Volume 34 Issue 6

June 2020

# The Observer

Millions of Stars in Omega Centauri - APOD 08/24/2019
Image Credit & Copyright: Michael Miller, Jimmy Walker

## Upcoming Events:

***Some meetings will be held online.***

***EVAC Meeting via Zoom - June 19***

## Inside this Issue:



## From the Desk of the President

*by Gordon Rosner*

Greetings from your President.

Our club is still operating but with all public events, in-person events, outreach events, and our GRCO Observatory all being closed, cancelled, or postponed until further notice. Our Leadership Team is closely monitoring the status of our public health environment and still is not confident in deciding a reopening strategy or timeframe. These decisions must be made using reliable objective data to protect the health of our club members and the public we support. The confidence and stability of the data are still not at an acceptably objective level. Especially since public restrictions are now being eased and we are entering another phase of the pandemic and results, be they good or bad, are not yet known.

On 26 May, EVAC's Leadership Team met online via Zoom to discuss future General Membership Meetings. We previously had two limited audience practice meetings with live online presentations and both went very well. The Leadership Team unanimously agreed to transition our monthly General Membership Meetings to online meetings using the Zoom platform. The online meetings will mimic the usual meeting agenda with member presentations and the major presentation except it will be viewable online

# From the Desk of the President

## *by Gordon Rosner*

*Continued from page 1*

rather than in-person at the Library. We received notice that the Library has opened its meeting rooms but with some restrictions. We still do not want to return to in-person meetings at the Library at this time. We don't yet know when that will happen but certainly not for a couple months. The 19 June General Membership Meeting will be presented online starting at the usual 7:30PM. To receive the link to view the meeting, you must ask then you will receive the link via return email. Those on EVAC-Announce and AZ-Observing will receive notice but if you are not on these FreeLists groups, you can request the link by sending an email to vp@evaconline.org. For now, the meetings will only be available live online and a recorded link will not be provided for future viewing.

I have been maintaining contact with other Arizona astronomy clubs and organizations and they all also do not yet have any firm reopening plans. However, all have started either using virtual meetings with computer platforms such as Zoom, or are experimenting with doing it. EVAC, as are other clubs, is entering a new and exciting aspect of our astronomy passion and our club is fortunate to have a Leadership Team that is aggressively investigating and experimenting with how to be a part of it. Astronomy has always been changing through history with new discoveries and new ways of understanding the universe, and so are all of us right now as we enter another new aspect.

Obviously, gatherings across Arizona for sharing our astronomy enthusiasm have mostly been cancelled. But that does not mean astronomy has been cancelled. On the contrary, certain other aspects are always available and ready to take up the slack. One of them is observing programs. And one of the best available is our very own club's program. The EVAC Observing Program is a great way to learn the night sky, improve your observing skills, and get rewarded for it. All from your backyard. There's a Lunar Program which is a great way to start. Want more challenge? Go to a dark sky site and work on one of the more challenging programs. The EVAC Observing Program has various levels of challenge. There are twenty two different programs. Completing a program will earn an EVAC plaque for that specific category. You may have seen these as some folks have attached these to their telescopes. Some programs may also meet the requirements for Astronomical League certification. All astronomy enthusiasts are invited to participate, but only club members will receive a plaque for a program completion.

There are no time limits for completing any program and it's totally on the honor system as personally observing each object is mainly its own reward. A form is available for each program as a download from our website. Just pick a program and complete the form for each object listed on the form for that program and start observing. Objects can be checked off by using either visual or photography methods. For detail information and directions, see the 'Observing Programs' page in the 'News + Resources' section of our EVAC website.

Also, are you just starting out in joining us in our astronomy passion? Check out the 'Virtual Beginners Lab' also in the 'News + Resources' section of our website. What a great compilation of information! Also great for the experienced enthusiast to brush up on the basics and be able to point our new enthusiasts for excellent information.

