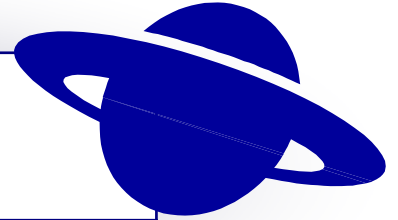


September 2005

# The Voyager



East Valley Astronomy Club

Volume 19 Issue 9

## From the Desk of the President *by Steven Aggas, 2005 EVAC President*

At the end of September EVAC will once again host the All Arizona Star Party. As an added feature this year we will have a very large canopy to provide shade and a place for people to hang out and talk astronomy with cold water available. Additionally, if you have items that you would like to sell, bring 'em, we'll have tables available for those that would like to have a small swap meet. We will also have a registration table setup so that you can get in on the door prizes. The donation of \$5 that is requested will help cover the cost of the portajohns, the canopy, as well as, getting your name in

the hat for the door prize drawing. Gwen Grace will be accepting pre-registration forms/donations at the September meeting or you can do this on Friday or Saturday of the event. We are also planning on a hot dog cookout on Saturday, Oct. 1<sup>st</sup>, so any grills would be appreciated for barbecuing. I've got some good chili I'll bring to top the dogs off with (don't worry, it's not that hot...). The door prize drawing will immediately follow the cookout and all winners must be present to win. So if you want to have fun in the Sun (and shade), come to the AASP this year! As our speaker

for the September General Assembly meeting, we will have Jon Christensen. Jon, one of EVAC's very own members, will give a presentation on his CCD equipment, the techniques he has perfected and he will show us some of his awesome images (some of them you may have seen published recently in *Astronomy* or *Sky and Telescope* magazines, and some of them will be published I'm sure).

Join us at the Southeast Regional Library (Gilbert Public Library) on Friday, September 16<sup>th</sup> at 7:30PM. The GPL is located at the Southeast corner of Greenfield and Guadalupe Roads.

## The Backyard Astronomer *Clearing the Recycle Bin by Bill Dellinges*

I wonder if I can sneak the following garbage past the newsletter editor? I have some bits and pieces concerning various astronomical/desert mischief to share with the EVAC membership.

### Grand Canyon Star Party.

I spent three nights at the GCSP on the North Rim.

For unknown reasons, Deloy and Karen Pierce, who normally anchor the star party there, were absent. However, SAC's Marge Williams did a good job spelling for them. She brought all kinds of neat things like T-shirts and pins and organized the schedule for the nightly slide show lectures. Kudos to her.

The first night was OK, but the second and third nights were cold and windy. We had about 6 scopes each night including 18" and 25" Dobs and a nice Takahashi 106 on a G-8 mount brought all the way from England. Once again I was able to split the AB pair of Nu Scorpii (1.3") with my C8 from this

*(Continued on page 2)*

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### September Events:

- *Deep Sky Star Party at Vekol Road - September 3*
- *Public Star Party in Gilbert - September 9*
- *Monthly Meeting at Southeast Regional Library - September 16*
- *Local Star Party at Boyce Thompson - September 24*
- *All-Arizona Star Party at Farnsworth Ranch - September 30 through October 1*

# The Backyard Astronomer

(Continued from page 1)

site. For some reason I can't achieve this from the PHX area. In this regard, let me report that on June 13 from my home site 5 miles east of Apache Junction, Don Wrigley's 8" Spooner Newtonian reflector not only split it but also split Xi Scorpii (AB = 0.7")! Mr. Spooner must make one heck of a mirror.

**Lowell Observatory:** I stopped here to buy a replacement T-shirt which pictures Lowell at his 24" telescope. It has been discontinued. I couldn't believe it, it was a classic. I sent them a letter expressing my disappointment in this matter.

**Eyepieces:** A club member showed me a Celestron X-Cel eyepiece (ep) he had recently purchased for the amazing price of \$64. I was impressed by its appearance and price. I was in the market for a couple of inexpensive ep's and looked into their specs. Impressive: 6 element, ED glass, 55 degree apparent field, blackened edges, fully multicoated, fold down rubber cup, rubber grip, and most important to me, 20mm of eye relief for eye glass wearers. Focal lengths are 2.3, 5, 8, 10, 12.5, 18, 21, and 25mm. Yes, the price tells you they're made in China. I bought a 12.5mm for my PST from Adorama. It had a speck of dust inside the lenses which showed a false "sunspot" on the sun. I returned it and bought another one and a 25mm from Anacortes hoping for better luck. They were fine. I'm pleased with them and thought club members might be interested in their existence as a good inexpensive way of acquiring a set of eyepieces. You could buy 3.75 of them for the price of a TeleVue Radian (though I don't know what you'd do with 0.75 of an X-cel ep).

Speaking of which, I compared their performance one night and can report the X-Cel's made a respectable showing against the Radians. The main difference I found was the Radian had superior edge performance

even with its larger apparent field of 60 degrees. But considering the price difference, the X-Cel's weren't that bad. I believe the Orion Epic series of eyepieces are the exact same except for being a different color and available in focal lengths: 3.7, 5.1, 7.5, 9.5, 12.3, 14, 18, 22mm. If you can live with a 55 degree apparent field and edge performance only slightly less than a Radian, this line may be for you.

