt, S=7, T=9, Wow nite, 100X - seen as comet shape even with low power. 330X - high power brings out lots of detail. Dark lane on south end, between R Mon and rest of nebulosity. West side is much brighter, averted vision makes it grow.

16" f/4.5, Antennas, S=6, T=7, 27mm Panoptic, pretty bright, pretty small, comet shaped even at low power. Using the 14mm eyepiece makes the comet shape more unmistakable. The west side is longer and more prominent. The star at the tip is easy. With the 6.7mm eyepiece the star is ivory and the nebulosity is much larger with averted vision. There is a slight mottling seen in the nebulous glow.

32" f/7.2, David Healy's telescope, 27mm, Hubble's Variable nebula, very mottled nebula with a bright edge and a dark marking across the wedge shape. It is indeed comet like.

10 x 10

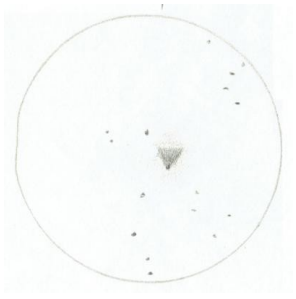


Steve Coe, 13” f5.6, 330x

SAC Observer: Rick Rotramel

16” f4.4, 90x, Buckeye Hills Site, Pretty bright, pretty large, wedge shaped with a star at the point.

15 X 15



Rick Rotramel, 16” f4.4, 200x

SAC Imager: Tom Polakis

5 minute exposure taken with a 12.5-inch f/6.7 telescope in Tempe, Arizona. Image by Tom Polakis

Link to a time-lapse: http://www.pbase.com/polakis/image/163069532

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

Hello SAC imagers, observers & sketchers:

For **April,** NGC 3432, Sc, 10 52.5, +36 37, 11.7 mag, 7.5x2.0, edge-on, faint streak, in Leo Minor.

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

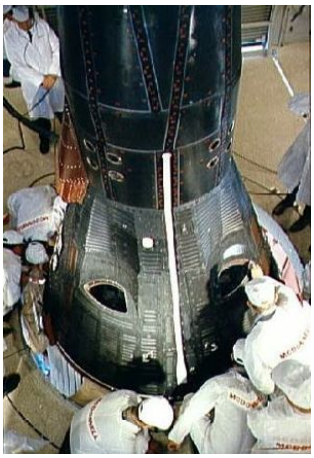
For **May**, NGC 4274, Sb Galaxy, 12 19.9 +29 37, 11.1 mag, 7.3x2.7, in Coma Berenices.

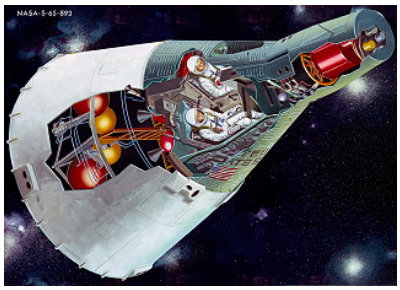
For **June**, NGC 4438, Sap Galaxy, 12 27.8 +13 01, 12 mag, 9.7x3.9, pair with NGC 4435 in Virgo.

Spaceflight Trivia Answer

John Young, Rest in Peace
Gemini III

Mission type: Manned Earth Orbital Test Flight	
Operator	NASA
COSPAR ID	1965-024A
Mission duration	4 hours, 52 minutes, 31 seconds
Distance travelled	128,748 kilometers (80,000 mi)
Orbits completed	3
Spacecraft properties	
Spacecraft	Gemini SC3
Manufacturer	McDonnell
Launch mass	3,236.9 kilograms (7,136 lb)
Crew	
Crew size	2
Members	Virgil I. "Gus" Grissom & John W. Young
Callsign	Molly Brown
Start of mission	
Launch date	March 23, 1965, 14:24:00 UTC
Rocket	Titan II GLV, s/n 62-12558
Launch site	Cape Kennedy LC-19
End of mission	
Recovered by	USS Intrepid
Landing date	March 23, 1965, 19:16:31 UTC
Landing site	22°26′N 70°51′W
Orbital parameters	
Reference system	Geocentric
Regime	Low Earth orbit
Perigee	161 kilometers (87 nmi)
Apogee	225 kilometers (121 nmi)
Inclination	32.6 degrees
Period	88.35 minutes
Epoch	March 23, 1965





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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:
  Meade Ultra Wide Angle 6.7mm multi-coated
  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

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

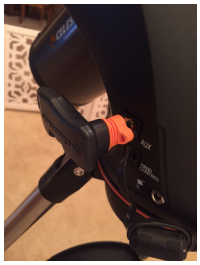
480-646-1324

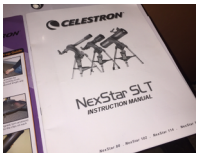
Ads placed here are free to SAC members and friends. SAC is not responsible for the quality of the advertised items. If you wish to place an ad here to sell your telescope or astronomy related items, contact Rick Rotramel at: r.rotramel@cox.net

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





For Sale
Orion Maksutov-Cassegrain Telescope - 127mm 5in
$300.00
602-240-5421 or 602-499-9910

AstroTrac TP3065 Portable Pier and TW3100 Wedge

The AstroTrac Pier and Wedge are about 4 years old and were purchased from OPT. Both are in very good condition.

https://www.optcorp.com/astrotrac-tp3065-portable-pier-mount.html

· TP3065 Pier w/ Travel Bag $495 · TW3100 Wedge $429

Total cost was $924.

Contact Jim Waters – Email: jimwaters@cox.net

Asking $425, Bank check or cash.

