Volume 33 Issue 1

January 2019

The Observer

Planetary Nebula NGC 2818
Image Credit: NASA, ESA, Hubble Heritage Team

Upcoming Events:

EVAC Star Party - January 5

EVAC Public Star Party -January 11

EVAC Meeting - January 18

EVAC Star Party - January 26

Check out all of the upcoming club events in the Calendars on page 11.

Inside this Issue:

From the Desk of the President

by Tom Mozdzen

Looking back at 2018, we can count many positive events and accomplishments. We had a very successful auction in April, which featured an assortment of items donated over the past years. We netted over $10,000 in sales. The bylaws were enhanced to remove ambiguities and to clarify those who were members of the governing body. We moved the implementation and wording of several items from the bylaws to a Policy and Procedures document so that minor adjustments wouldn't require a bylaw amendment. The governing body of the club is now a nine member body including the five board-members-at-large plus the four executive officers. The five board-member-at-large terms are now two years long, while the two term limit remains in place (max 4 yrs. as a board-member-at-large).

We also secured a fidelity bond to protect us against theft, and we opened an account with interest bearing CDs that requires both the President and the Treasurer to confirm money transfers out of the account.

We created Facebook pages for both EVAC and the observatory, GRCO. We became a listed non-profit organization in the Intel

From the Desk of the President

Continued from page 1

Volunteer System. Donations from Intel employees can now be made electronically. The Chandler Solar System Walk posters, which were installed at the Chandler Veterans Oasis Park 6 years ago as a memorial to long time EVAC member Howard Israel, have been replaced, free of charge from the vendor, with new signs that should last a solid 10+ years.

One more positive was that the ancient projector at our monthly meeting room was replaced by the Town of Gilbert with a modern projector that can now project in widescreen format – hurrah!

Elections were held in November with the new governing board consisting of:

Executive Office positions:

- President – Tom Mozdzen
- Vice President – Rob Baldwin
- Treasurer – Brooks Scofield
- Secretary – Tom Polakis

Board Members at Large:

2nd year of 2-year term

- Claude Haynes
- Henry de Jonge
- Gordon Rosner

1st year of 2-year term

- David Hatch
- Derek Youngson

EVAC membership continued to be healthy with 138 members. The GRCO observatory, managed by Claude Haynes, attracted 17,415 visitors a 9 percent increase over 2017. It has been identified as a "Place to Visit in Gilbert" by many publications including Trip Advisor and JPL's Night Sky Network. Our outreach program, led by Lynn Young, continued to be in high demand with 32 events held that reached over 4300 people. Our outreach success couldn't be done without the help of our many dedicated volunteer members – many thanks to all.

Finally, we capped off the year with a festive Christmas Party held at the Shakespeare room located at the Southeast Regional Library. Many thanks to Janet and John Evelan for organizing the party and all the work they did to make it happen. We held it on a Thursday, so that we could have time to socialize without running a meeting or having to staff the observatory.

For 2019, we are still in the planning stage for improvements, but a couple items on the radar screen are: a modernization of our website, making available wearable EVAC items such as polo shirts and hats, and assisting the library with its telescope donation program.

I will be giving the featured talk in January. The topic will be on our recent efforts at ASU to find evidence of when the first stars formed by determining when the intergalactic hydrogen became ionized due to the UV radiation from these first stars. Last March our group published, what we think, is the first detection of this epoch. It was listed by Physics World as one of the top ten breakthroughs of the year because, if confirmed, it would be the first measurement of this event, and that the explanation for the magnitude of the signal might be due to interaction with dark matter.

See you at the January meeting.

Tom Mozdzen

EVAC Christmas Party December 2018

The 2018 East Valley Astronomy Club Christmas party held on December 20 was, without question, the best party that we have ever had.It set a very high bar for all future club events. Of course, an event like this results from the hard work and leadership of just a few people who step up to make it happen. A huge EVAC thanks to Janet and John Evelan for their efforts to bring this party together! We all know, and John agreed, that Janet was the real mastermind and responsible for most of the work. Special thanks to Janet!!!

EVAC Christmas Party December 2018

Continued from page 2

The Backyard Astronomer
by Bill Dellinges (January 2019)

I Never Met a Star Cluster I Didn't Like

I'm sometimes asked, "What's your favorite type of object to observe?" My answer is star clusters. I find star clusters fascinating. They're like diamonds spread on black velvet. Each one has its own shape or "personality." Their stars come in various shades of red, white and blue (very patriotic!). And most can be enjoyed even in a small telescope. From the many clusters I've observed, could I compile a Dave Letterman kind of "Top Ten" here? It would be my pleasure to try. They are listed in order of right ascension to avoid favoritism.