I also tried the new Meade series 5000 26mm, a 5 element Plossl with a 60 degree apparent field. It's a beautiful looking thing with a very smooth adjustable eye relief top like Radians and Pentax XL/XW's. It screws up like the Pentax's rather than the Radian's click - stop method. It appears to perform as well as the Radian in every way except edge correction-the Radian shows a slightly less coma and further from the field center. However, note the price difference, \$100 (Meade) versus \$240 (Radian). I was alarmed by one thing about this ep. When you turn the adjustable eye relief top to extend it upwards, you can see that a grease was used to facilitate its smooth movement. It can be seen on a portion of the exposed barrel left as the assembly moves up and also inside the rising piece near the eye lens. I wouldn't think you'd want exposed grease anywhere near an eye piece, let alone on and in it. My Pentax eyepieces which also screw up to adjust eye relief do not show any type of lubricant anywhere. Their motion is both smooth and *dry*.

**Tucson Trek.** Have you ever taken the "back road" to Tucson? That is, Route 79 via Florence and Oracle? It's a most beautiful drive and welcome alternative to Interstate 10, the Highway of Death. (I'm a bit chagrined though, to see the massive development spreading around the northern side of the Catalina Mountains near Oro Valley and Catalina – a sea of red tile roofs is not what you want to see in the desert).

A special bonus for going this way is that as you enter Tucson from the north on Oracle Road, you drive right past Starizona, and I always brake for a telescope shop! Dean, the shop owner, is a friendly and knowledgeable astrophile and I enjoy our brief chats about the latest astronomical products coming out.

On this trip we decided to stay at the historical (1919) Congress Hotel in downtown Tucson. I had read about this old renovated hotel and was intrigued with the prospect of staying there. Big mistake. The train station and bus depot are half a block away – that tells you everything you need to know about the hotel's ambience; as does the shaky looking street people schlepping about. We tried two different rooms which both made me feel like the protagonist in David Lynch's "Eraserhead." It's like you went back in a time machine to 1932.

The place seems to be a magnet for the bohemian crowd who pack the hotel's surprisingly good "Cup Café" which also offers outside patio service. Though our stay was not stellar, I must say it was quite a "Twilight Zone" experience.

Off to Diamond Bell Estates between Tucson and Kitt Peak Observatory near Robles Junction on route 86. I had been here several times before checking out real estate and the night sky situation. There are about 400 one acre lots and homes here so far. Lots are priced at about \$30,000 with city water and underground electrical. The site is located on the south side of 86 on an upwards sloping ridge that must be around the 3000' level.

I had seen private observatories here before and stopped to take a picture of one when its owner came out to ask me what I was up to. For a moment I flashed on an ugly incident I found myself in last year when I stopped to take a picture of a property which resulted in the owner

(Continued on page 12)

# Star Party Guidelines

As the monsoon season subsides and we can all get back to using our telescopes again, perhaps this is a good time to review the EVAC Star Party guidelines:

Consumption of alcohol is not permitted at EVAC star parties.

Please do not litter. Please pack out all trash.

No white lights after dark; use a dim red flashlight. Also, please be aware of the light output from any laptop computer you may be using.

There is no potable water available at the sites, so bring plenty.

Please plan on arriving before dark. Many observing sites are difficult to find after dark. In addition, late arrivals can be rather disruptive to those that are already observing or taking photographs.

Most sites have a single entrance. If you are planning to leave early, please set up near the entrance to minimize the disruption when you leave. Likewise, if you are planning to stay all night, set up near the back of the site.

If you arrive late at a site, turn off your headlights and have someone guide you into the site.

If possible, don't be the last to leave. The last two people at the site should leave together to avoid the possibility of someone being stranded with a disabled vehicle.

Bring observers only. Small children and pets generally do not enjoy star parties, and can be annoying to others. Please leave them at home if at all possible.

Members are responsible for their guests. All non-members are considered invited guests, and must observe the rules.

Please keep noise to a minimum. Please be considerate of your fellow stargazers.

Have fun and enjoy the wonders of the night sky!



As you may (or may not) know, your Newsletter Editor does double-duty as the Observing Program Coordinator. In an effort to better serve the membership, I am considering making the observing programs available in popular astro software formats. If this sounds like something you may consider worthwhile, please send me an email and tell me your opinions.

I have Sky Tools 2 and Sky Map Pro 9, so I could make these formats available. Perhaps someone with Megastar could do the same. Other programs?

Send your comments to: [news@eastvalleyastronomy.org](mailto:news@eastvalleyastronomy.org)

# EVAC Properties

The club maintains a collection of items that are available for loan to members. The logistics of bringing everything to each meeting is unrealistic, so we are hereby instituting an advance registration process. Listed below are most of the items in the EVAC collection. If there is something you would like to borrow, please send an email to our Properties Director, Dave Williams. Dave will then make arrangements for you to pick up the item at the next meeting.

