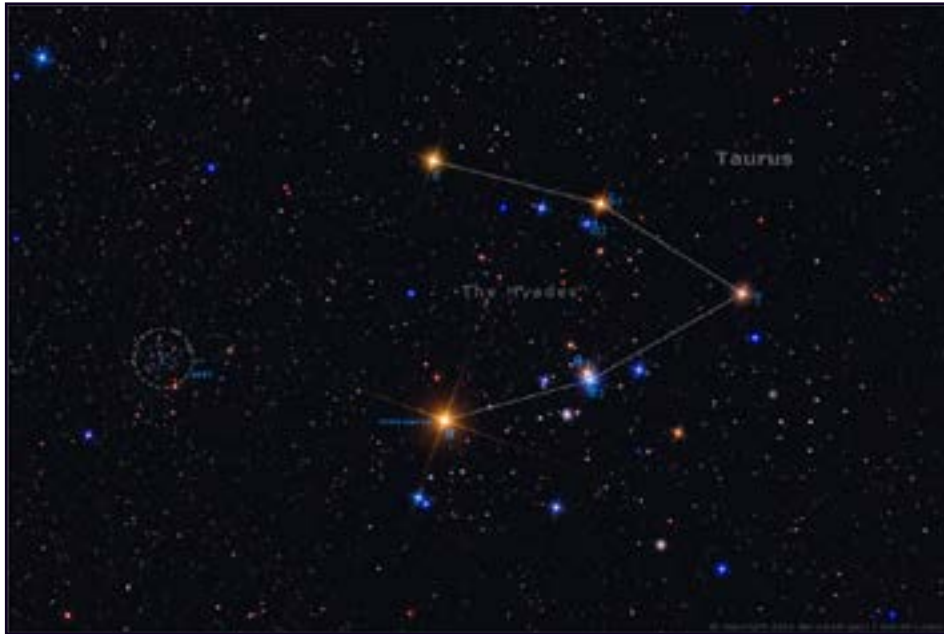


THE OBSERVER



Hyades for the Holidays - APOD December 24, 2012

Image Credit & Copyright: Jerry Lodriguss

From the Desk of the President by Gordon Rosner

Greetings from your President.

As always, I sure hope everyone is still doing well and keeping healthy. Please be more vigilant as virus cases are rising. Remember that all EVAC in-person group activities still remain cancelled, and we are still uncertain when in-person events will return. As always, check our website for the latest information.

Results of Officer elections. As reported in last month's online meeting, we had no volunteers for our officers whose terms had expired. During these troubled times, this was not a surprise. Your Leadership

Team anticipated this as a possibility and all had volunteered to remain in their current positions if no one volunteered. This meant that the officers were considered as "Single Nominees" by our club's Constitution and Bylaws and required an "Affirmation" vote during the meeting by the general membership. The online vote was a unanimous yes. This means the club's officers will remain in their current positions until next year's elections in November. Hopefully, club activities will be back to some level of normal by then.

The club thanks all the officers for staying on through these very unique times. These are:

UPCOMING EVENTS:

All meetings will be held online.

EVAC Presentation via Zoom - December 5

Mateo Tacca - "Gravitational Wave Detection of VIRGO-LIGA" and

EVAC Meeting via Zoom - December 18th

Ed Buie - "Turbulence in the Halos of Galaxies".

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From the Desk of the President

by Gordon Rosner

Continued from page 1

President: Me, Gordon Rosner. Looks like you are stuck with me for another year. My major job is to make sure all the other officers do their jobs. We have such a great team that my job has been the easiest of all. All members of the Leadership Team are fully dedicated to the club and have done an excellent job during these tough times.

Vice President: Tom Mozdzen. Tom originally set up our online meetings and continues to do so. This has been a major driver of our club moving into a new and exciting future ensuring we weather the virus storm with a new way to provide service to the club. Tom has also been finding all the excellent main presentation speakers for these meetings.

Treasurer: Brooks Scofield. Even though we are not having in-person meetings and public functions are on hold, there are still bills to be paid and finances to be handled, and membership sign-ups and renewals to take care of. Brooks has done a great job in making sure bills such as those from our internet providers and for club insurance are paid up and on time. We are still in solid financial shape and thanks go to Brooks making sure we still have income through his investment suggestions approved by the Leadership Team.