Notice how I'm being very passionate about our website. This is certainly with reason. It has been totally revamped and updated this year and I challenge anyone to find a better astronomy club website. Make sure you take a look and surf around the different pages available. You will also be very proud of it.

As I mentioned, our Leadership Team has no reliable prediction about when operations will resume or when and how GRCO will re-open. We are moving to continue General Membership Meetings via Zoom, an online platform. Please monitor our club's website for the latest information.

"Keep your feet on the ground and keep reaching for the stars."

Your President,

Gordon Rosner

# The Backard Astronomer

*by Bill Dellinges (June 2020)*

**Summer Stargazing is Almost Here**

Take your planisphere and set it to June 1st, 9 p.m. What do you see? Not much Milky Way, it's hiding low in the northeast and northwest sky. The rest of the sky is open to extragalactic space. Most of the galaxies mentioned in the April column (Spring Skies = Galaxyfest) are still around, just shifted a little west of the meridian, the imaginary line dividing the sky into two halves, east and west. It runs from your due south point on the horizon, up and overhead to your zenith, down toward the north passing very close to the North Star Polaris, and on to your true north point on the horizon. This is a very handy marker on the celestial sphere to know. It's not on star maps. Every observer on the planet has a meridian line. It never moves. Due to Earth's rotation, the stars, moon and sun appear to rise in the east and transit the meridian. That's when they reach their highest point in the sky and are said to culminate; then descend towards the west and set (excluding circumpolar stars which never set).

At this date and hour, we see the spring sky is mostly on the west side of the meridian while the summer constellations are just beginning to rise in the east half of the sky. Thus, the summer night sky is almost here! This is your last chance to scoop up the wonderful double star Gamma Leonis, the plethora of galaxies from Virgo to Ursa Major and the Coma Berenices Cluster Mel 111 northeast of Leo's tail. The latter will require a binocular with at least a 5 - degree field of view. Try using Mel 111 as a dark sky test: If you can't see it naked eye, your sky is in trouble. A so-so sky reveals a smudge. In a truly dark sky, a few of its 5th magnitude stars begin to reveal themselves.

Let's take a look at the east side of the sky. Approaching the meridian is Arcturus, the second brightest star in the sky for northern observers (magnitude -0.04). Arcturus is the lucida of Bootes, the Herdsman. The shape of the constellation is often compared to a kite or ice cream cone. It's noted for being a wonderland of double stars. The most well-known and challenging double in Bootes is probably Izar, Epsilon Bootis. Though exquisite, it's difficult to split cleanly due to magnitude disparity and tight separation of its components (magnitudes 2.6, 4.7, 2.9" SAO 83500). Consider also the triple stars Xi and Mu Bootis, SAO 101250, 64686 respectively. A special treat are the easy doubles Kappa and Iota Bootis which can fit in a 0.9 field acting as a "Poor Man's Double-Double", SAO 29045, 29071.

Rising in the east is Hercules, the Strong Man, the signature constellation announcing the arrival of the summer constellations. Hercules is the 5th largest constellation in the sky, but its stars are rather dim. The constellation's brightest star is Rasalgethi, the head of the Strong Man, shining at only magnitude 2.7. The writer must confess he still must, after years of stargazing, refamiliarize himself each year with Hercules' stellar outline (It doesn't help that Hercules is upside down!). Fortunately, an eye-catching "Keystone" trapezoid of four stars representing his torso can act as a starting point to work out the rest of the constellation. It's also fortuitous that along the west side of the Keystone's border sits M13, one of the finest globular star clusters in the sky. Even a small binocular or finder can pick it out 1/3 the way from Eta to Zeta Herculis. An 8" telescope can easily resolve its stars.

Facing north, we see the Big Dipper just slipping west past the meridian. The Big Dipper is an asterism, just the seven brightest stars in Ursa Major, the Great Bear (You knew that, right?). By the way, why not tear yourself away from the eyepiece for a moment and try to trace out the complete body – you might be surprised how huge the Bruin is (third largest constellation after Hydra and Virgo). It can be challenging, as the stars are dim and the creature is upside down this time of year as he revolves around the North Star.