Dave's email address is: [properties@eastvalleyastronomy.org](mailto:properties@eastvalleyastronomy.org)

Item	Title	Topic	Author	Date
Telescope	8" Newtonian	Homemade		
Telescope	8" Newtonian	Orion Intelliscope		
Tool	Laser Collimator			
VHS	Great Courses (part 4)	Birth and Life of the Universe	Alex Fillipenko	2001
VHS	Great Courses (part 5)	A Universe of Galaxies	Alex Fillipenko	2001
DVD	Saturn: Ring World			
DVD	John Dobson on Cosmology	June 2005 EVAC Meeting	John Dobson	2005
Atlas	SkyAtlas 2000.0	Star Charts	Wil Tirion	1987
Star Chart	Philips Planisphere	Naked-eye star chart	George Phillips	1982
Book	Outlines of Astronomy	Astronomy textbook	Sir John Herschel	1867
Book	21 <sup>st</sup> Century Astronomy	Astronomy textbook	Jeff Hester	2002
Book	21 <sup>st</sup> Century Astronomy	Companion study guide	Jeff Hester	2002
Book	Guide to Stars and Planets	Stars and planets	Ridpath / Tirion	1984
Book	The Perfect Machine	Palomar telescope	Ronald Florence	1994
Book	How to Make a Telescope	ATM	Jean Texereau	1963
Book	The Astronomical Tourist	Deep sky observing	Steve Coe	2000
Book	Galaxies and the Universe	Observing guide	David Eicher	1992
Book	Stars and Galaxies	Astronomy guide	David Eicher	1992
Book	Astronomy Made Simple	Introductory astronomy	Michael Hamburg	1993
Book	Universe from Your Backyard	Deep sky object guide	David Eicher	1961
Book	The New Cosmos	Astronomy	Astronomy	1992
Book	Structure of the Universe	General astronomy	Roy / Clarke	1990
Book	Photo Guide to the Constellations	Constellation guidebook	Chris Kitchin	1998
Book	Intro Astronomy and Astrophysics	Textbook	Zelik / Smith	1987
Book	The X-Ray Universe	X-Ray Astronomy	Tucker / Giacconi	1985
Book	Lonely Hearts of the Cosmos	Secrets of the universe	Dennis Overbye	1997

# September Guest Speaker: Jon Christensen

Jon Christensen purchased his first telescope, a 60mm refractor from Kmart, in 1984 after taking a general astronomy course at A.S.U. where he learned that the universe was far more complex and interesting than he had ever imagined. He joined EVAC in 1996 after purchasing a 10 inch Newtonian scope. Like many astronomy hobbyists, he was interested in astrophotography and learned the basic techniques for film photography from reading The Backyard Astronomer's Guide by Dickinson and Dyer. After experimenting with film and digital cameras for a couple of years, Jon read Ron Wodaski's The New CCD Astronomy and proceeded to pursue CCD imaging. Jon has worked for the last 17 years in property management.



## EVAC Properties

Item	Title	Topic	Author	Date
Book	Einstein: Life and Times	Career of a genius	Ronald Clark	1972
Book	Prehistoric Astronomy of the SW	Archaeoastronomy	Malville / Putnam	1991
Book	The Astronomer's Universe	Cosmology	Herbert Friedman	1990
Book	The Universe Around Us	Modern astronomy of the day	Sir James Jeans	1929
Book	Astronomy with a Small Telescope	Beginner's handbook	James Muirden	1985
Book	Turn Left at Orion	Observing guide	Consolmagno/Davis	1989
Book	Astrophotography for the Amateur	Astrophotography	Michael Covington	1991
Book	Lightweight Giants	ATM of large telescopes	Steven Overholt	1991
Book	Mathematical Astronomy	Calculator astronomy	Aubrey Jones	1978
Book	Open and Globular Clusters	Webb Society Handbook	Kenneth Glyn-Jones	1980
Book	Planetary and Gaseous Nebulae	Webb Society Handbook	Kenneth Glyn-Jones	1979
Book	Black Holes and Baby Universes	Astronomical essays	Stephen Hawking	1993
Book	Field Guide to the Stars and Planets	General introduction	Donald H. Menzel	1964
Book	Star Ware	Astro equipment guidebook	Phil Harrington	1998
Book	From the Earth to the Universe	Textbook	Jay M. Pasachoff	1983
Book	Double Stars	Webb Society Handbook	Kenneth Glyn-Jones	1975
Book	The Southern Sky	Webb Society Handbook	Kenneth Glyn-Jones	1987
Book	Galaxies	Webb Society Handbook	Kenneth Glyn-Jones	1981
Book	Atoms of Silence	Cosmic evolution	Hubert Reeves	1984
Book	Burnham's Celestial Handbook	Andromeda through Cetus	Robert Burnham Jr.	1978
Book	Burnham's Celestial Handbook	Chameleon through Orion	Robert Burnham Jr.	1978
Book	Burnham's Celestial Handbook	Pavo through Vulpecula	Robert Burnham Jr.	1978



## Classified Advertisements

### Meade ETX-70

with Meade 9mm and 25mm eyepieces, Autostar, and flex focus. \$150.00

**Damion Pauksta (602) 240-5421**  
**damionbow@aol.com**

### NexStar 11 GPS

Carbon fiber model purchased from Astro-nomics late 2003, unused due to illness. In-cluded with all standard accessories are Feathertouch focuser, 2" AP visual back, JMI Wheely Bars with extra-large wheels and complete Celestron 'gift' set of eyepieces and filters in case. Cost well over \$3600 -- will sell for \$2000 firm. Prefer local sale.