- Pier has been modified to allow more vertical adjustment in the 3 feet.
- Detailed pictures available on request.
- Stainless Steel Tensioners
- Mounting Plates
- Adjustable Feet
- Leg Roll
- Soft Carry Bag

Click here to return to page 1

Such-A-Deal

ITEM FOR SALE

Vixen SXW Computerized, Equatorial Mount with Starbook Controller

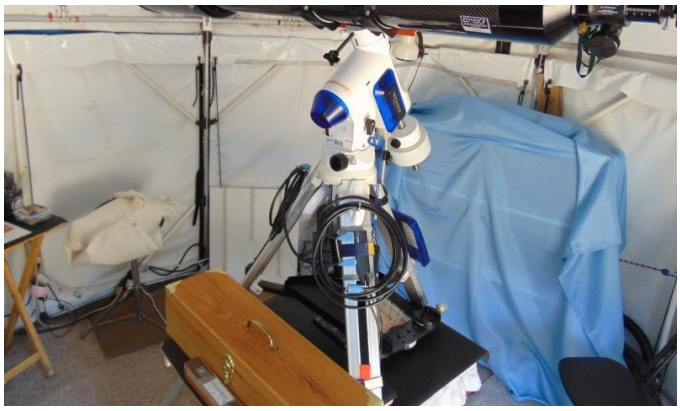
I purchased this mount with a Vixen 8" Astrograph on top of it from the estate of the past president of the Riverside Astronomical Society, the astronomical portion of that estate being sold off by RAS at a past RTMC gathering. I sold the astrograph some time ago but the mount has been my primary solar observatory mount for several years now here in Flagstaff. It comes with the manual, deluxe tripod, Starbook controller, two factory counterweights, and any features which were standard equipment on the original unit. Weight capacity is stated to be 35 pounds. It has a Vixen dovetail rail mounting. This mount is easily light enough to be transported and I occasionally drag it down to Camp Verde in the winter months to continue the solar work while staying in our trailer.

This is a very sophisticated mount with an exquisite controller system, the Starbook. It has been very happy with a coaxially mounted Lunt 80mm double stacked solar scope and a Stellarvue 80mm triplet with a Thousand Oaks white light filter on it. I also run a Celestron 9.25" cassegrain on it for planetary.

This is a very good deal at **$1000**, exactly what I paid for it. If it makes it easier, I might be open to a part trade. I'm open to driving down to Cordes Junction or so to meet.

Fred Tretta, Flagstaff, AZ

Email: ftretta@msn.com



Meade 10-inch LX-200 EMS (Classic) GoTo Mount

Worked last time I used it. I could not get it to track the Moon but that is probably the fault of the would-be astronomer. I retain the optical tube assembly and have mounted it on my new GEM. If I can't find a home for the Meade mount its home will be a landfill in Tonopah.

For sale, $1 obo

David Dillmore

ddillmore@msn.com

623-522-7357

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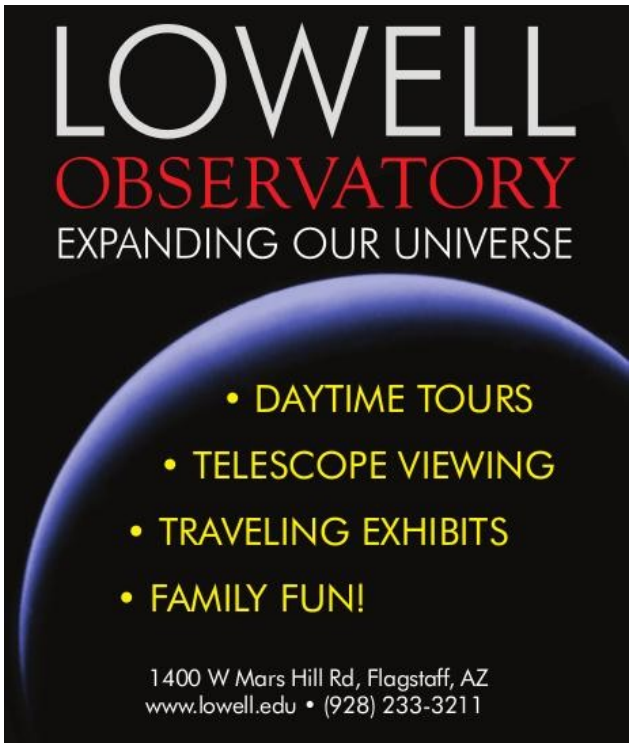
Such-A-Deal



http://www.lowell.edu/visit.php

http://www.photoninstrument.com

Apache-Sitgreaves Observatory

Overgaard, Arizona

Largest Public Observing Telescope in Arizona

Apache-Sitgreaves.org

Telescope Accessories

http://corvus-optics.com/

1350 S Greenfield Rd #2105
Mesa, AZ 85206
Phone: (480) 779-9262

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Hours: Mon, Tue, Wed, Thu 10AM-5PM Fri, Sat 10AM-10PM
Closed Sun. Free Viewing Fri and Sat nights!
5757 N. Oracle Rd., Suite 103 · Tucson, Arizona 85704 ·

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

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Bits & Pisces

Minutes of the February 2, 2018 SAC Board Meeting By Andrew Perry, SAC Secretary

Attendance was as follows:

President, David Dillmore

Vice-President, Michael Poppre

Treasurer, Lori Prause

Secretary, Andrew Perry

Properties, Robert Brewington

Newsletter, Rick Rotramel

Public Events, Jack Jones

Novice Leader, Steve Dodder

SAC Board Meeting was called to order at 6:30pm.

Lori Prause brought up the issue of paying rent for this year and perhaps the idea of moving locations on campus and it turns out that we have to move to another building this year anyway.

Michael Poppre suggested that we can look into a different location entirely. Andrew Perry brought up a community college or a public library.

Rob Boldwin came to talk about the Messier Marathon. The idea was for a swap meet, dinner, and raffle. The idea for the t-shirts was brought up. Michael will be looking into getting t-shirts ordered in time if possible. Jack used to order the Porta Johns from River Septic LLC.

Lori said that dinner will be Sloppy Joes, drink, fruit, and desert for $5. She will also be passing around a sign up sheet for volunteers for various help with the duties of the marathon events.

Jack showed up and we discussed the t-shirt orders and the amount and cost of the t shirts. We also discussed if we are in the window of getting the shirts on time. Last year Jack ordered 62 shirts.

Lori also brought up the money that was set aside from last year's raffle to buy new products for the raffle directly from companies.

The Meeting of the SAC Board was dismissed at 7:20 pm to start the SAC Club Meeting.

Corrections and Clarifications

In the February newsletter, page 9, in the January 5th SAC Meeting Minutes, the show and tell presentation about “Backyard Nikon Premium Edition” camera software program was presented by Michael Poppre, not by Mike Collins.

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Bits & Pisces

Minutes of the February 2, 2018 SAC General Meeting By Andrew Perry, SAC Secretary

The SAC club President David Dillmore brought the meeting to order at 7:39 pm. The President asked if there were any new attendees and there were four new people. David also discussed the Messier Marathon which will be held on March 17th, 2018. He discussed the raffle at the marathon and he asked for volunteers. Lori Prause, SAC Treasurer, heads up the Dinner Committee and is asking for volunteers to help during the Marathon and passed out a sign up sheet. She also asked for a person to be the person that gathers the prizes for the raffle.