1) NGC 457 (Cassiopeiae): This cute little cluster of 80 stars 7900 light years (ly) away is sometimes called the E.T. or Owl Cluster due to its shape. I like the Airplane Cluster as suggested to me by a fellow stargazer many years ago. The cluster's two brightest stars, which are E. T.'s eyes, are the tail lights. The alien's arms are the swept back wings of the plane. The string of stars running between the wings is the fuselage. The brightest eye or tail light star is Phi Cassiopeiae, a quadruple star system. My 11" telescope found three of the components at 90x. The fourth star, magnitude 12.2, took 200x to tease out.

2) The Double Cluster (Perseus): The combined light of NGC 884 and 869 can just be detected with the naked eye as a blurry fog between the tip of Perseus and Cassiopeia. The two clusters are about the same distance from us, about 7500 ly. They're a breathtaking sight in a telescope with a low power wide field eyepiece. The view in a 28x100 binocular (2.5o field of view) will send you to the Moon. One must wonder why Messier didn't include this object in his venerable 1784 catalog.

3) M-45, the Pleiades, aka Seven Sisters (Taurus): Tennyson's "Fireflies tangled in a silver braid" needs no introduction. It could be argued it's the most intriguing thing in the night sky. It even catches the eye of laypeople, though most have no idea what it is; they often ask, "Is that the Little Dipper?" This 380 ly distant jewel in the sky has been the source of much sky lore. A good overview of various cultures' mythology behind the Pleiades can be found in Robert Burnham's Burnham's Celestial Handbook, Volume Three, pages 1863-1874. Because of its large size (2o), the cluster is best viewed with binoculars. I can think of no other deep sky object as stunning as the Pleiades viewed through tripod mounted 16x70 binoculars.

4) The Hyades (Taurus): The head or face of the Bull is actually a star cluster, but close enough to us at 150 ly to be resolvable to the naked eye, which also accounts for its large apparent size compared to the Pleiades. The cluster forms a distinctive V shape of stars. Its brightest star Aldebaran is a foreground star 67 light years away. Nevertheless, this orange giant plays a crucial esthetic role in contributing to the beauty of the cluster. For an astounding image of this cluster, go to: https://earthsky.org/?s=hyades. This is a large cluster and to see it at its best, use a binocular with at least a 7o field, like a 7x50 or 8x42, preferably mounted on a tripod. A rock steady view of anything through a binocular is far superior to a handheld view.

5) M-35 (Gemini): At the west end of Gemini above Eta Geminorum, lies this wonderful splash of stars 3200 ly away. I never miss a chance to view this old friend whenever Gemini is visible. Eagle eyed observersshould try for another cluster less than half a degree to its southwest, NGC 2158, which appears comet-like due to its more remote distance of 11600 ly. An 11" telescope begins resolving NGC 2158 at 90x with averted vision. At 233x its stars begin to pop out with direct vision.

6) NGC 2362 (Canis Major): This is a lovely little cluster in southeastern Canis Major, about 2.5o northeast of Delta Canis Majoris (Wezen). A bright foreground star, Tau Canis Majoris, dominates the cluster. The cluster is 5200 ly away and Tau, 3586 ly distant. Tau, magnitude 4.4, is also a triple star. Its magnitude 11.2 and 8.22 companions are 14.5" and 85" arc seconds away respectively at position angles 79o and 74o. You'd think it would be difficult to find the two companions among the many stars of the cluster, but I found it surprisingly easy. In my 11" SCT reversed field, the two were rather conspicuously tucked in closely to the right side of Tau.

7) M-44, the Beehive Cluster, aka Praesepe, the Manger (Cancer): There is a large void between Gemini and Leo. Using just the naked eye, imagine a line from Pollux in Gemini to Regulus in Leo. In all but the worst light

Continued from page 4

polluted skies, you should spy a nebulous patch of light midway on that line. You have found the Beehive Cluster (580 ly away). In dark skies you can just pick out some of its brighter stars. The cluster is a huge 1.7 degrees in apparent diameter, a perfect target for any size binocular. It's interesting to note the Beehive is framed by three 4th and 5th magnitude stars spaced about 120 degrees apart; the entire scene fits nicely in a 6o or 7o binocular field.