**Norm Rubenstein (623) 322-6464**

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### Meade ETX-60AT

Excellent beginner's GoTo Scope, like new

#506 cable kit to keep Autostar controller up-to-date

Brand new #884 heavy duty tripod & carrying case

\$180,

**Bob Christ 480.505.0488 x253**

**bchrist@tolisgroup.com**

### 16" f4.5 Meade Starfinder with Equatorial Mount

Optics remounted into a new tube, built by Pierre Schwarr with a JMI focuser. Includes 7, 12.5, 17, 20, and 32mm eyepieces plus 2.8 Klee Barlow, laser collimator and an Olympus OM1 camera.

Many extras! Call or e-mail me for a list. I have \$5200 invested in this telescope package, but will sell for \$2000

**Dave Rainey 602-980-0582**

**drainey7@cox.net**

### Wanted

2" TV Everbright or equivalent quality diagonal with compression clamp. Must be in excellent condition.

Contact Silvio 480-926-8529 [silvioj@msn.com](mailto:silvioj@msn.com)

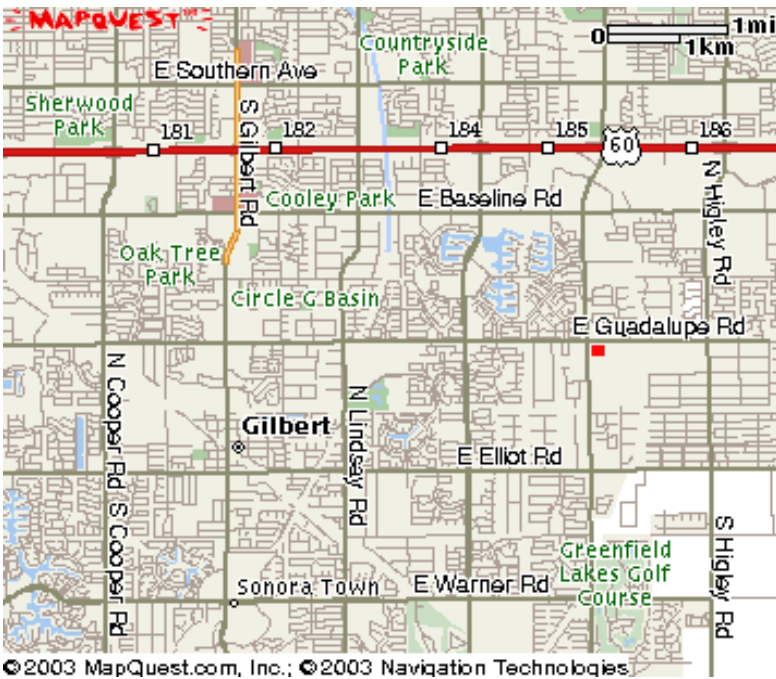
Only non-commercial advertisements for astronomical equipment will be accepted from current EVAC members. Ads will be published as space permits and may be edited. Ads should consist of a brief text description and must include a current member name and phone number. You may include your email address if you wish. Ads will be run until canceled or until they have appeared in three issues of the newsletter (whichever occurs first). Ads should be emailed to: [news@eastvalleyastronomy.org](mailto:news@eastvalleyastronomy.org)

*Support  
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dealer!*



**5201 N. Oracle Rd. Tucson, Az 85704 520-292-5010**

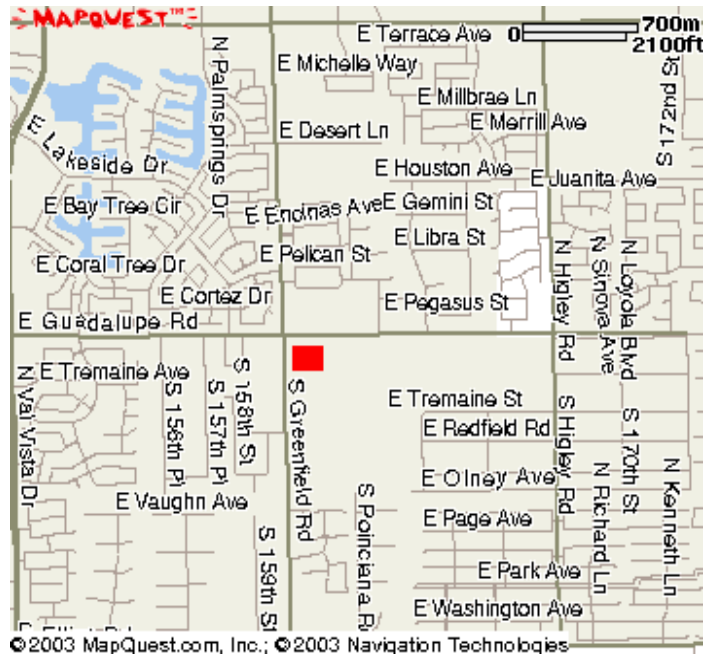
**[www.starizona.com](http://www.starizona.com)**



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 Rd., on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30pm.

Visitors are always welcome!