Stevie Dodder Chairman of the Novice committee told the new people that he runs the committee for people that need help with their telescopes and for loaner equipment to help them get started.

Lori Prause did the treasurer's report and she said that SAC has $4,204.00. Lori also said that the club meetings will be needing to be held somewhere else on campus in the near future. Michael Poppre, SAC Vice-President, asked for suggestion for a possible change of venue for future SAC meetings. The issue would have to wait until GCU got back to Lori for a possible new location on campus.

Club presentations:

ATM Presentation by Paul Lind was of the ATM meeting on Jan 30, 2018. He showed pics of a C8 scope, brought in by Tom Mozdzen to be collimated. Paul also went out to the Antennas site and had some astro-images to show to the club.

Joan and David, showed images of the Total Lunar Eclipse that they took. They used a SONY ALPHA 6, 5 ⅛ inch high resolution camera attached to the telescope and took pictures of the eclipse.

The Club President asked about how many people will be going to the restaurant JB's and did a head count.

The club took a break at 8:10pm.

The club President called the meeting to order at 8:32 pm.

Speaker:

Wayne Pryor, Central Arizona College, Cassini UVIS Co-Investigator, gave the presentation titled, "The End of the Cassini Mission." He showed several pictures taken during the Cassini mission and gave detailed descriptions of the atmospheric conditions of several of Saturn's moons and of Saturn itself. He also showed pictures of the readings that were collected of the magnetic fields of Saturn. At the end of the presentation, Wayne Pryor answered several questions from some club members.

Closing:

The SAC Meeting came to a close at 9:30 pm.

Wayne Pryor

Photo: Susan Trask

The February SAC Meeting Speaker

Dr. Wayne Pryor, Central Arizona College

Topic: "The Cassini Mission and recent results."

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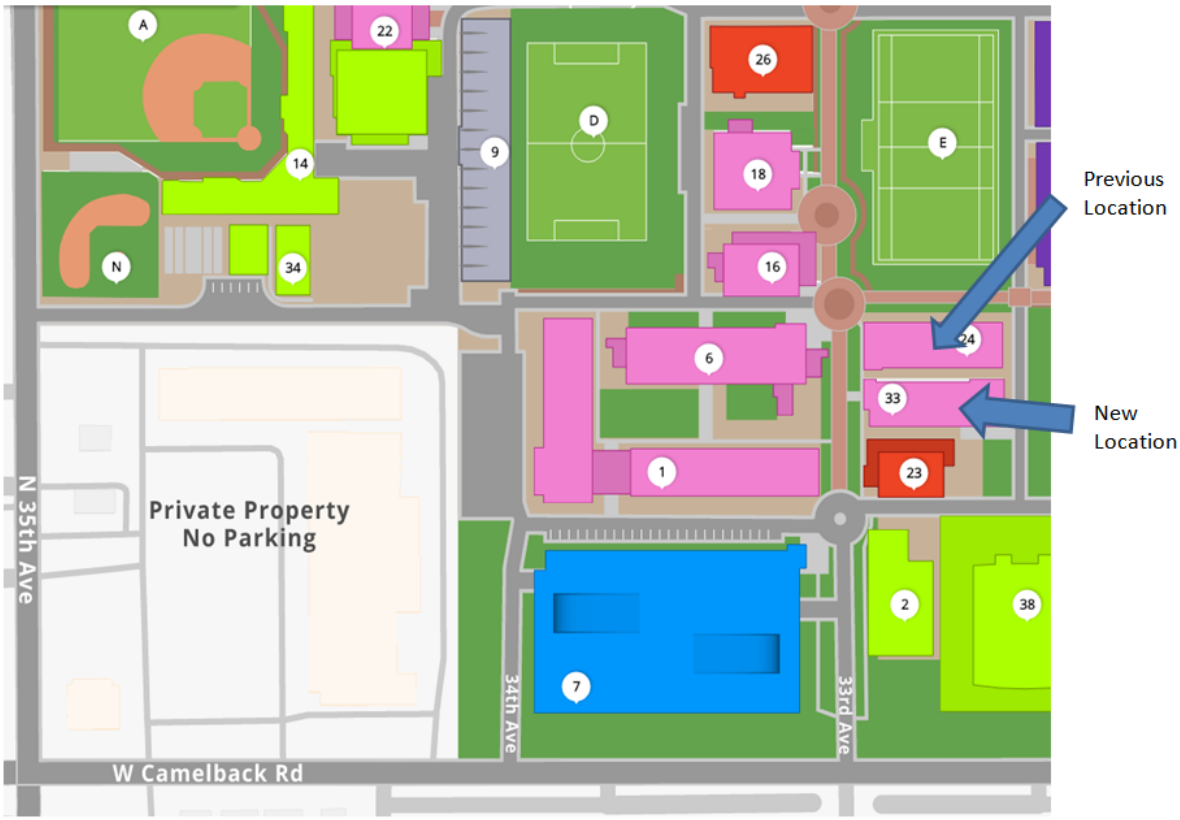
Bits & Pisces

New SAC Meeting Location: Room 33-103
March 2, 2018 SAC General Meeting

(*Old room location, Fleming Building 24*)

Grand Canyon University- SAC Meetings

Room change as of March 2018



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2018 All Arizona Messier Marathon Events

Saturday, March 17th, @ The Salome Emergency Airfield Site

More info here:
http://www.saguaroastro.org/content/2018%20Messier%20Marathon/AllArizonaMessierMarathonAnnouncement.html
Directions to the site: http://saguaroastro.org/content/AAMM/directions.txt
Contacts: About the Marathon, Rick Tejera: Mailto:saguaroastro@cox.net; In General, David Dillmore: Mailto:president@saguaroastro.org

Swap Meet

Saturday, March 17, 2:30 – 4:30 PM
@ Central Tables/Canopies

You can bring your unused astronomy items you would like to sell. This could be a great time to pick up previously loved items and get a little cash for your own. Bring plenty of small bills so you can make change for your sales. Bring a chair and table if you can.

