



East Valley Astronomy Club

December 2003

www.eastvalleyastronomy.org

Scottsdale, Arizona

December 2003



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From the Desk of the President

by

**Peter Argenziano
2003 EVAC President**

As the year draws to a close, I'd like to reflect back on another great year for the East Valley Astronomy Club. This year saw the club grow by about 15%. Welcome to all the new faces! We had great participation in all club events: a trip to the Steward Mirror Lab, a trip to the US Naval Observatory, the Messier Marathon, the All-Arizona Star Party, a special meeting at the Arizona Science Center, the popular beginner's labs, our monthly members star parties, a myriad of outreach public star parties – especially during the Mars-mania... the list goes on and on. My sincere appreciation goes out to all who were involved in making these events a huge success, and I extend a personal invitation to everyone to join in to ensure 2004 is even better!

During 2003 the club assumed full control of our Internet domain, and our webmaster (Marty Pieczonka) has great things planned for our already excellent website. You may have already noticed a newly redesigned main page – this month featuring Joe Orman's photos of our trip to the Steward Mirror Lab in Tucson. Also, a new events calendar has been incorporated into our cyberhome.

The club has forged new alliances with Boyce Thompson Arboretum State Park and Arizona Science Center, while maintaining our relationship with Scottsdale Community College and the Riparian Institute. These affiliations are mutually beneficial and serve to reinforce the club's position as a responsible member of the community. These partnerships also contribute to the club's ability to maintain our membership dues at \$20 annually.

This past year our guest speaker program included a mix of amateurs and professionals: in addition to some memorable member presentations, AJ Crayon spoke about sketching at the eyepiece; Adam Block gave a presentation about the CCD imaging program at Kitt Peak Observatory; Jeff Hester talked about the history of structure in the universe; Chris Schur told us about construction of Clear Creek Canyon Observatory; Fulvio Melia lectured about the black hole at the center of the Milky Way; Steve Ruff provided details of the current Mars exploration missions; Scott Davis talked about the battle against light pollution; and Bill Ferris provided insight into observing the Herschel 400. This month, Michael Schwartz will present details of his outstanding work at Tenagra Observatories in the hunt for supernovae. And, if you can believe it, next year promises to be even better!

Speakers already scheduled include:

January: David Williams, ASU Planetary Geology group, will talk about current Mars missions – Spirit and Opportunity are scheduled to arrive on the red planet in January.

February: Bill Stoeger of the Vatican Observatory will present "Cosmology, Multiverses and the Anthropic Principle"

March: Christopher J. Corbally, Vice Director of the Vatican Observatory, will discuss "Getting to Know Thy Neighbors: A NASA Survey of Nearby Stars"

Martin also tells me he is working on a couple of special speaking engagements, which will likely be held in either the auditorium at Scottsdale Community College or the planetarium at Arizona Science Center. Possibly Jack Newton or Guy Consolmagno?

Our Events Coordinator, Howard Israel, did an outstanding job this year in organizing all kinds of events in which to participate. He assures me that 2004 will be even better. Rumor has it he will shortly announce an upcoming trip... stay tuned for details. If you have suggestions or ideas for club events, please contact Howard at: events@eastvalleyastronomy.org

contd. from p.1

I would like to take this opportunity to thank all those who served as the governing body for EVAC in 2003. Thank you for your dedication and efforts in making the club successful! I would also like to take this opportunity to announce the 2004 EVAC cabinet:

President: Peter Argenziano
Vice President: Martin Bonadio
Secretary: Diane Cook
Treasurer: Jack McEnroe
Events Coordinator: Howard Israel
Newsletter Editor: John Matthews
Webmaster: Marty Pieczonka
Properties Director: Dave Williams
Board of Directors: Jim Gutman, Mort Hanlon, Joe Goss,
Tom Polakis and Dave Shafer
Photographer: Jason Nelson

The EVAC Holiday party is scheduled for Saturday, December 13th, at the home of Tom Polakis. This is a potluck, so

bring your favorite appetizer, salad, side dish or dessert. The address is 122 W. Alameda, in Tempe. Complete details are available on our website at:

<http://www.eastvalleyastronomy.org/holiday03.htm>

I'd like to announce that we will continue to hold our monthly meetings in room PS-172 at Scottsdale Community College on the second Wednesday of each month, beginning at 7:30 pm. We will also continue with the current venue for our monthly member star parties: the Local Star Party at Boyce Thompson Arboretum State Park and the Dark Sky Star Party at the Vekol Road site. We will also continue to host a public star party at Water Ranch at the Riparian Preserve, in Gilbert. This event is held on the second Friday of each month.