8) NGC 6231, the "False Comet" (Scorpius): Below the wide optical double Mu Scorpii in the lower end of the creature, there is a most interesting complex of stars. Some observers have mistaken it for a comet. NGC 6231 takes on the role of the "comet's" nucleus. One degree northeast, a larger but dimmer cluster, Trumpler 24, acts as the comet's tail. Use binoculars to see the full "Comet" and a telescope to zoom in on NGC 6231. A unique characteristic of NGC 6231, no doubt attributable to its low position in the sky, is the shimmering and sparkling of its colorful stars. I have not seen this effect in any other star cluster as conspicuously as in NGC 6231. This cluster is a light show you can always count on.

9) M-7 (Scorpius): A grand star cluster! If there ever was a prototype for a star cluster, this is it. Beautiful in binoculars or telescope. The last two stars in the Scorpion's tail, the Stinger Stars or Cat's Eyes, point eastwards right to it. Being placed relatively low in the sky, I find a relaxing way to observe it is through tripod mounted 16x70 binoculars while seated comfortably on a stool. So stationed, it's an exquisite sight.

10) M-11 (Scutum): Although in Scutum, I've always used the last two stars forming Aquila's tail to find this lovely cluster. Follow the two tail stars southwest a short distance to sweep it up. The English astronomer Admiral W. H. Smyth (circa 1830) bestowed the moniker Wild Duck Cluster on this beauty, but I have trouble seeing ducks here. One 8th magnitude foreground star stands out slightly off-center of the cluster. Behind this small cluster is a wonderland of background Milky Way stars at no additional charge to you.

I'm confident the above objects will get any stargazer's heart beating a little faster. No doubt many stargazers have observed some or all of them. But if perhaps you've managed to miss one or two, add them to your observing list the next time you're out. You won't be sorry. I could have easily titled this discussion "My Top 25 Star Clusters;" but that would have risked the village people coming after me with torches and pitchforks. It might be wiser to do a "Part Two" version on this subject in a future article.

New Moon on January 5 at 18:28

First Quarter Moon on January 13 at 23:45

Full Moon on January 20 at 22:16

Last Quarter Moon on January 27 at 14:10

Find Out What's Happening – Join EVAC-Announce List

If you would like to receive email announcements about EVAC meetings and activities please join the EVAC–Announce mailing list. Click on the link below to subscribe. Enter your full email address in the box titled User Options and press OK. You will receive a confirmation email. Your privacy is respected by EVAC and we will never sell your email address, or use it for non-club relevant solicitations. This mailing list is designed for communication from EVAC, and does not enable users to respond to the message. If you wish to contact club officers, please use the list on the Contact-Us tab. To subscribe to the EVAC–Announce mail group click: http://www.freelists.org/list/evac-announce. To unsubscribe use the same link, enter your email address and select Unsubscribe from the "Choose An Action" list. Another list that may be of interest is AZ-Observering. To subcribe click http://www.freelists.org/list/az-observing.

EVAC also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To join: EVAC Facebook Group.