AAMM Dinner and Raffle

Panorama of the 2015 AAMM Dinner and Raffle photos: Rick Rotramel

Dinner starts at 5:00 PM, for $5.00 each, pay at the dinner table, no RSVP's

The Dinner Menu:

Sloppy Joes (2) & Chips, Fruit, Drink & Dessert

The Raffle

Enjoy the **Raffle** after the dinner, before the **Sunset Talk**, by coordinator, Rick Tejera, about the Messier Marathon. **Arrive early** to set up your telescope. **Raffle tickets** sold before & at the dinner, $1 ea, or 6 for $5 or 25 for $20.

Thanks to Lori Prause for doing the dinner. Also, a great big thank you goes out to Claude Haynes who provides the tables and shade canopies. The ***Midnight Cafe*** will again serve hot cocoa, coffee, snacks and lots of encouragement. Please consider donating a snack such as some cookies, cupcakes, a pie or other treats to stock up the cafe. A gallon of drinking water would also be appreciated.

The 26th Annual All Arizona Messier Marathon

Saturday Eve, March 17, 2018 * Rick Tejera, Coordinator

In addition, the field will be available on the night of Friday, March 16 for an extra night of observing. Reminder, the Friday date is NOT the marathon. It has been set aside for more time to observe from your personal observing list. It will also provide more time for socializing on Saturday.

In recent years there has been growing participation by younger astronomers. To help encourage this trend, the All Arizona Messier Marathon will offer a separate awards category for observers under the age of 18. All U18 observers will receive a certificate of participation. Those observing 25 or more objects will receive a certificate of achievement. And the top 3 observers in the U18 category will receive plaques as well as the certificates. So, if you are under 18 and have an interest in astronomy come on out and observe! If you know a young astronomer, let them know and encourage them to join us. The only caveat is all U18 observers must be accompanied by a responsible adult and must be listed on that adults Liability waiver.

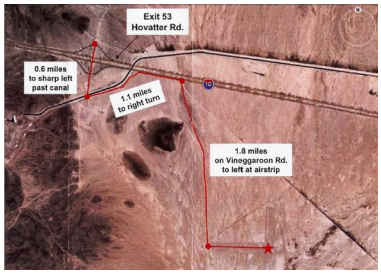
Required Waiver for all attendees to fill out and give to the coordinator:
http://www.saguaroastro.org/content/2018%20Messier%20Marathon/LiabilityWaiver

Set your own goals. The marathon is for having fun!
Set your goals in order for you to have fun!
The guidelines are pretty simple, please read them over if you plan on participating.

It's an honor system. No one is going to be looking over your shoulder to verify your observations. Have an ***observing list*** (from the coordinator) to keep track of observations. Fill out the heading. Find an object.
Observe/image it with your eye through the main eyepiece of your telescope.
Mark off the entry. Go to the next object.
Hand in your filled out sheet to Rick Tejera's camp table by Sunrise before leaving! Very important, if you want to be counted in the results.

Astronomical Data	
Sunset	18:44
Moonset	19:07
Evening Ast. Twilight	20:07
Morning Ast. Twilight	5:18
Sunrise	6:41

Object Data: March 17/18, 2018	
Evening	Mar 17th
M74 at Sunset	31 Degrees
M74 at Twilight	13 Degrees
M74 Sets	21:16
M77 At Sunset	35 Degrees
M77 At Twilight	18 Degrees
M77 Sets	21:38
Morning	Mar 18 th
M30 Rises (over hills)	5:53
M30 at Twilight	-4 Degrees
M30 At Sunrise	11 Degrees



Aerial view: Salome Emergency Airfield (south of I-10 at Exit #53) Directions Link: http://www.saguaroastro.org/content/2018%20Messier%20Marathon/HovatterAirstripDirections.txt

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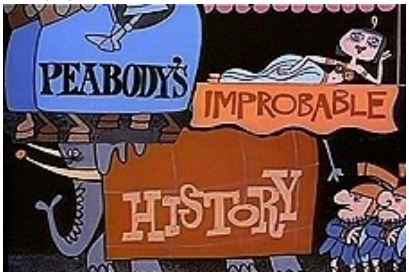
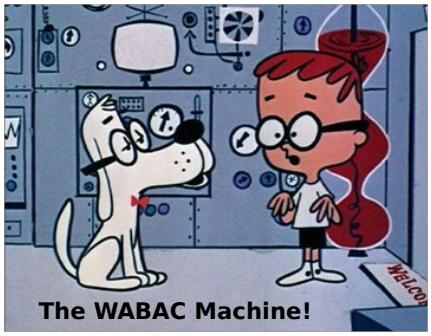


© Peabody and Sherman, 'Rocky and Bullwinkle' Pictures



25 Years Ago in SAC

Saguaro Astronomy Club
Metro Phoenix, Arizona
SACNEWS

April 1993 — Issue #195

Minutes of the March Meeting

The meeting opened at 7:30pm with President Bob Dahl welcoming new members and visitors, asking them to sign the guest book to receive the newsletter. He had gotten a call from *Sunset* magazine; they were writing an article about star parties, so look for some information in the upcoming months—possibly the May issue. Bob reminded everyone about the public star parties— March 27 at Reach 11 and May 1 at Thunderbird.

Carol Lee then presented the Treasurer's report—we now have 116 full members. Piet Burggraaf reported that the educational star parties at the schools were a success, and he appreciated the help from the members. He asked for volunteers for the April 16 date in Scottsdale. A.J. Crayon mentioned that the Deep Sky group would meet March 11 at the McGrath's house and the constellation studied would be Leo. Directions are in the newsletter. Also, please plan to attend the Messier Marathon on March 20–21. Paul Dickson asked all members to submit articles to him for the newsletter. Tom Polakis told members that there was a packet on the table with suggestions for the Messier Marathon. David Burstein would be the April speaker, and Tom wanted suggestions from members for short presentations for the May meeting. For a possible field trip, Tom had talked to Brian Skiff about a tour of the Lowell Observatory—tentatively set for August. Steve Coe brought up the Sentinel Star Party on April 17. No one had anything to share for "Show 'n Tell."

After the break, Bob Dahl mentioned that Gene Lucas's mother had passes away, and the club sent their condolences. The main speaker was Dr. David Crawford from the University of Arizona. As head of the International Dark Sky Association, he gave a presentation on light pollution and the efforts of his group to work with cities and private businesses to contain, change, and eliminate light polluting fixtures. —*Susan V. Morse, SAC Secretary*

10 Years Ago in SAC

Saguaro Astronomy Club

SACnews

Volume 32 Issue 4 April 2008

Bits and Pisces, Minutes of the March General Meeting

By A.J. Crayon

Esteemed President Steve Dodder opened the meeting with about 50 people in attendance. This evenings meeting was held at the Williams Lecture Hall because of the expected larger crowd for the speaker. Charlie Whiting gave the treasurer's report – we have a balance of $4784.00 in checking and $39.00 cash on hand.