I'll close this month's installment by wishing everyone a joyous Holiday Season!

Keep looking up!

**If it's clear...
by
Fulton Wright, Jr.
Prescott Astronomy Club
for August 2003**

Shamelessly stolen information from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find info.

When gauging distances, remember that the Moon is 1/2 a degree or 30 arcminutes in diameter. All times are Mountain Standard Time unless otherwise noted.

On Monday, December 8, it's a good night to see a lot of solar system objects. Use binoculars to help locate the dim ones.

Here is the schedule:

- 4:34 PM** the full Moon rises between east and northeast
- 5:19 PM** the Sun sets between west and southwest
- ~6:00 PM** dark enough to see Venus (mag -4) low in the southwest
- ~6:15 PM** dark enough to see Mercury (mag 0) very low in the southwest
 - lamda Sgr (mag 3) is very close to Mercury
- ~6:15 PM** dark enough to see Mars (mag 0) high in the south
- ~6:30 PM** dark enough to see Uranus (mag 6) with a telescope at RA 22h06.4m, dec -12d27'
- ~6:30 PM** dark enough to see Neptune (mag 8) with a telescope at RA 20h53.6m, dec -17d31'
- 7:06 PM** Saturn (mag 0) rises between east and northeast
- 12:21 AM** Jupiter (mag -2) rises in the east

On Tuesday, December 9, about 6:00 PM, you can see comet 2P/Encke. With binoculars, look for the mag 7 object a little south of west, about 7 degrees above the horizon. It should be near a mag 6 star at RA 17h33.5m dec -5d45'.

On Thursday, December 25, about **6:15 PM** the crescent Moon and Venus make a nice pair setting in the southwest.

And I hope you are having a good Christmas!



STARIZONA
ADVENTURES IN ASTRONOMY & NATURE

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Schedule of Events - December, January & February
East Valley Astronomy Club
by
Howard Israel

Date	Event	Location	Notes
		December Events	
Sat. Dec. 6	Beginners Lab	Dave Coshows' home	7:00 PM, Setup
Wed. Dec. 10	General Meeting	SCC - PS 172	7:30 PM, Michael Schwartz, ☞ Searching for Super Novae
Fri. Dec. 12	Public Star Party	Gilbert Library	7:00 PM, Setup
Sat. Dec. 13	EVAC Holiday Party	Tom Polakis' home	6:30PM
Sat. Dec. ☞ 13 & 14	Geminoid ☞ Meteor Shower Peak		9:00 PM, Local time
Sat. Dec. 20	Deep Sky Star Party	Vekol Road Site	Sunset: 5:24 PM
Sat. Dec. 27	Local Star party	Boyce Thompson Arboretum	Sunset: 5:28 PM
		January 2004 Events	
Sat. Jan 4	Quartrantid Meteors		Before dawn
Fri. Jan 9	Public Star Party	Gilbert Library	7:00 PM, Setup
Sat. Jan 10	Beginners Lab	Dave Coshows' home	7:00 PM, Setup
Wed. Jan 14	General Meeting	SCC - PS 172	7:30 PM, Dr. David Williams, ☞ Current Mars Exploration
Sat. Jan 17	Local Star party	Boyce Thompson Arboretum	Sunset: 5:45 PM
Sat. Jan 24	Deep Sky Star Party	Vekol Road Site	Sunset: 5:52 PM
		February Events	
Sat. Feb. 7	Adopt-A-Highway Clean-up	Florence Junction	8:00 AM ☞ Usual meeting place
Sat. Feb. 7	Beginners Lab	Dave Coshows' home	7:00 PM, Setup
Wed. Feb. 11	General Meeting	SCC - PS 172	7 :30 PM, Fr. Bill Stoeger, ☞ Cosmology, Multiverse
Fri. Feb. 13	Public Star Party	Gilbert Library	7:00 PM, Setup,
Sat. Feb. 21	Deep Sky Star Party	Vekol Road Site	Sunset: 6:18 PM
Sat. Feb. 28	Local Star Party	Boyce Thompson Arboretum	Sunset: 6:24 PM
		Upcoming Events	
Wed. March 10	General Meeting	SCC-PS 172	Fr. Chris Corbally, Know Thy ☞ Neighbors - Nearby Stars
Sat. Mar. 20	Messier Marathon	Farnsworth Ranch, ☞ Arizona City	Sunset: 6:40 PM

Mount Graham Observatory Tour

by
Bill Dellinges (Nov 2003)

On November 8th of this year, my wife Lora, and I took the last tour of the season to Mount Graham International Observatory (MGIO). At 9:30 a.m., thirteen of us were packed into a van and taken on a 45 mile, 1.5 hour journey up to the 10,500 foot level of the MGIO.