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



## 2005 Meeting Dates

September 16

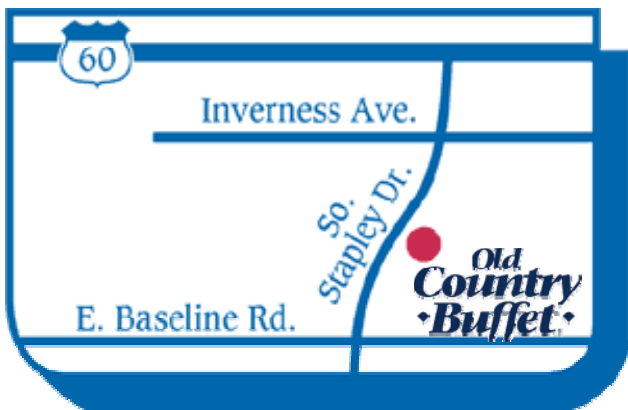
October 21

November 18

December 16

All are welcome to attend the pre-meeting dinner at 5:30 PM. We meet at **Old Country Buffet**, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, (near the Walmart Supercenter) just south of US 60.

**Old Country Buffet 1855 S. Stapley Drive in Mesa**



# September 2005

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				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	

## Schedule of Events

- September 3 - Deep Sky Star Party at Vekol Road
- September 9 - Public Star Party at Riparian Preserve in Gilbert
- September 16 - General Meeting at Southeast Regional Library in Gilbert
- September 24 - Local Star Party at Boyce Thompson Arboretum State Park
- September 30 - October 1 - All-Arizona Star Party at Farnsworth Ranch

### Minutes of August General Meeting

Meeting date: Saturday, August 20, 2005

Meeting location: Southeast Regional Library in Gilbert

The meeting was opened by President Steven Aggas. Officers and attending Board Members were: Steven Aggas, Howard Israel, Peri Cline, Gwen Grace, Randy Peterson, Dave Williams, Dave Shafer Peter Argenziano, Marty Pieczonka, Joe Goss, and John Holmquist.

Visitors and guests introduced themselves and were welcomed.

Announcements: Dave Williams, the Properties Director, has a selection from the club library available for check out. He also provided a list of all of the selections in the library and will be happy to bring requested selections to future meetings. Please see pages 4 and 5 of this issue for the list.

Win Pendleton reported that the dome for the Riparian-Rotary Observatory is being built and will be painted by member Gary Hobbs once it arrives in the Valley. Win will travel to Mississippi to see our dome being disassembled prior to shipment. Win announced an open house so that anyone interested could see the Paramount ME (German equatorial mount) that will be installed in the observatory. Directions were provided. This mount will hold the 16" Meade SCT (Schmidt-Cassegrain Telescope) planned for the observatory. The telescope will be purchased in the near future from a gentleman on the east coast - thanks to Director Chuck Crawford's lead.

Treasurers update was given by Peter Argenziano for Wayne Thomas. The main source of the club income is from memberships which are normally renewed at the end of the year and the very beginning of the year. This tends to make for an erratic balance sheet.

Recognition: Joe Goss was awarded plaques for completing the Globular Cluster and the Herschel 400 observing programs.

Howard Israel was recognized for an article in the Arizona Daily Sun.

Jon Christensen was recognized for a published photo of M31.

Ratification by the membership of the Board decision about advertising in the EVAC Newsletter and website by members only was passed.

Martin Bonadio was ratified as a Director.

Dr Jeff Hester from ASU gave a presentation entitled "Born Among Giants".



# East Valley Astronomy Club -- 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 (select according to the month you are joining the club):

- \$20.00** January through March                                       **\$15.00** April through June  
 **\$10.00** July through September                                       **\$25.00** October through December  
*Includes dues for the following year*

Renewal (current members only):

- \$20.00** January - December

Magazine Subscriptions (include renewal notices):

- \$34.00** Astronomy                                       **\$33.00** Sky & Telescope

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

Name:

Phone:

Address:

Email:

City, State, Zip:

Publish email address on website  
URL:

How would you like to receive your monthly newsletter? (choose one option):

- Electronic delivery (PDF)                                       US Mail

Areas of Interest (check all that apply):

- General Observing                       Cosmology  
 Lunar Observing                       Telescope Making  
 Planetary Observing                       Astrophotography  
 Deep Sky Observing                       Other

Please describe your astronomy equipment:

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.eastvalleyastronomy.org](http://www.eastvalleyastronomy.org)

# Liability Release Form

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In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC") I hereby affirm that my family and I agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

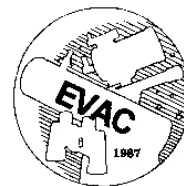
My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

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.

\_\_\_\_\_  
*Please print name here*

\_\_\_\_\_  
*Date*

\_\_\_\_\_  
*Please sign name here*



PO Box 2202  
Mesa, AZ 85214-2202  
[www.eastvalleyastronomy.org](http://www.eastvalleyastronomy.org)

## Improbable Bulls-Eye

by Dr. Tony Philips

Picture this: Eighty-eight million miles from Earth, a robot spacecraft plunges into a billowing cloud almost as wide as the planet Jupiter. It looks around. Somewhere in there, among jets of gas and dust, is an icy nugget invisible to telescopes on Earth—a 23,000 mph moving target.