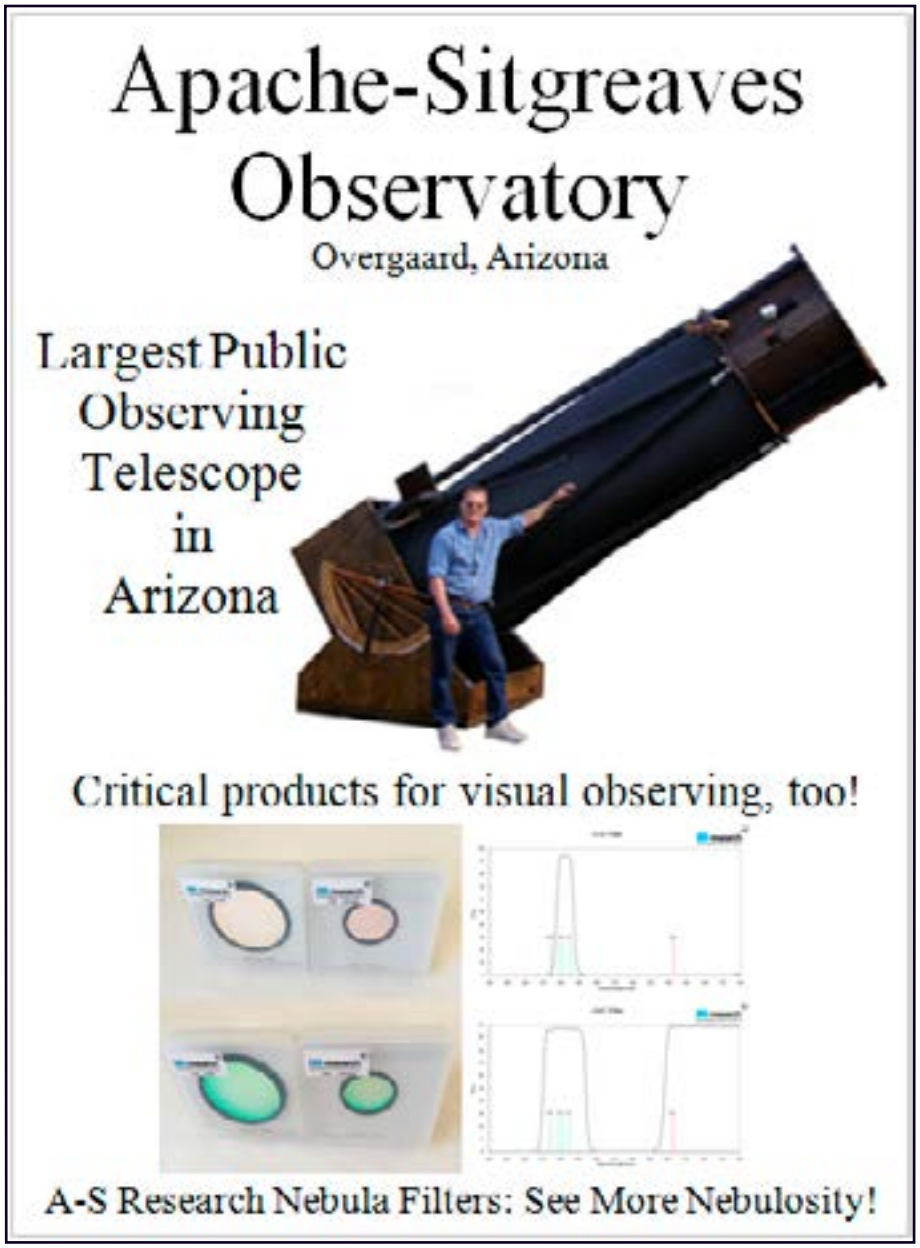
The Gilbert Rotary Centennial Observatory (GRCO) also has a Facebook Group where members may share ideas, photos, and Astronomy related information. To visit, please click on Gilbert Rotary Centennial Observatory - GRCO.

Looking for that perfect weekend activity?

Why not resolve to getting involved?

Contact Claude Haynes to join the staff at GRCO

Email: grco@evaconline.org



Classified Ads

The darkest, most Pristine, sky in the continental U.S. !

At the site: Bathroom facilities, running water, 5 pads w110v, wifi, acres of grassy camp sites.

From the site: Very Large Array 42mi E, The Astronomical Lyceum 55mi E, MRO Observatory 80mi E