Secretary: Wayne Thomas. Wayne hovers over every club function to take notes and document the club's official minutes. For examples of his excellent work, just read his General Meeting minutes columns in our newsletters. He does this same level of detail for all behind the scene's events such as our Board of Directors meetings and Leadership Team voting functions. We all will enjoy him continuing with his newsletter inputs.

Board of Directors: David Hatch, Jon Koester, Ken Milward, Bill Peters and Derek Youngson. Our Board of Directors provided inputs and suggestions for club operations and voted on implementation of improvements and club direction. This year has presented the Board with quite a few unique challenges. Each Board member has provided the valuable inputs for your Leadership Team to collectively make the decisions that keeps our club not only operating, but improving.

Administrative Managers: These positions are appointed, not elected. They make sure the very visible aspects of our club smoothly continue. Claude Haynes, GRCO Manager,

has made improvements in the dome and has procured safety items so we are prepared to re-open our observatory when ready. David Hatch, Property Manager, continues to receive equipment donations and maintains our inventory. Wayne Thomas, our Observing Program Coordinator, is still ready to give observing awards per the requirements listed in our Website. This is a great backyard activity during these cautious public times. Marty Pieczonka is our Newsletter Editor and Webmaster. We all can easily see the great work he is doing. I believe everyone is proud of his products as it presents our club to the public eye.

Every member of the Leadership Team has been instrumental in maintaining EVAC as one of the premier, if not THE premier, astronomy clubs in Arizona. As your president, I have been in touch with other Arizona clubs throughout the year. Some are not doing well lately. Our Leadership Team has ensured our club not only survives, but actually grows and improves. And of course, the most valuable asset of our club is YOU... the members. Our membership continues to stick in there supporting our club by attending our monthly meetings, supporting our very successful Facebook page, and spreading our astronomy enthusiasm. Hang in there folks. When things get back to a new normal, the club will be even bigger and better by returning to our usual events and continuing our public outreach via our new online methods.

December provides some astronomy highlights that we can look forward to. The Geminids Meteor Shower puts on its best show the night of the 13th into the morning of the 14th. With a new Moon, hopefully this will be a nice show. A total eclipse of the Sun will pass over the south of South America on the 14th. And Jupiter and Saturn will get the closest to each other on the 21st. This is close enough that most telescopes will be able to see both in the same view! And this is the closest they have been since 1623. Also, we are starting to see some Sun spots now. So, dust off those Hydrogen Alpha telescopes and solar filters and take a look. Everyone remember to only use solar filters that attach to the objective end of your telescope. NEVER use the old screw on the eyepiece Sun filters. The concentrated heat on it may crack these as you are looking through it! If you find one in your junk box, destroy it and throw it away. We are starting to climb out of the bottom of the eleven year Solar Cycle. For you amateur radio operators, the increasing solar activity is just starting to "open" the

From the Desk of the President

by Gordon Rosner

Continued from page 2

frequency bands allowing your radio signals to travel much farther.

Also, December provides us with an additional club treat. On Saturday, 5 December at 10:00AM, Tom Mozdzen has scheduled a special "Coffee Talk" presentation by Mateo Tacca on "Gravitational Wave Detection of VIRGO-LIGA and Upgrade Plans". Dr. Tacca will be presenting from his home in Europe. This is another example of how our club continues to grow and has expanded its reach worldwide even during these tough times. Remember that all our meetings are recorded and a link is placed on the monthly meetings page of our club's website.

There will not be a December Holiday Party due to virus concerns. Instead, we will have a usual monthly online Zoom meeting on Friday 18 December, starting at the usual 7:30PM. The main speaker will be Ed Buie presenting "Turbulence in the Halos of Galaxies". I confess I don't know what that is but I assure you I certainly will after watching his presentation. Claude Haynes will also give a member presentation on the famous Arecibo Radio Telescope that has come to a very sad ending.