The ship glides deeper into the cloud and jettisons its cargo, the “impactor.” Bulls-eye! A blinding flash, a perfect strike.

As incredible as it sounds, this really happened on the 4<sup>th</sup> of July, 2005. Gliding through the vast atmosphere of Comet Tempel 1, NASA’s Deep Impact spacecraft pinpointed the comet’s 3x7-mile wide nucleus and hit it with an 820-lb copper impactor. The resulting explosion gave scientists their first look beneath the crust of a comet.

*That’s navigation.*

Credit the JPL navigation team. By sending commands from Earth, they guided Deep Impact within sight of the comet’s core. But even greater precision would be needed to strike the comet’s spinning, oddly-shaped nucleus.

On July 3<sup>rd</sup>, a day before the strike, Deep Impact released the impactor. No dumb hunk of metal, the impactor was a spaceship in its own right, with its own camera, thrusters and computer brain. Most important of all, it had “AutoNav.”

AutoNav, short for *Autonomous Navigation*, is a computer program full of artificial intelligence. It uses a camera to see and thrusters to steer—no humans required. Keeping its “eye” on the target, AutoNav guided the impactor directly into the nucleus.

The system was developed and tested on another “Deep” spacecraft: Deep

Space 1, which flew to asteroid Braille in 1999 and Comet Borrelly in 2001. The mission of Deep Space 1 was to try out a dozen new technologies, among them an ion propulsion drive, advanced solar panels and AutoNav. AutoNav worked so well it was eventually installed on Deep Impact.

“Without AutoNav, the impactor would have completely missed the nucleus,” says JPL’s Ed Riedel, who led the development of AutoNav on Deep Space 1 and helped colleague Dan Kubitschek implement it on Deep Impact.

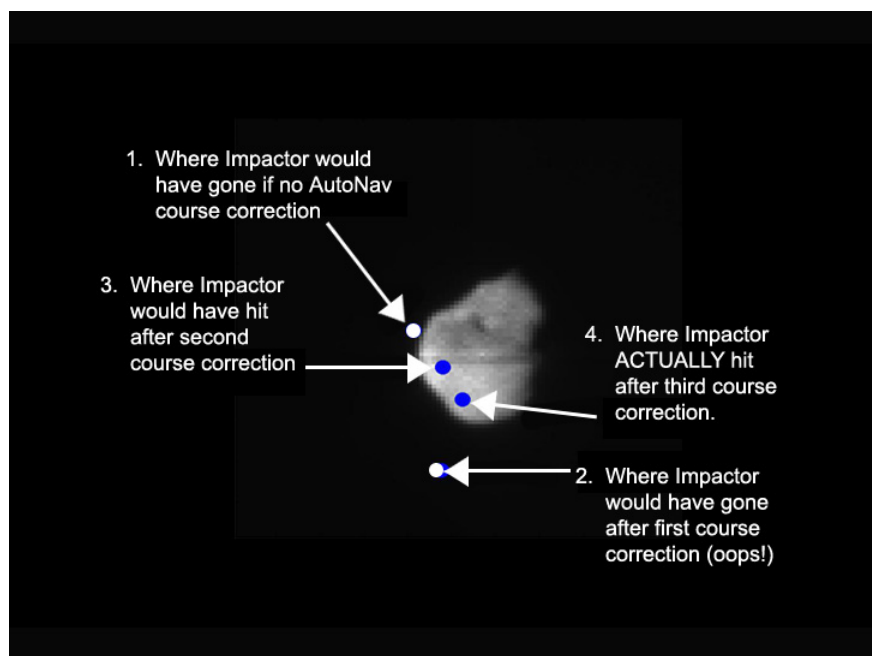
En route to the nucleus, AutoNav “executed three maneuvers to keep the impactor on course: 90, 35, and 12.5 minutes before impact,” says Riedel. The nearest human navigators were 14 light-minutes away (round trip) on Earth, too far and too slow to make those critical last-

minute changes.

Having proved itself with comets, AutoNav is ready for new challenges: moons, planets, asteroids ... wherever NASA needs an improbable bulls-eye.

Dr. Marc Rayman, project manager for Deep Space 1, describes the validation performance of AutoNav in his mission log at <http://nmp.nasa.gov/ds1/arch/mrlog13.html> (also check [mrlog24.html](http://nmp.nasa.gov/ds1/arch/mrlog24.html) and the two following). Also, for junior astronomers, the Deep Impact mission is described at <http://spaceplace.nasa.gov/en/kids/deepimpact/deepimpact.shtml>

*This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration*



*Comet Tempel 1, as seen by the Deep Impact impactor’s camera. Three last-minute AutoNav-controlled impact correction maneuvers enabled the Impactor to hit the bulls-eye.*

# If it's Clear...

by *Fulton Wright, Jr.*  
*Prescott Astronomy Club*

## September 2005

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 arc minutes in diameter. All times are Mountain Standard Time unless otherwise noted.

The season for observing Mars is coming. Here is a table to help you plan for a few months. The altitude at the best time will be about 70 degrees the whole 4 month period. (see Sky and Telescope, September 2005, p. 67 for more detail.)