This would be the perfect time to make a stop at M51 (NGC 5194), the Whirlpool Galaxy. It's positioned close to your zenith now, which translates into having less troublesome atmosphere to peer through. Though just a hop and skip from Alkaid, the end star in the Dipper's handle (or Bear's tail), M51 is technically assigned to Canes Venatici, the Hunting Dogs. This face-on galaxy is about 25 million light years away and sports a smaller companion galaxy, NGC 5195, thought to have "recently" collided with M51. This observer has seen the spiral arm nature of M51 in an 8" telescope at the Grand Canyon. Which begs the question: does any other observer think the smaller NGC 5195's nucleus seems brighter than M51's nucleus?

This ends the tour of the almost summer night sky of June. Dark skies to you and stay safe.

# EVAC Zoom Meeting Notes for 2020 May 15, at 07:30 P.M. AZ Time

*by Wayne Thomas*

This meeting was a 'practice' online meeting via Zoom mimicking a monthly meeting to a limited online audience to determine the feasibility of using this method for our monthly General Membership Meetings. The limited audience allowed exploring the various functions available and testing the overall process by the club's Leadership Team. The results of this event supported further discussions by our Leadership Team in implementing this method for future meetings.

President Gordon Rosner welcomed those in the "audience" to the Zoom meeting at 7:32 p.m. He then introduced the officers, board of directors, and administrators. Under current business he stated that the governing board agreed that no events would be scheduled for groups of people until it was safe to do so, and that is unknown at this time. This includes GRCO.

Tom Polakis gave a member presentation about his measurements of the fading of Orion's alpha star Betelgeuse. After searching the AAVSO database for recorded observations, he settled on those of Tom Calderwood's photoelectric measurements for their presumed accuracy. Tom next shared how he and Jennifer were able to measure such a bright star by using aperture masks. The first one still allowed too much light through so they developed a four hole mask that kept the focal ratio the same and kept the CCD in its linear range. Even so, his exposures were limited to 1.5 seconds. His methodology included using Aldebaran as a comparison star and Phi 2 Orionis as a check star. His graph showed the 1.6 to 1.7 magnitude drop he measured. He fielded a question about his setup and processing.

Tom Mozdzen then introduced the main speaker, Adam Beardsley, who spoke on radio telescopes and reaching back in time to some of the earliest signals after the Big Bang. By way of introduction, Adam is the NSF Astronomy and Astrophysics Post-Doctoral Fellow at ASU and the Principal Scientist on the Murchison Widefield Array. He titled his talk "Radio Arrays to Map the Cosmic Dawn." Adam explained the physics of the cosmic microwave background radiation as the combination of electrons and protons into hydrogen atoms – a gas. Most of the photons in the universe are from this time. He then provided a time line naming the various eras from the Planck era at 400,000 years past the BB up to today. He also identified the radio telescopes and other telescopes specific to each epoch.

He explained some categories of radio telescopes including the horn (Ewin & Purcell, discoveres of the CMB), the single dish radio telescope, the focal plane array (e.g. the Parkes radio telescope in Australia), and the radio array (e.g. the VLA in New Mexico). One of the challenges of arrays is to correlate the signals for each of the telescopes. This requires lots of computing power (think super computer). The Murchison Widefield Array is a general purpose radio telescope observing in the frequency range from 80 megaHertz to 300 mHz. Since "first light" in August 2013, it has generated 35 petabytes of data! The phase 1 array consists of 16 dipole antennae creating a "radio garden." Phase 2 will increase the effective diameter to 5.6 km and contain multiple groups (hex cores) spread over that area.

A current area of improvement is to reprogram the existing GPUs of the LWA in New Mexico to do more data reduction via the Fast Fourier Transform technique to reduce the amount of data to be transmitted to the correlators. This will then speed up the final output

Adam finished up by describing an outreach goal of his – the Completely Hackable Amateur Radio Telescope (CHART).