Announcements included the Thunderbird Star Gaze, Rick Tejera discussed plans for supporting the Girl Scouts astronomy outreach event. AJ Crayon discussed the 2008 All Arizona Messier Marathon and set out checklists and waivers for signatures. Steve Dodder discussed a telescope that is to be donated to the SAC coffers. He will post information on the e-mail list to gather more information on how to proceed. The Grand Canyon Star Party from June 21st thru 28th was discussed, both the south and north rim possibilities. SAC will host a pizza party June 22nd. If interested in the south rim, contact Jack Jones; north rim, contact Steve Dodder. Jennifer Polakis discussed the Arizona Science Centers request for astronomers' assistance during an hour of darkness on Saturday, March 29, 2008 from 8:00pm to 9:00pm. Steve Dodder invited the club to a potluck, discussion and club star party at Stone Haven Observatory to being at 4:00pm on April 26th. For a map to the site go to its web page and click on the rotating observatory at the bottom.

For Show-n-Tell Tom Polakis showed some slides taken during a winter trip to Michigan and some taken from in and around the Phoenix area. Al Stiewing had some CCD images of a very large and low surface brightness Comet Holmes. Steve Coe discussed why the latest Saddle Mountain site needed to be abandoned. He ended up showing some slides taken from his backyard with a ToUCam of the moon at prime focus. Then there were some piggyback images from the Antenna site of NGC1499, The California Nebula, and Comet Holmes.

After the break Jennifer Polakis introduced the evening's speaker, Frank Zullo. He is a well know Arizona photographer that has had images in *Time*, *Life*, *National Geographic* and *Arizona Highways*, amongst other well known periodicals. His talk *The Sky in Stone* is in preparation for an upcoming issue of *Arizona Highways*. The extra meeting space was needed – thanks to the organizers for the heads up here.

The meeting adjourned just before 10:00am and many meandered to JB's Restaurant for nourishment and more discussion.

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And They Build Telescopes

By Rick Rotramel

The SAC ATM (Amateur Telescope Making) / Astro-Imaging meeting was held on January 30, 2018 at Paul's home shop. Attended by Paul Lind, Al, Lynn, Tom and me.

Collimation of a Celestron C8

Tom Mozdzen brought in a C8 that needed some tender loving care. It came from a city camp up in the mountains north of Payson, Camp Tontozona. They have a few telescopes there for campers to enjoy some star gazing.

This one had some work done to it that required re-collimation. The secondary had come loose from its mounting and had been glued back on. First though, the corrector plate was removed to check something on the secondary holder. After that was done, it was reassembled onto the tube assembly.

Lynn re-applies a cork spacer for the corrector plate.

Once the optics were back together, the telescope was set up out in the driveway for Lynn Blackburn to work his magic collimating the telescope. It took quite a while because the secondary had been re-glued and was not in the same original position when it was manufactured.

The collimation of a C8, which is a Schmidt-Cassegrain optical tube assembly, requires adjusting the three adjusting screws on the secondary mirror mounting. When it was done, Tom said, “He was determined!”

Another success story for the SAC ATM group to add to their long list of telescope repairs.

The Celestron C8 out on the driveway

A Focal Length Measuring Tool

Paul made a tool for measuring the unknown focal length of a lens. It is quite simple but very elegant. And, it mounts on a tripod so that it can be used to point at the sky on a star.

Paul Lind's Focal Length Measuring Tool

Epilogue

That’s all for this month, see you next time. Remember, if you have a “need” for your telescope, bring it over to Paul Lind’s shop at the next SAC ATM/Astro-Imaging meeting on the Tuesday evening before the SAC general meeting and join in on all the fun. Paul will post the date on the SAC-Forum list. Hope to see you there. It’s a fun time for all.

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SAC Observing:

The 2018 Symposium of the *Society for Astronomical Sciences*

Suggested Meeting Invite in this issue by: Bob Buchheim
The 2018 SAS Symposium will be held June 14-15-16 in Ontario, California.
This will be a joint meeting with the *Association of Lunar and Planetary Observers*.

Click here: https://socastrosci.z2systems.com/np/clients/socastrosci/eventRegistration.jsp?event=7&

Special events this year are two workshops, and the "Evening with the Pro's." Workshop #1 is "Times of Minimum of Eclipsing Binary stars," led by Bob Nelson and Dr. Dirk Terrell. This is a great "beginner project" in stellar photometry; and also one that can have surprising complexities. Workshop #2 is "Monitoring H II regions for transients with narrow-band imaging," led by Dr. John Bally. This subject is a surprise to me – we sometimes ask "who needs another photo of M42," but apparently there is an ongoing need for flux-calibrated narrow-band images. Who knew?
The "Evening with the Pro's" will feature talks about current activities by professional astronomers. Dr. Lance Benner will give us an update on his radar observations of near-earth asteroids (mostly done at Arecibo). Dr. Jennie Christiansen will give us an update on the TESS mission and their need for amateur photometry and spectroscopy of candidate host stars.

The 2017 SAS Symposium Group Photo Photo by: Earl Wilson See if you can find five SAC members in the photo!
"The white-haired lady sitting next to me in the photo is Dava Sobel (author of "Galileo's Daughter," "A More Perfect Heaven," etc.) who was our banquet speaker last year. Next to Dava is Stella Kafka (Director of AAVSO)." Bob Buchheim (In blue shirt and tie, front row.)