The scenery en route is gorgeous as the mountain is heavily forested. Along the way, our tour leader, "Jim", gave us the history of the mountain (maybe a bit more than we needed to know). I wish we could have taken a short break maybe half way up to stretch our legs. I think it's too much to ask of people crammed like sardines in a van to make the trip non stop (where's the suggestion box?). Because most of the road is very windy, they suggest taking Dramamine if you're prone to car sickness. I did and had no problem in that regard.

Arriving at the Large Binocular Telescope (LBT) building, we immediately were told to have lunch in the observatory's dining room. The \$25 per person tour charge included a box lunch and drink which was a nice touch. But couldn't lunch wait till after seeing the LBT? Who wants lunch at 11:30 a.m. after a tedious ride and being extricated from a sardine can?

The LBT is housed in a large square building which rotates with the scope, very much like the MMT telescope on Mount Hopkins. Likewise, the scope is a maze of girders similar to that which supported the original MMT arrangement of 6 mirrors. The two 8.4 meter, F/1 mirrors are not installed; one sits on site, the other is yet to be finished in the Roger Angel spin cast furnace in Tucson. When the system is completed in 2005, it will be the world's largest telescope (in a single building) with the light gathering power of a single 11.8 meter mirror and resolving power of a 22.8 meter mirror. It is claimed this scope will produce images ten times sharper than the Hubble Space Telescope (assuming the use of adaptive optics). It's amazing to think, while gazing upon the massive super structure of this monster, that it was built in Italy, assembled there for testing, disassembled, packed into 72 crates, shipped to Houston, driven up this mountain and reassembled here! This is Italy's 25% contribution to the cost of the project (\$120 million total, I believe). The Germans are paying for 25%, the U.S., 50%.

Next up was the Heinrich Hertz Sub-millimeter Telescope with its 10 meter dish. This "radio" telescope explores the microwave range of the spectrum and can be used both at day and night. We chatted with a young man at the computer console while rock music blared from nearby speakers.

The Vatican 1.8 meter telescope, another F/1 system, is a squat looking affair awash in wires and electronics on its business end. We were told its mirror was the first spin cast mirror made. Jim told us there are plans for 4 more telescopes on the mountain. He was very knowledgeable about the mountain and the facility-I learned a lot and enjoyed the tour...just wish I could have driven up myself. There is strict security due to the controversial establishment of MGIO here because of Red Squirrel, Indian, and forest issues. Recall too, there was serious damage done here during construction by parties unfriendly to the project.

As Safford is 130 miles southeast of Apache Junction, we chose to arrive the day before since the tour would begin so early in the morning. That evening we visited Discovery Park (entrance fee \$5), an interesting science center on the south side of town. Due to funding problems, it's only open on Fridays 6-10 pm and Saturdays 4-10 pm. Here you will find Gov Acker Observatory

with its 20" telescope (donated by Kitt Peak), astronomy museum and gift shop, a narrow gauge train offering rides, and hiking paths through a large nature area within the park. Telescope viewing is open to the public Friday and Saturday night. I recommend the space shuttle ride in the museum (\$6). This simulator will give you a remarkable ride to Pluto and back. I had a death grip on the safety bar in front of me as the machine bucked, shuttered, and accelerated at faster than light drive making stops at the planets and moons during the 20 minute ride. Pretty cool. Try not to do it on a full stomach.

To book MGIO tours, call: Discovery Park, 1651 Discovery Park Blvd., Safford, AZ 85546. (928) 428-6260 or 1-888-837-1841. www.discoverypark.com. Tours leave from the Chamber of Commerce (1-888-837-1841) in downtown Safford, not Discovery Park.

P.S. discovery Park is run by volunteers, who try to do the best they can, so be patient in making your booking. It took me a couple of tries to reach the right person(s).