For further information the following websites were listed:

. mwatelescope.org
. reionization.org
. loco.lab.asu.edu/adam_beardsley
. astrochart.github.io

The meeting of in excess of 60 attendees was adjourned by 9:00 p.m. local time.

Wayne Thomas, Secretary
EVAC

## 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 in the Contact-Us area on the Home page of our EVAC website. 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 to consder is AZ-Observing@groups.io, simply click on this link https://groups.io/g/AZ-Observing and follow the instructions on the page. 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***

## EVAC Outreach Events
*by Gordon Rosner*

Unfortunately, another very short column this month. All outreach events remain cancelled due to supporting the public health concerns. For more information, see the President's column at the beginning of this newsletter.

As always, still looking very forward to our outreach program getting back and to hearing all those "OH WOW's" we so love to hear.

Gordon Rosner
EVAC Outreach Events Coordinator

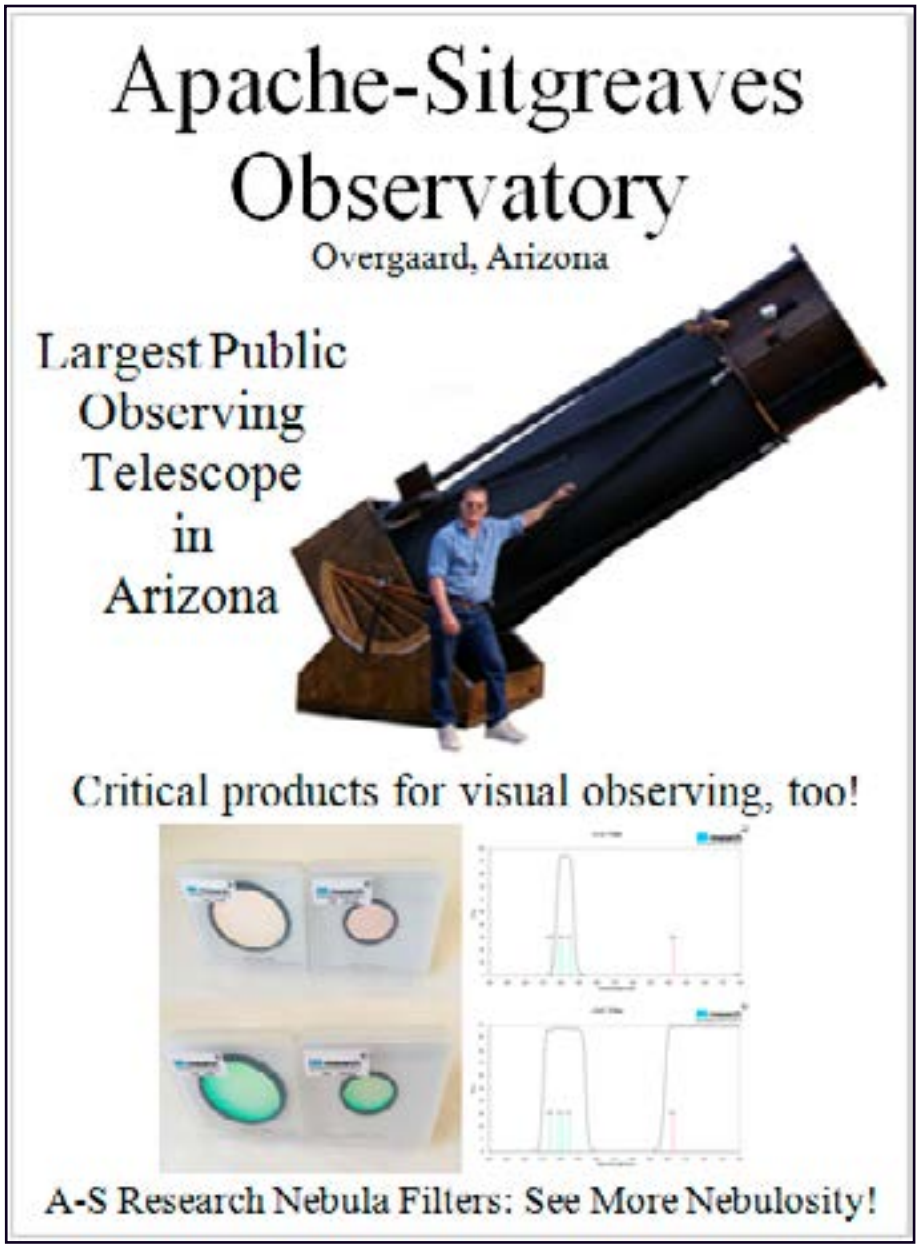
**Full Moon on June 5 at 15:12**

**Last Quarter Moon on June 13 at 02:24**

**New Moon on June 21 at 02:41**

**First Quarter Moon on June 28 at 04:16**

## Classified Ads



# 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**

Monthly Meetings will be presented live online using Zoom. See the EVAC Website for updates. All other events are on hold until health concerns are resolved.

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!***


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

# June 2020

| 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 | | | | |

**June 12** - Public Star Party

**June 13**- EVAC Star Party

**June 19** - EVAC Monthly Meeting Live Online via Zoom

**June 20**- EVAC Star Party

***The EVAC Monthly Meeting will be held live online via Zoom. All other meetings and events have been cancelled until further notice.**

# July 2020

| 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 | |

**July 10** - Public Star Party

**July 11** - EVAC Star Party

**July 17**- EVAC Monthly Meeting Live Online via Zoom

**July 18**- EVAC Star Party

***The EVAC Monthly Meeting will be held live online via Zoom. All other meetings and events have been cancelled until further notice.**

# East Valley Astronomy Club -- 2020 Membership Form.

IMPORTANT: All memberships expire on December 31 of each year

**New Member Dues** ( select according to the month you are joining the club)

| | Individual | Family | |
|---|---|---|---|