Science with Small Telescopes

In 21st century astronomy, it may be surprising that there is still an important role for data gathered by non-professional researchers using backyard-scale telescopes. That is, people like us, with equipment like ours.
The giant professional telescopes are designed to study faint targets, their detectors cannot handle objects that are too bright, their observing time is oversubscribed, and so many worthy targets go unstudied. The small-telescope community has several special capabilities: (a) There are a great many small telescopes and capable observers, which makes it feasible to examine targets that can't be fit into the schedule of the giant telescopes. (b) Relatively bright targets (say, brighter than about 10th magnitude) can only be monitored with smaller instruments. (c) Privately-owned telescopes are not constrained by "time allocation committees" - we can spend as much time as we want, observing anything that seems intriguing. (d) Small telescopes can be devoted to targets and phenomena that demand a lot of observing time. Determining the time of minimum light of an eclipsing binary system will use an entire night. Determination of an asteroid's rotational lightcurve will probably take a half-dozen all-night observing sessions. Monitoring a nova or other variable star might take a few hours every night for a month. Such tasks are difficult to fit into a large professional observatory's schedule, but the researchers do need - and value - observations like these that are fairly straightforward to make from our backyards, using visual observations, DSLR images, CCD images, and low-resolution spectrographs.
The annual Symposium of the Society for Astronomical Sciences is the premier gathering of the small-telescope research community, where amateur and professional astronomers come together to share results, learn the techniques, discuss projects and instruments, and enjoy each other's company. This year the Symposium will be a joint meeting with the Association of Lunar and Planetary Observers. It will be held in Ontario, California, on June 14-15-16, 2018. For more information, see the SAS website (www.SocAstroSci.org). The Invitation and Call for Papers are on the Symposium tab. Everyone with an interest in small-telescope science is welcome.

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SAC Travel:

An Eclipse, Some Russians, and the 4600 mile Road Trip!

By Dean Ketelsen and Marjory Williams

Intro:

A total solar eclipse is not to be missed - particularly if you are an amateur astronomer! A few minutes of true darkness in the middle of the day is the siren call to anyone who even casually has looked into the sky as the celestial spheres align to permit it. The "Great American Eclipse" of August, 2017 was such an event. Plans and reservations are made years in advance for that perfect spot that is a convenient drive from your home. However, life sometimes intrudes into real-life plans. Those of you who know me know that my wife Melinda went through a 3+ year battle with lung cancer, finally passing 11 months before the eclipse. When I should have been making plans for the great spectacle, I was taking her to her chemo sessions, by her side at hospice or making memorial plans. By the time I came out of my depression, it was 4 months to the eclipse and reservations were nowhere to be found. How to proceed?

The Russians:

Back in the mid-1990s, I was president of the Tucson astronomy association, so served as primary contact for the club. One day a letter arrived from Krasnoyarsk, Siberia in Russia, where Sergey led an astronomy group for a youth organization. He was hoping to bring a contingent of "his children" to the US, and was looking for aid in organizing and pulling off such a trip. He later indicated that I was the only respondent to the 30 or so letters that went out, so that is how I came to be associated with them. His first group in 1998 consisted on a single 10-year-old (after another dropped out at the last second), accompanied by Sergey and 2 female chaperones. I took them up to Kitt Peak and the Mirror Lab, spent a night at the Vega-Bray Observatory, followed by a trip to The Grand Canyon, Lowell Observatory and Meteor Crater. It was a great trip and all fit into my old van for transport. A dozen or so years later Sergey wrote again, this time bringing 10 kids and just him to oversee them! I had them for 8 days and planned each day for them, attending an American high school for a day, Pima Air and Space Museum along with the Missile Museum, the nightly programs at Kitt Peak and Mount Lemmon Sky Center, and spent the evening at the Large Binocular Telescope atop Mount Graham. That group also did the northern AZ loop too. The large group required rental of a 15 passenger van, and my wife Melinda following behind with her Jeep full of luggage! A great time was had by all!

The Russians of 2012 at Meteor Crater

This time Sergey wanted to bring a "small" group for the great solar eclipse, and instead of just the Tucson highlights, I'd plan a road trip around the Southwest, and I was given complete freedom to plan routes, locations and schedules. Unfortunately, for the reasons outlined above, 2 months to go and there were NO plans made...

Finally!

So coming into the Grand Canyon Star Party 2 months before the eclipse, all I had was the possibility of a campsite from a friend. He had made 2 reservations, with an alternate in case of weather. He was willing to give us the one he did not end up using. At my 3 days at the Canyon, I always ask the visitors where they are from. THAT is where I met Rod and Karen - in my telescope line! Asked where they were from, they replied Wyoming and I immediately asked what they were doing 21 August. They gave the correct answer, that they would be in their yard watching the eclipse from the path center in Shoshoni! I immediately asked if I could bring a dozen people, including up to 8 Russian kids to camp in theiryard and use their bathroom and shower. After a quick glance at each other in the dark, they replied that it "sounded like fun!" And THAT is how I got our eclipse plans settled, in 2 minutes less than 8 weeks prior to the event!

Eventually Sergey settled on his group size - 6 kids would be joining him. However that still presented issues, as my new van only seats 6 plus the driver. Sergey insisted that some of the kids were "small," but I couldn't image a long road trip with 4 kids crammed into a bench seat designed for 3! So went looking for another driver. Fortunately my buddy Margie Williams stepped up and offered her pickup with crew cab, and another friend Donna wanted to join in, if not offer to drive as well. So we were set - 10 riders, 2 vehicles, Motel 6 or equivalent when possible, yard camping at Shoshoni, WY when at the site.

To ease arrangements for our visitors, I'd agreed to pick up the contingent at LAX and save them the connection to Tucson. Remind me to NEVER do that again! While the trip across the LA basin at noon was ok if not a little white-knuckled, after finally finding our Russians in the chaos of the International terminal, we were dumped onto the streets at the height of rush hour, requiring 3 or 4 hours to drive back across to the eastern edge of the LA metropolitan area. For this farm boy, it was pretty much a version of hell...

Our "new family" had been traveling for 2 days straight and could be excused for being a little cranky... Their leader Sergey looked as if he was out of Hollywood central casting for a Russian aristocrat. He is to be appreciated for bringing school children halfway around the world to the United States three times. Anyone who has taken kids somewhere will admit one has to be courageous to do so. The children ranged in age from 12 to 17 years old. The lone female Polina, young and Paris fashionable, may have to decide between a life in science or a life in the fashion world. Of course we vote for a career in science for more women. Boris, only 12, has written a piece of progressive jazz that would make Dave Brubeck turn and listen. He approaches the piano as other kids would approach sports equipment; it is a fun thing to play. He has already won honors in the music field. Daniil, his teacher thinks, may grow up to be an important scientist. Vladislav never spoke English until one day a perfect English sentence came out of his mouth. We nearly fell over in surprise! In all, it was a great group of kids, all bringing their own perspectives to the trip.

Continued next page ...