More MGIO scope info:

LBT: <http://medusa.as.arizona.edu/lbtwww>

VATT: <http://clavius.as.arizona.edu/vo>

HHST: <http://Maisel.as.arizona.edu:8080>

Neighborhood Mystery

AIR FORCE DENIES STORIES OF UFO CRASH

Valles Marineris (MPI) - A spokes thing for Mars Air Force denounced as false rumors that an alien space craft crashed in the desert, outside of Ares Vallis on Friday. Appearing at a press conference today, General Rgrmmry The Lesser, stated that "the object was, in fact, a harmless high-altitude weather balloon, not an alien spacecraft".

The story broke late Friday night when a major stationed at nearby Ares Vallis Air Force Base contacted the Valles Marineris Daily Record with a story about a strange, balloon-shaped object which allegedly came down in the nearby desert, "bouncing" several times before coming to a stop, "deflating in a sudden explosion of alien gases". Minutes later, General Rgrmmry The Lesser contacted the Daily Record telepathically to contradict the earlier report.

General Rgrmmry The Lesser stated that hysterical stories of a detachable vehicle roaming across the Martian desert were blatant fiction, provoked by incidences involving swamp gas. But the general public has been slow to accept the Air Force's explanation of recent events, preferring to speculate on the "other-worldly" nature of the crash debris. Conspiracy theorists have condemned Rgrmmry's statements as evidence of "an obvious government cover-up", pointing out that Mars has no swamps.

December Classified Ads.

Free Classified Ads (Wanted & For Sale)

Noncommercial advertisements for Astronomical equipment, books, computers, or software — Wanted or For Sale — will be accepted from current EVAC members.

Ads will be run on a “space available basis” and may be edited slightly to best fit the space. Ads should consist of a brief text description and must include a current member name and an evening phone number. You may include your email address if you wish. Ads will be run until canceled or until they have appeared in three issues of the newsletter (whichever occurs first). Ads will be “tagged” with the first issue in which they appear.

Ads can be emailed to: john-cathy@cox.net
(this address may change in the future)

or send by U.S. Mail to:

EVAC PO Box 2202

Mesa, AZ 85214

Please mark the subject line of the email or the envelope, “EVAC Newsletter Ad.”

For Sale (October)

5" GOTO SCT - F/10. Less than 1 year with heavy duty tripod and NexStar goto hand-controller. I have a JMI hard case (fits in airliner carry-on), 1-1/4 diagonal, 20mm Plossl, 1x finder, batteries, bobs knobs and power cord. I paid about \$1300 with shipping and accy's. The optics are great, and the scope does a great job tracking, slewing, and centering to objects once easily aligned. Scope is literally new and used only 4 times. I'll admit to using it last month for Mars observing, and enjoyed the views at over 200x. I'll sacrifice for \$750 or make a reasonable offer.

That's a bargain!! Contact Info: Martin Bonadio (480-570-7163)


Wouldn't it be nice if there were an interesting Astronomy article or a fascinating piece of club news in this spot?

Trite though it may sound, the content and value of this newsletter is pretty much what YOU -- the members of this club -- make it.

As newsletter editor, I'm always interested in publishing your contributions. So, if you have an astronomy related article you've been intending to write “some day”, an interesting drawing or a photograph which you want to share, or even a club story or a bit of “astro humor”, please send it along. The “power of the printed page” is greatly enhanced when there are words and pictures scattered upon the vast expanse of white paper.

John Matthews

EVAC newsletter editor



Mr. Telescope

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The Backyard Astronomer

Bill Dellinges (12/03)

Televue 85 – Questar 3.5 Shootout

I thought it might be interesting to put these two telescopes up against one another. The TV85 (TV85) is an 85mm (3.3") F7 600mm focal length APO refractor. The Questar (Q) is an 89mm (3.5") F14.4 1300mm focal length Maksutov reflector. The latter has a secondary obstruction. If you do the math and subtract its area, the Questar's effective aperture is reduced to 82mm (3.22") making it actually the "smaller" of the two instruments.

Let the games begin. I will award 1 point per object for the overall best view.

Saturn: 143x. Poor seeing this night. Q image a bit soft. Cassini's Division barely seen. Can't see ring shadow on planet. TV85 gives brighter, sharper image, C. Div. also barely noticeable. Planet's shadow seen on ring. TV85 wins one point.

Jupiter: 50x. Close, but the TV85 has slightly better sharpness and contrast. TV85 wins one point.

Castor: 100x. Both scopes split this 3.8" double nicely. TV85 image has blue color fringe. Q shows no color but image not quite as sharp as TV85. One point each for effort.