As a reminder, there are three ways to receive a notification link via an email to register for the next online monthly General Meeting. You only need to do one of the following and only once to continue to receive that monthly

email to register for the upcoming General Meeting:

1. Send a one-time email request to vp@evaonline.org
2. Sign up for the evac-announce@freelists.org mailing list
3. Sign up for the AZ-observing@groups.io mailing list

Another way to get notification of special online events, such as the 5 December presentation and how to register, is to join the EVAC Facebook page and check the announcements a week or two before the scheduled General Meetings.

Everyone should remember that member presentations are a fun and valuable part of our monthly meetings. These are about ten minutes long regarding any astronomy related subject you would like to share with the club. I encourage you to do one of these. Just let me know you would like to do one by using the 'Contact President' link near the bottom of the main page of our EVAC website. I'll then get back with you and we can discuss. If needed, we can also do a dry run sometime before the actual meeting.

I'll 'see you' at the 18 December meeting.

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

Gordon Rosner

EVAC Zoom Meeting Notes for 2020 November 19, at 07:30 P.M. AZ Time

by Wayne Thomas

Meeting Minutes.

President Gordon Rosner welcomed those in the "audience" to the virtual meeting at 7:30 p.m. His first slide presented the meeting agenda:

- Welcome
- Introductions
- Its Election Time
- Club News
- Featured Speaker: Tom Field: "You Can Almost Touch The Stars"

After his welcome, Gordon introduced the leadership team in charge of keeping EVAC running. Although many are reaching the ends of their terms, all officers have agreed to continue for another year as there have been no additional nominations. Per our Bylaws and Policy and

Procedures, only a vote of affirmation is required which will be conducted via Zoom's Chat feature. Claude will tally the votes and report the results later in the meeting.

Under club news, he noted that club sponsored events with personal contact are still cancelled. Instead of a holiday party there will be a regular meeting on Friday, December 18. Member presentations are still welcome. Send Gordon a note if you are interested in making one. Our monthly meetings on Zoom are being recorded and each can be viewed from its link on the EVAC website.

There were no member presentations.

There is a special meeting on Saturday, December 5, at 10:00 a.m. Arizona time by astronomer Mateo Tacca presenting from Belgium on:

EVAC Zoom Meeting Notes for 2020 October 23, at 07:30 P.M. AZ Time

by Wayne Thomas

Continued from page 3

"Gravitational Wave Detection by VIRGO – LIGO, and Upgrade Plans."

Our next regular club meeting will be at 7:30 p.m. Friday December 18 via Zoom. Register for the meeting in the usual way by the link in the invitation email. ASU PhD candidate Ed Buie will present: "Turbulence in the Halos of Galaxies."

Claude reported the results of the affirmation election of officers, but the final tally was presented after the presentation.

Tom Mozdzen then introduced the main speaker, Tom Field, speaking on "You Can Almost Touch The Stars." Tom Field is a contributing editor of Astronomy Magazine, has created astronomy software, and has made presentations to various groups including NEAF (Northeast Astronomy Forum) and SAS (Society for Astronomical Sciences).

Tom Field's presentation covered a broad look at what can be learned about the universe from star light arriving at Earth. About 70% to 80% of what we learn comes from the spectra of stars and interstellar matter, both the bright parts and the gaps in those spectra. He gave a brief history of the study of spectra including the contributions of Newton, Bunsen, and Kirchhoff. Bottom line – spectra provide the fingerprints of the chemical elements and their environment. He listed several contributors other than "old white men" who have also made significant contributions to the field.

Spectroscopy need not cost a lot of money. A star analyzer grating costs only a couple hundred dollars and can be attached to a camera by an inexpensive adaptor. The camera can be mounted piggyback on a telescope, or the star analyzer and camera can be at the focus of the telescope. The results can be analyzed by software such as RSpec-Astro which Tom wrote. The tracking requirements of the mount are not as stringent as for astrophotography either.

Tom has found that being able to display a spectrum of a star in real time is a great benefit for outreach. Being able to show how the dips or bright lines correspond to the colors of known elements is great for his audience. Of special interest are Wolf-Rayet stars which have bright line spectra.

Tom emphasized the importance of taking one's own spectra – by analyzing your own, you attain an emotional relationship with your data. The analysis you do is now part of you.