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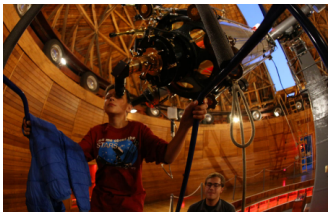
SAC Travel: *(Continued)*

After a night's rest day 2 dawned bright and we hit Joshua Tree as we departed the Left Coast, and ended up in Flagstaff that night, unfortunately too late for the evening observing at Lowell. We arranged 2 nights at Flagstaff, spending a long day at Meteor Crater, always a big hit with the Russians, finally getting that evening of observing at Lowell with spectacular views of Saturn through the historic 24" refractor.

Day 2, Joshua Tree

Polina taking selfie at Meteor Crater



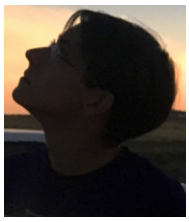
Boris Peering at Saturn thru Clark 24"

Group Shot, Monument Valley

Day four we hit the road northward onto the Navajo Nation, the highlight of the day being the stop at Monument Valley and the Museum/lookout/hotel there. My first visit to that astounding place, and the seeds planted for a future return! We continued more driving up the east side of Utah through Kanab then eastward to Grand Junction to close out day 4. Day 5 was Saturday, and with no plans for reservations that day, we stopped at the local Walmart to clean out their supply of inexpensive sleeping bags and foam pads. We pushed northward through the small towns and winding roads of central Colorado. A brushfire near the Wyoming border threatened our schedule, but at the last second, it was deemed safe to pass, allowing us to skip a detour that would have taken hours to get around. We alerted Karen, our Shoshoni hostess we were pushing through, and arrived just a bit after sunset about 9 pm. Karen greeted us with hugs and a huge pot of chili. It was a hit with me, less so with our Russian visitors who aren't fond of any spicy foods.... As planned, I set up my tent in the yard in the dark, the Russians seemed overjoyed at Karen's offer to sleep in the carpeted living room, which seemed wall-to-wall kids.

Hostess Karen in Pink, her son the sheriff next to her

Karen and her grandkids were exceedingly generous. They opened their house and yard for us, as well as cooked all our meals for us. We made a donation for the food and contribution to the construction fund for the pair of bathrooms Karen envisioned, only one of which had progressed to the point to be usable for our group. Besides our 10 people, she also welcomed a friend of mine traveling from Europe – her husband and another couple, traveling cross-country in RVs, couldn't find reservations inside the path of totality, so Karen welcomed them (6 more folks). Remember the reservations offered by a friend who had made two sets of plans? Well, last minute he called me and the forecast foretold of a chance of clouds, so gave those up to join us too. I tried to talk them out of it, but Karen overheard and invited them too – their 8 made our "little group" 24 in all! It was also great being there 40 hours in advance. It wasn't that the town of Shoshoni, 650 population, offered great tourist options, but gave me the chance to set up gear and practice the exposures I would need during the brief eclipse. Meanwhile the Russians impressed our hosts with their skills, including 12-year-old Boris who sat at their piano and churned out some impressive music he himself had written! The group of Russian kids got invited to the local high school for the eclipse, invited to take part in a live streaming webcast of the eclipse by I believe the FOX Business channel. I'm not sure if they got on the air, but they were about a km away from Karen's yard where the rest of us eventually congregated.



Left: Andre in eclipse glasses during the partial phase.
Middle: Boris eating popcorn while watching totality.
Right: Danil portrait during totality. Photos (3): Marjory Williams

I had setup my Astro-Physics 1200 mount with a pier extension so the working end of my refractor would be a comfortable height. I used a recently-acquired TEC 140 (5.5" Triplet) and it's 1,000mm of focal length for a perfect scale on the Canon 6D camera.

I also used an old Meade 80mm f/6 APO with a full-aperture prism to take a "flash spectrum" of the sun's chromosphere layer just after 2nd contact and just before 3rd. It was something fun to do – rarely do you see any spectral work of the eclipse. I had aligned the mount to Polaris the night before, and used solar filters to focus all my gear on the partially-eclipsed sun in the hour before totality, so I was prepared, but still busy right up to 2nd contact when the moon finally fully covered the sun.

Left: Setup of AP 1200, TEC 140 and Meade 80mm f/6 for Solar Flash spectrum.
Right: Observing field at eclipse time!

Continued next page...

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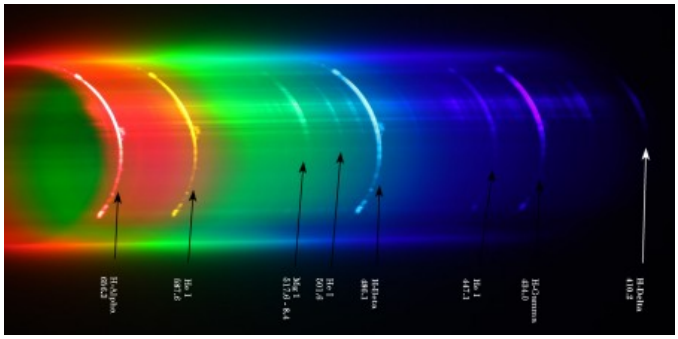
SAC Travel: *(Conclusion)*

Totality arrived in a rush to a perfect sky and a lot of hooting and hollering from our group – I might have contributed, but don't remember. I was concentrating on the 2 cameras I was operating and looking thru them as well for a magnified view – it was glorious! I found that my 6D could take up to 7 frames automatically with different exposures, so did that at approximately what I thought were proper exposures. I ended up getting about 7 sets of frames, tending unfortunately towards longer exposures! My spectra were beautiful, but found the focus locking mechanism had come loose after focusing, so were a little blurry, but still pretty! Everyone was happy, and most everyone professed plans for 2024 (next U.S. totality) barely after the totality had ended! Our big group thinned quickly, the late-coming 8 leaving before the eclipse was over and our RV friends shortly after. All were stuck in hours of traffic on the road. I had made plans from day one to stay overnight to leave the morning after the eclipse and was glad I did – no traffic issues at all after we left Tuesday morning, after our 3 nights of Shoshoni hospitality.