| January, Feburary & March | **$30.00** | **$35.00** | |
| April, May & June | **$22.50** | **$26.25** | |
| July, August & September | **$15.00** | **$17.50** | |
| October, November & December | **$37.50** | **$43.75** | (*Includes following year)* |

**Renewal** (current members only):

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

☐ **Astronomical League:** $7.50 Annually (per person)

**Name Badges:** Quantity: _____

☐ **$10.00** Each

Name to imprint: _____

**Total amount enclosed:**

Please make check or money order payable to EVAC

Payment will be made using PayPal ☐

Name: | Phone:

Address: | Email:

City State Zip | URL For website

Would you be interested in our outreach program? ☐ Yes ☐ No

How did you discover East Valley Astronomy Club?

## Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC"), the receipt and sufficiency of which is hereby acknowledged, I hereby affirm that I and any related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, children, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, hereby forever release, acquit and discharge to hold EVAC and its related entities, predecessors, successors, affiliates, attorneys, guarantors, insurers, transferees, assigns, parents, spouses, subsidiaries, accountants, officers, directors, employees, agents, shareholders, members, and trustees, past and present, from any and all causes of action, claims, losses, damages, liabilities, expenses (including attorneys' fees) and demands of any nature whatsoever, known or unknown, that in any way relate to, arise out of, or concern EVAC and/or my presence on the premises of any EVAC Star Party and related areas, whether or not those causes of action, claims, damages, liabilities, and demands are part of the specific subject matter of EVAC or any EVAC Star Party. This release is intended to and does cover all injuries and damages, and the consequences thereof, whether known or unknown at the time of the execution of this release, which have occurred or may hereafter occur or which may hereafter be discovered, and which may have been caused or may be claimed to have been caused by the said incident, and specifically includes, but is not limited to, bodily injuries, mental and emotional injury, pain and suffering, medical treatments, and loss of earnings or income.

My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance. EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Signature _____ Date _____

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

www.evaconline.org

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