Gamma Leonis (Algieba): 100x. Both scopes split this 4.4" double cleanly. Q star images mushy. Tv85 shows no color problem, sharper stars. TV85 gets one point.

Moon: 50x, 143x, 200x. Q and TV85 even at 50x. At 143x and 200x, TV85's contrast swings my vote. TV85 wins one point.

M13: 130x. Mostly a blob in both scopes. Partial resolution with averted vision. One point for both scopes.

M44: Q at 41x, 1.2o maximum field can't compete with the TV85 29x, 2.2o field which can go as big as 4.5o with a 2" 55mm eyepiece. TV85's large field advantage wins one point.

M31: Q at 41x, 1.2o field barely gets in M32 and NGC 205 satellite galaxies. TV85's 29x, 2.2o field gives more "room" around the three galaxies rendering a more pleasing view. Brightness of objects about the same. TV85 gets one point.

M45 (Pleiades): No contest. Though star images equal, the

TV85's superior wide fields frame the Seven Sisters in a way the Q can never achieve. TV85 wins another point.

May I have the envelope please -- The TV85 wins over the Questar, 9 to 2.

Other notes: 1) Though the Questar's viewfinder is a marvel of engineering, I find it very difficult to use practically in the field. The TV85's Starbeam red dot finder is much easier to use. I can find things in a second or two. With the Questar, sometimes it takes minutes for me to find stuff. That's why I put a red dot finder on it (Feb. 2002 newsletter). 2) Over the years, I've leaned more toward low focal ratios and wide fields. I think the industry is going the same way-note the trend of the classic F15 refractors getting down to F5 or 6. People want to see a bigger chunk of sky in the eyepiece. While I realize "Maks" like the Questar have an inherent high focal ratio and resulting narrow field, I think Questar is kind of stuck in a 1950's time warp. The instrument is almost exactly the same scope introduced in 1952. The above "contest" demonstrates its limitations when it comes to deep sky observing. It's a super telescope, surely. But I think best suited for planets, double stars and the moon (in my view). Insofar as the Questar's built in motor drive...yes, it's a nice amenity! Ahhh, tracking! Here the Questar has a distinct advantage over the TV85 (try observing a planet at 200x in an alt-az non tracking scope-good luck). Yes, the TV85 could be put on a driven mount, but with much added weight and mass to the system.

Nevertheless, if I had to choose between them, say to be marooned on a desert island for life, I'd choose the TV85 for its ease of use, wide fields, contrast (no secondary obstruction) and resolution.

Remembering as John Herschel said, "When an object is once discovered by a superior power, an inferior one will suffice to see it afterwards."

A newsletter without words and pictures is like a sky without stars, galaxies or planets. And Bill and Peter can't write it all!

For 2004, I encourage all of you to contribute an article, a picture, a drawing, a bit of club news or "astro humor" -- short or long -- doesn't matter -- I'll fit it into YOUR newsletter.

John Matthews
EVAC newsletter editor

East Valley Astronomy Club Membership Form

Please complete this form and return it to the club treasurer at the next club meeting OR mail to EVAC, P.O. Box 2202, Mesa, AZ 85214, with a check or money order made payable to EVAC.

IMPORTANT: ALL memberships expire on December 31, of each year.

New Member Only - select month joining:

- \$20.00 January – March
- \$15.00 April – June
- \$10.00 July – September
- \$25.00 October – December & Next Year

Membership Renewals:

- \$20.00 January – December

Name Badges:

- \$7.00 each Name: _____

Magazines: if renewal, customer # _____

(New) (Renewal)

- \$29.00 /yr Astronomy Magazine
- \$30.00 /yr Sky & Telescope

Newsletter delivery option, check one:

- Email (saves club printing & postage) U.S. Mail

Total enclosed \$

Name: _____

Address: _____

Phone # () _____

Email: _____

URL: _____

Local Star Party Sites

1: Florence Junction Site

General Information: The Florence Junction site is one of the two official sites for the East Valley Astronomy Club's Local Star Parties, typically held on the Saturday closest to Last Quarter Moon. Florence Junction offers reasonably dark skies within a short drive of most East valley locations. EVAC's Land Use Permit #26-104528 applies to this site.

Location: N 33° 14' 40" W 111° 20' 16"

2: Boyce Thompson Arboretum Site

General Information: The Boyce Thompson site is still considered the new local site. Only a few Star Party have taken place there as a second local site, although EVAC members have held Star Parties there at the request of the Arboretum on a twice yearly basis. The site has some privacy advantages over the FJ site.