Totality! HDR from combining 4 different exposures



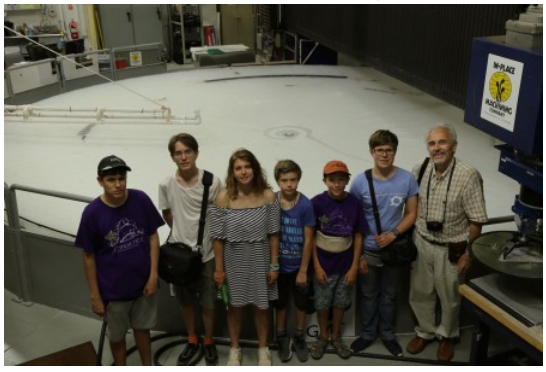
Flash spectrum with tentative identifications

So on day 8 we said our sad farewells to Karen and her grandkids and headed southwest. The only recreating we did was a stop at Flaming Gorge near the Wyoming/Utah border as we continued south to Green River, UT. Day 9 brought us through the San Rafael Reef, then finally some national park action, though all the scenery was pretty much beyond words. We hit Bryce Canyon early in the afternoon, then Zion a little later. Karen had worked as a ranger at Zion, so directed us to a favorite pizza place – Flying Monkey Pizza in the town just through Zion in Springdale, Utah. We traversed Zion again nearing sunset as we drove the last miles into Kanab, just outside the northern border of Arizona! Day 10 got us back into AZ and the north rim of the Grand Canyon where we spent half a day before returning to Flagstaff.

Prominences near 3rd contact

Day 11 we visited the US Geologic Survey campus in Flagstaff before heading towards Tucson, staying at my place the next 2 nights, Day 11 allowing most of the day at the Pima Air and Space Museum and a stop at the Mirror Lab, and Day 12 headed towards Kitt Peak – taking in a walking tour there before continuing west on to California and Los Angeles, dropping them off on the next leg of their adventures at noon on Day 13 in Redlands. In an instant, our family of the last two weeks were swept away from us and Margie and I were left alone to return home along separate paths. Meanwhile our Russian friends had another 10 days or so of their continuing travels visiting the astronomical highlights of California, including a night at Mount Wilson Observatory observing with the 60" before heading home.

North Rim of The Grand Canyon



Steward Observatory Mirror Lab tour

It is always fun to spend time with Sergey's groups. Two weeks was a bit long with a group that had not worked on their English conversations beforehand! It is nice that we touch lives halfway around the world, and that by bringing them here, we also touched lives in a small town in Wyoming too by showing there is a big world out there with kids like them that are capable of great things. Would I do it again? In a heartbeat! We should all be so willing to take a chance at spreading some peace and good will! *Dean Ketelsen*

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2018 SAC Officers and Contacts

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President	David Dillmore (mail to:president@saguaroastro.org)
Vice-President	Michael Poppre (mail to:popps@fastq.com)
Treasurer	Lori Prause (mail to:loriprause@gmail.com)
Secretary	Andrew Perry (mailto:secretary@saguaroastro.org)
Properties	Robert Brewington(mail to:properties@saguaroastro.org)

Non-board Positions

Novice Leader	Steve Dodder (mail to:fester00@hotmail.com)
Newsletter	Rick Rotramel (mail to:r.rotramel@cox.net)
Webmaster	Robert Brewington (mail to:webmaster@saguaroastro.org)
Public Events	Jack Jones (mail to:publicevents@saguaroastro.org)
ATM Group	Paul Lind (mail to:atmgroup@saguaroastro.org)
Imaging	Al Stiewing (mail to:amst@cox.net)
Deep Sky	Kevin Kozel (mail to:kevin.kozel@cox.net)
Public Outreach	Eric Hoag (mailto:eric.hoag@gmail.com)

Mail Address

SAC, 8441 W. Foothill Dr, Peoria, AZ 85383

2018 Board Mtgs:

February 2, 6:30 pm

May 4, 6:30 pm

August 24, 6:30 pm

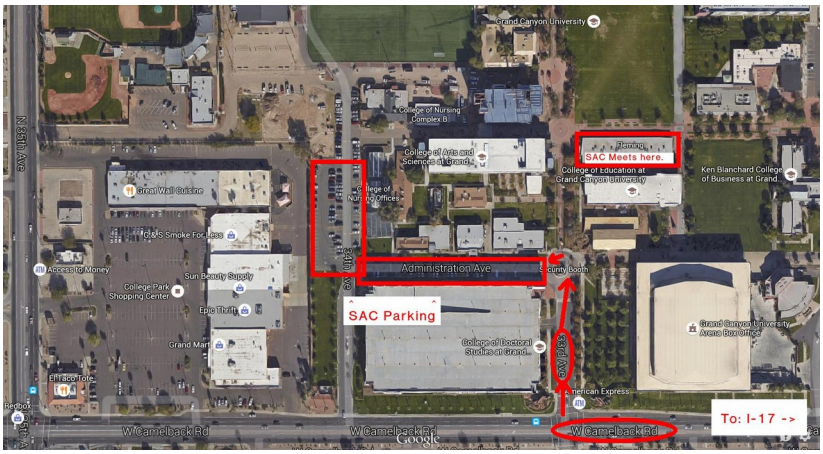
November 16, 6:30 pm

Occultation Info

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

Mail to:tomwaymas@gmail.com

Meeting Location: Grand Canyon University is located at 3300 W. Camelback Rd, Phoenix, AZ We meet in Fleming Hall, Room 105, 7:30 PM to 10:00 PM



Parking: Turn into the campus from Camelback Road at 33rd Ave. and drive straight and stop at the guard station. Tell the guard you are attending the astronomy club meeting. Then, turn left past the guard 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

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

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

Saguaro Skies Staff

Editor: Rick Rotramel

Photographers: Tom Polakis, Michael Poppre, Rick Rotramel and Susan Trask

2013-2017 Contributors: Bob Christ, Mike Collins, AJ Crayon, Paul Dickson, Steve Dodder, Richard Harshaw, Kevin Kozel, 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
- ~~☐ $13.00 Member Nametag (pinned clasp)~~
- ~~☐ $14.00 Member Nametag (magnetic clasp)~~

~~*Nametags will be mailed to address provided below*~~

Please print all information legibly

Date: ____/____/____ For the year of: 20__

Name: _____

Address: _____

Address: _____

City: _____

State: _____

Zip Code: _____

Phone: _____

Email: _____

☐ *Check here if this is updated information*

Make check payable to: SAC

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

Saguaro Astronomy Club
c/o Lori Prause, Treasurer
8441 W. Foothill Dr.
Peoria, AZ 85383

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://www.saguaroastro.org/content/SACNEWS/newsindex.htm