DATE	BEST TIME	SIZE
Sep 1	4:30 AM	14"
Oct 1	3:15 AM	18"
Oct 30	1:00 AM	20" (closest to

earth)			
Nov 7	12:15 AM	20" (opposition)	
Dec 1	10:10 PM	17"	
Jan 1	8:15 PM	12"	

On Thursday, September 1, about 7:45 PM you can see two planets about 1 degree apart. With your unaided eye or binoculars look 10 degrees above the west-southwest horizon for bright Venus (mag -4) and dimmer Jupiter (mag -2). 5 degrees off to the left is a much dimmer star, Spica (mag 1). In the days leading up to this you can watch the pair of planets approach each other.

On Saturday, September 3, it is new Moon so you have dark skies for all night observing if you like.

On Tuesday, September 6, about 7:45 PM you can see a grouping of objects. With your unaided eye or binoculars look low in the west for Venus (mag -4), Jupiter (mag -2), Spica (mag 1), and the thin crescent Moon, all within a 5 degree circle.

On Thursday, September 15, any time in the evening, you can see the northern pole of the Moon at its best. Although the nearly full moon is not very high in the sky, it has its northern part tipped toward us by libration.

On Saturday, September 17, at 6:37 PM, the full Moon rises.

Forget the faint fuzzes tonight and check out the rays and other albedo features on the Moon.

## The Backyard Astronomer

*(Continued from page 2)*

jumping up and down on the roof of my car. But once he knew I was another stargazer, he was cordial. I was surprised to learn this fellow was none other than Ron Morales, a serious amateur astronomer who used to be a frequent contributor to Sky and Telescope. I remembered his articles from years past, so it was quite a pleasure to meet him. Ron has lived here since 1972. We chatted for about half an hour as he told me broke off his relationship with the magazine in the '90's and how his favorite telescope is his Cave 12" reflector. The late Walter Scott Houston often featured Ron's observing reports in his column. In Houston's book *Deep Sky Wonders*, there is a nice reference to Ron on page 156-157.

No, I did not go to Kitt Peak on this trip. But remember my posted question on EVAC's List group recently about where a star party site was west of Tucson? Not the Tucson club's site but another site off route 286 south of Robles Junction. I got the answer from a brochure at Stari-zona. It's the "Desert Sunset Star Party" site where on May 4<sup>th</sup> of this year they held their third annual star party at Caballo Loco RV Ranch. Directions: west on 86, south on 286 for 11.2 miles. Turn east beyond milepost 35. Drive 8 miles on dirt road. More info: [www.chartmarker.com/sunset.htm](http://www.chartmarker.com/sunset.htm). So this is the place I heard about but couldn't track down till now. Sounds like a good thing to drop in to; it must be pretty dark there. Cost: \$5 per night fee, \$10 per night dry

camping, \$15 per night full hookups. For 2006, the dates are April 26-30.

**New spectral classes:** My last item (finally) concerns this subject. Remember after "OBAFGKM" there were three more classes referred to as RNS? So the whole mnemonic was "Oh be a fine girl/guy kiss me, right now, smack. Well I knew something had changed but was having difficulty finding out what. To the rescue came S&T's 2005 May issue (p.37) on brown dwarfs. In that article it's stated the RNS classes have been dumped in exchange for two cool brown dwarf types called L and T. So it's suggested we drop "right now smack" to "lovingly tonight."

Is it hot in here?



## Why Buy a Catadioptric?

Article Courtesy of Ad-Libs Advertising, Inc. (dba Astronomics and/or Christophers, Ltd.)

Catadioptric (compound or lens/mirror combination) telescopes combine many of the best features of refractors and reflectors into one package, with few of their drawbacks.

They allow the performance of a large aperture, long focal length scope to be folded into a reasonably lightweight and transportable package – very helpful if the telescope must be taken to dark sky sites.

Because of their optical design, catadioptrics are almost completely free of the coma found in reflectors and the chromatic aberration found in refractors. Stars are essentially point-like and coma-free across the visual field of a catadioptric scope, and there's no trace of colored halos around bright stars and planets to mask faint details and colors. Some curvature of field is often visible in catadioptrics – particularly in fast focal ratio models – but it usually shows more at the edges of wide field photos than in visual observing.

The typical catadioptric fork mount cradles the telescope's short optical tube securely on two sides, reducing image-degrading vibration to a minimum. Its power-driven right ascension setting circle keeps pace with the motion of the stars, allowing the observer to find faint deep space objects by their celestial coordinates alone, without the constant manual readjusting needed with the right ascension circle of most refractor and reflector mounts. A catadioptric's slow motion controls, often not available on reflectors, makes the "fine tuning" of the telescope's position



easy. And a catadioptric's setup and takedown time is short, due to its folding tripod, lighter weight, and more compact size per inch of aperture.

The catadioptric's drawbacks? First, the cost. An 8" Schmidt-Cassegrain costs 50% to 300% more than an 8" reflector (although about the same as a 4" refractor).

Second, Schmidt-Cassegrain catadioptrics do not have as wide a contrast range on the Moon and planets as a refractor or most  $f/6$  to  $f/8$  reflectors, because of the extra light scattered by its larger secondary mirror and its multiple-element folded light path, nor will it be able to split close binary stars as cleanly. However, a Schmidt-Cassegrain will usually outperform a fast ( $f/4.5$ ) focal ratio reflector of similar aperture on the planets and binary stars due to its lack of diffrac-

tion-causing secondary mirror spider vanes. A Maksutov-Cassegrain, because it has a smaller secondary mirror obstruction, typically has better contrast than a Schmidt-Cassegrain, often rivaling that of a refractor of similar aperture.