Location: N 33° 16' 52" W 111° 09' 35"

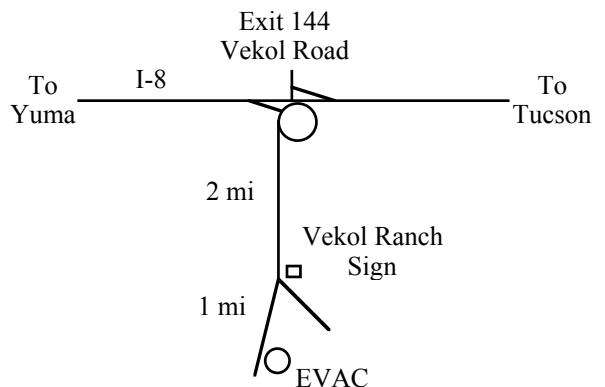
How to get there: Drive East on US 60 past Florence Junction for both sites. About 3.7 miles East of Florence Junction (after crossing railroad tracks) you will see a (second) flagpole on your right. Turning right (South) here and following the dirt road for 0.6 miles you will reach the FJ #1 site (marked by an old corral on your left). Continuing past the flagpole turn-off on US 60 and over Gonzales Pass will bring you to the Boyce Thompson Arboretum just before you enter the town of Superior. The Arboretum is marked with a large brown and white State Park Sign and there is a right turn lane.

Deep Sky Star Party: Vekol Road Site

General Information: The Vekol Road site is the official site for the East Valley Astronomy Club's Deep Sky Star Party, typically held on the Saturday closest to New Moon. Vekol Road offers dark skies despite prominent sky glow from Phoenix to the North. The site is within 90 minutes drive time from most East Valley locations.

Location: N 32° 47' 55" W 112° 15' 15"

How to get there: Take I-10 South and exit onto Maricopa Road. Continue through the town of Maricopa to SR 84, about 25 miles from I-10. Turn right on SR 84, after about 5 miles the road merges with I-8. Continue West and exit I-8 at Vekol Road-Exit #144. Turn left and cross the highway overpass. Before looping back onto I-8 take the small road (now paved) to the left. Go South for 2 miles. At the Vekol Ranch sign bear right and continue South for another mile until reaching a large open area on the left.



EVAC Officers

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East Valley Astronomy Club

EVAC Homepage: <http://www.eastvalleyastronomy.org/>

Membership & Subscriptions: \$20 per year, renewed in December. Reduced rates to *Sky & Telescope* and *Astronomy* available. Contact Stanley Bronstein. PO Box 2202 Mesa AZ 85214-2202.

Address Changes: Contact Stanley Bronstein. PO Box 2202 Mesa AZ 85214-2202

Club Meetings: Second Wednesday of every month at the Scottsdale Community College, 7:30 p.m. Meet in **either** Room PS 172 (Physical Science Bldg.) or SC 164 (Student Center Bldg.). See maps and meeting schedule on page 10. of this newsletter. •• **SAVE PAGE 10** ••

Newsletter: Email John Matthews at: john-cathy@cox.net The newsletter is mailed out the week before the monthly Club meeting. An electronic version is available in Adobe PDF format in lieu of the printed copy. Please send your contributions to John Matthews at: john-cathy@cox.net Contributions may be edited.

EVAC Library: The library contains a good assortment of books, downloaded imagery, and helpful guides. Contact Gary Finnie a: gfinnie@kam-az.com

Book Discounts: Kalmbach and Sky Publishing offer a 10% discount to EVAC members on books and other items from their catalog. When ordering, notify the person on the phone that you would like the "Club Discount." When ordering by mail, there is a line to subtract the club 10%.

EVAC Star Party Line: Let other members know in advance if you plan to attend a scheduled observing session. Contact Events Coordinator Howard Israel at (480) 893 7523).



**East Valley
Astronomy Club**

**EVAC
PO Box 2202
Mesa, AZ 85214**

**EVAC Homepage:
www.eastvalleyastronomy.org**

Reminders:

December EVAC Meeting Wednesday, Dec. 10, 2003

Location: Room PS - 172
Physical Science, (SCC) @ 7:30PM

January EVAC Meeting Wednesday, Jan. 14, 2004

Location: Room PS - 172
Physical Science, (SCC) @ 7:30PM