Tom covered many more aspects of how spectroscopy has led to a better understanding of objects in the universe including planetary nebula, planet atmospheres, the discovery of Helium in the Sun's spectrum, Doppler shift, type 1a supernovae, and quasars.

For those interested there are more sophisticated instruments which provide improved spectra resolution such as the Alpy 600, and the Lhires III. These of course cost more. In conclusion, Tom Field took questions:

- Question 1 regarding analyzing non-linear spectra as from a prism. Yes, his software can produce calibrated spectra from a prism.
- Question 2 regarding using a video camera. The output of a video camera is not ideal.
- Question 3 regarding using a 2 inch spectra analyzer versus a 1.25 inch one. A 2 inch analyzer is lot more expensive, and an adaptor from 2 inch to 1.25 inch works just fine.

Tom pointed out that EVAC members Woody Sims and Bob Buchheim are making spectrographic contributions that are useful to professional astronomers.

Thanks to Tom Field for his excellent presentation.

Our next regular meeting will not be a Holiday Party. Instead, we will have a meeting on Friday December 18th, at 7:30 p.m. via Zoom.

We had about 75 attendees tonight, and the final vote for keeping the current elected officers was 41 affirmative and 0 nays.

Also, since we have bills to pay for ongoing expenses, membership renewals are appreciated.

Gordon adjourned the meeting at 8:55 p.m.

Wayne Thomas
Secretary EVAC

The Backard Astronomer - December's Four Finest Ornaments for Binoculars

by Bill Dellinges (December 2020)

Lurking in the northeastern skies this month are four outstanding star clusters. They have two things in common. 1) They are arguably the four most gorgeous star clusters in the northern hemisphere skies and 2) Are best seen in binoculars because they're HUGE! These amazing four objects were observed with tripod-mounted 16x70 binoculars (4.1° real field). Let's savor them in order of distance away from the north celestial pole.

The Double Cluster in Perseus is a classic showcase object, two open star clusters adjacent to one another, NGC 884 and NGC 869. The two clusters are about 7000 light years (l.y.) away and nicely fit in the 16x70 field with a little room to spare. Of the two, I personally prefer NGC 869 because it's a little denser and its core of colorful stars twinkle like gems in a jewel box – reminiscent of the way stars in NGC 6231 in Scorpius sparkle. There's a string of stars leading northeast from NGC 869 about one Double Cluster length to Stock 2, a large faint, sparse cluster that's worth a look. For the adventurer, consider sliding just a tad more northwest where you'll be engulfed by an even larger and brighter "cluster" well worth your time. None of my atlases indicate a catalog assignment for it so I'm claiming it as Dellinges 1 (centered on R.A. 02h Dec +60°).

Perseus O-B Association, aka Mel 20: I believe this object is overlooked by many amateurs – you know who you are! If you look at Perseus' brightest star Mirfak with the naked eye in a dark sky, you might notice an amorphous glow under that star. The glow is the aggregation of light from a cluster of stars, which includes Mirfak, 600 l.y. away. Mel 20 is tied with M44, the Beehive Cluster in Cancer as the fourth closest star cluster to the Sun after the Hyades (153 l.y.), Coma Berenices Cluster (Mel 111, 283 l.y.) and Pleiades (M45, 446 l.y.). Mel 20 has about two dozen bright members and many fainter stars spread over about four degrees. Interestingly, some of the brighter stars form a serpentine "S" pattern. Mel 20 fills the 16x70's 4.1 degree field. My 8x50 binocular with its 7° field frames the cluster nicely, allowing a little more space around the cluster, but the 16x70's extra magnification and light gathering power renders a superior view.

The Hyades: To the upper right of Orion the Hunter lies Taurus the Bull. The main part of the constellation is basically the "V" shaped arrangement of stars representing the Bull's face, which also happens to be a star cluster in its own right. At a distance of 153 l.y. the Hyades is the

closest star cluster to us. Its brightest star Aldebaran is actually not a member of the group but a foreground star 67 l.y. away. To accommodate the entire cluster, you'll need a binocular that provides at least a seven-degree field. The 8x50's 7° field does a good job but my 7x42's 8° field is even better (again, better framing). Take special note of the three pairs of stars just west of Aldebaran. They're spaced about 120° apart and thus quite striking. The Hyades is a stunning sight and like Mel 20 above, perhaps overlooked by amateurs too busy trying to find other deep sky objects within Taurus.