IC 405

Insight Observatory
16" ATEO 1 Telescope

SkyPi Remote Observatory

Upcoming Meetings

January 18

February 15

March 15

April 19

May 17

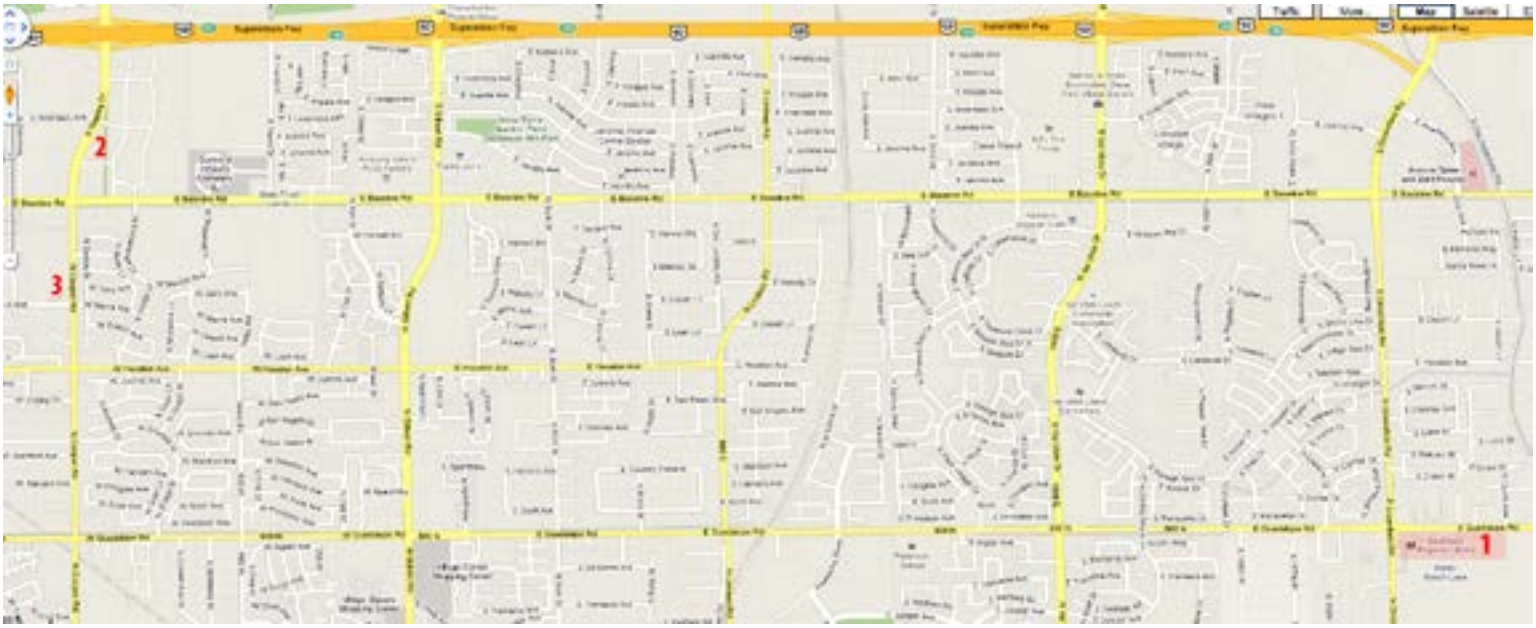
June 21

July 19

The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Road; on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30 pm.

Visitors are always welcome!



1 Southeast Regional Library
775 N. Greenfield Road
Gilbert, Az. 85234

January 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	**5**
6	7	8	9	10	**11**	12
13	14	15	16	**17**	**18**	19
20	21	22	**23**	24	25	**26**
27	28	29	**30**	**31**		

January 5 - EVAC Star Party

January 11 - Public Star Party

January 17 - Fulton Elementary

January 18 - EVAC Monthly Meeting

January 23 - San Tan Elementary

January 26 - EVAC Star Party

January 30 - Altadena Middle School

January 31 - Carlson Elementary

February 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	**2**
3	4	**5**	**6**	**7**	**8**	9
10	11	12	**13**	**14**	**15**	16
17	28	19	20	**21**	22	**23**
24	25	**26**	**27**	**28**		

February 2 - EVAC Star Party

February 5 - Kyrene de la Mariposa

February 6 - C. O. Greenfield

February 7 - Navarette Elementary

February 8 - Public Star Party

February 13-14 - ASU NASA Grant Meeting

Febuary 15 - EVAC Monthly Meeting

February 21 - Knox Gifted Academy

February 23 - EVAC Star Party

February 26-27 - CGCC Star Party

February 28 - Pomeroy Elementary

East Valley Astronomy Club -- 2019 Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

☐ New Member ☐ Renewal ☐ Change of Address

New Member Dues (dues are prorated, select according to the month you are joining the club):

☐ **$30.00 Individual** January through March

☐ **$35.00 Family** January through March

☐ **$15.00 Individual** July through September

☐ **$17.50 Family** July through September

☐ **$22.50 Individual** April through June

☐ **$26.25 Family** April through June

☐ **$37.50 Individual** October through December

☐ **$43.75 Family** October through December

Includes dues for the following year

Renewal (current members only):

☐ **$30.00 Individual** ☐ **$35.00 Family**

Name Badges:

☐ **$10.00** Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed: ☐

Please make check or money order payable to EVAC

☐ Payment was remitted separately using PayPal ☐ Payment was remitted separately using my financial institution's online bill payment feature

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Name: ☐ Phone: ☐

Address: ☐ Email: ☐

City, State, Zip: ☐

The Observer is the official publication of the East Valley Astronomy Club. It is published monthly and made available electronically as an Adobe PDF document the first week of the month.

☐ General Observing ☐ Cosmology

☐ Lunar Observing ☐ Telescope Making

☐ Planetary Observing ☐ Astrophotography

☐ Deep Sky Observing ☐ Other

Would you be interested in attending a beginner's workshop? ☐ Yes ☐ No

How did you discover East Valley Astronomy Club? ☐

PO Box 2202
Mesa, AZ 85214-2202
www.evaconline.org

All members are required to have a liability release form (waiver) on file. Please complete one and forward to the Treasurer with your membership application or renewal.

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The East Valley Astronomy Club is a 501(c)(3) nonprofit charitable organization.

www.evaconline.org

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