The Pleiades (M45): The "Seven Sisters" star cluster, at a distance of 446 l.y., is the third closest star cluster to us. There is probably no stellar grouping more well known to the general population as the Pleiades, with the possible exception of the Big Dipper asterism. In fact, it's often mistaken for the Little Dipper as it's similarly shaped, albeit much smaller. Like the Hyades, the cluster is part of the constellation of Taurus, representing the Bull's shoulder. The cluster is so distinctive that its mythology goes back to time immemorial. If you have good eyesight, you can pick out seven of its brightest stars (thus its moniker "Seven Sisters"). Most people do well to see six stars. Superior eyesight can pull in a few more. The cluster contains about 200 true members. Any size binocular shows the Pleiades well, but the bigger the better, as long as you have enough field to accommodate at least two degrees of sky for this "Swarm of fire-flies tangled in a silver braid" (Tennyson, 1842). I have viewed the Pleiades with 8x50, 16x70 and 28x100 binoculars and the 16x70 gets my vote for the best binocular to train on this object. The 16x70 offers both a field big enough to perfectly frame the cluster and ample light-gathering power to produce a fusillade of bright stars. Look for the double star S437 dead center in the cluster (magnitude 8 and 7.7, separation 39", which the 16x70 split). Also check out the neat chain of magnitude 7 and 8 stars curving away from Alcyone, the cluster's brightest star.

I wondered why the Pleiades carry so much cachet than other star groupings. So I went outside and looked up at the area of sky under discussion here and realized why. As impressive as the rising winter sky is, the naked eye is irresistibly drawn to that little isolated tight knot of seven stars. Putting a 16x70 on it to further investigate this puzzling little object, you're greeted with an explosion of bright stars. The Pleiades are truly a breathtaking sight in binoculars.

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 consider 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

Again, unfortunately another very short column this month as all outreach events remain on hold due to supporting the public health concerns. For more information, see the President's column at the beginning of this newsletter or at the top of the EVAC website.

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

LAST QUARTER MOON ON DECEMBER 7 AT 17:37

NEW MOON ON DECEMBER 14 AT 09:17

FIRST QUARTER MOON ON DECEMBER 21 AT 16:41

FULL MOON ON DECEMBER 29 AT 20:28

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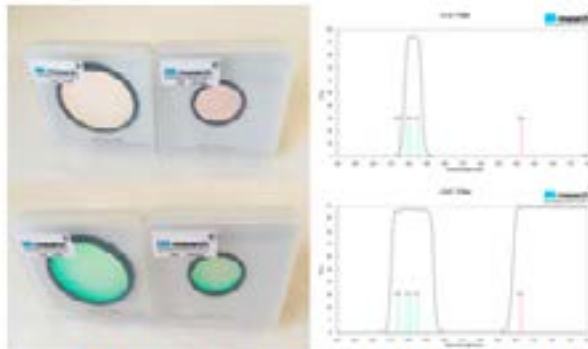
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IC 405

**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



DECEMBER 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		

December 5 - Special online presentation, 10:00 AM - "Gravitational Wave Detection of LIGO-VIRGO and Upgrade Plans".

December 18 - EVAC Monthly Meeting Live Online via Zoom.

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

JANUARY 2021

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

January 15 - EVAC Monthly Meeting Live Online via Zoom.

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, February & 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	<i>(Includes following year)</i>

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 _____

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. Please send your contributions, tips, suggestions and comments to the Editor at: news@evaonline.org. Contributions may be edited. The views and opinions expressed in this newsletter do not necessarily represent those of the East Valley Astronomy Club, the publisher or editor.

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

www.evaonline.org

East Valley Astronomy Club
PO Box 2202
Mesa, Az. 85214-2202

President: Gordon Rosner

Vice President: Tom Mozdzen

Secretary: Wayne Thomas

Treasurer: Brooks Scofield

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Events Coordinator: Gordon Rosner

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Refreshments: Janet Cotie

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