Third, although their large apertures allow detailed deep space observing, catadioptrics generally do not have as bright an image as other scope types of similar aperture at the same power. A catadioptric can have a light transmission of 64% before secondary obstruction light losses are figured in (70% to 75% with multi-coated optics), compared with the 90% of a similar aperture multi-coated refractor and the 77% to 80% of a reflector.

Finally, because of their eyepiece location at the bottom of the optical tube, catadioptrics on German Equatorial mounts are somewhat less comfortable to use than reflectors on similar mounts – when observing at the zenith, catadioptric eyepiece will typically be at waist level, moving to normal eye level only when the scopes are pointed towards the horizon. The eyepieces of fork-mounted catadioptrics are always at more or less eye level, no matter where the scopes are pointed, and are therefore more accommodating for visual observing.

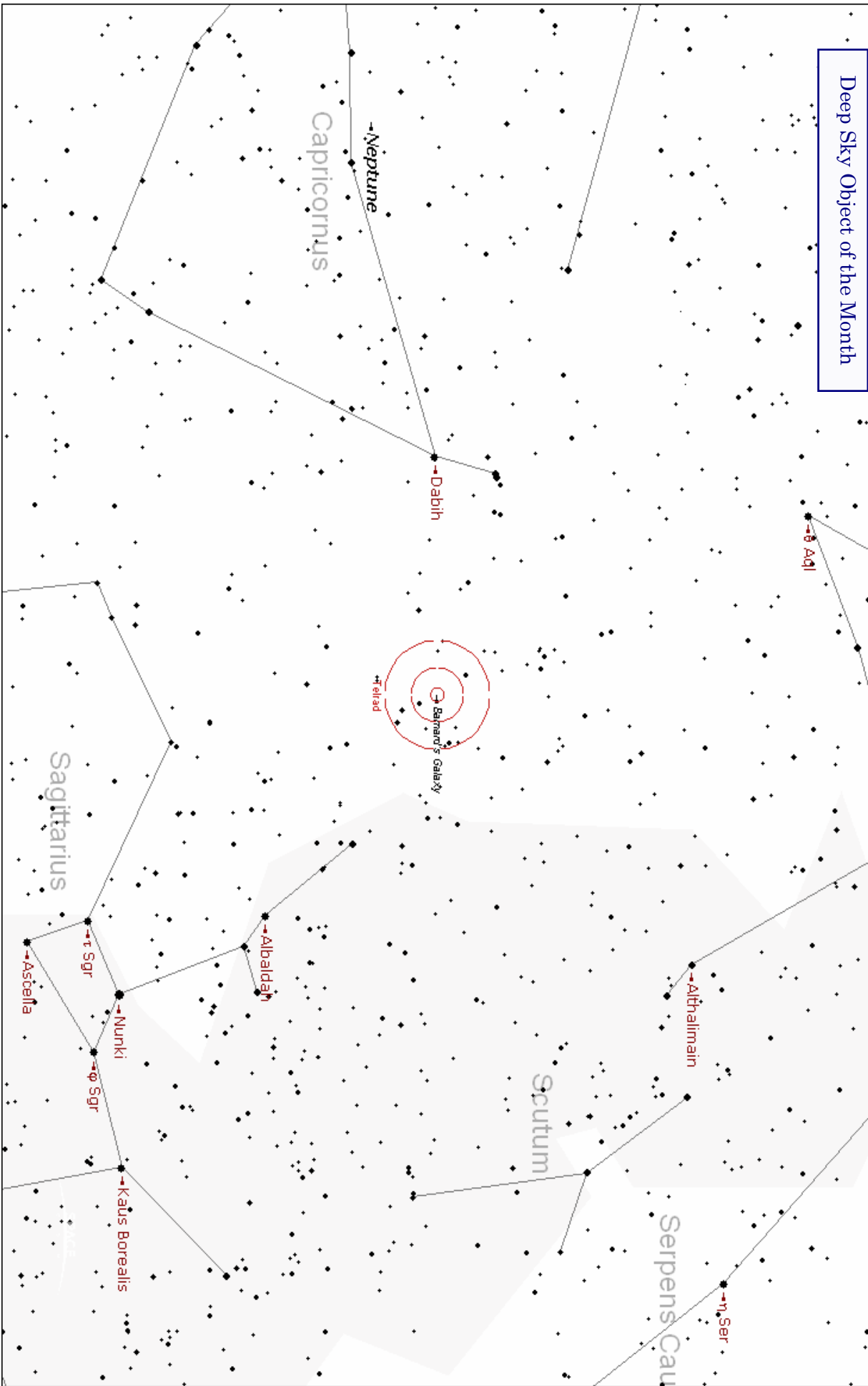
Despite these drawbacks, if it fits your budget and you need a portable scope that does it all, you would be hard-pressed to find a better all-around investment than a good catadioptric.

# All-Arizona Star Party

Friday, September 30<sup>th</sup> and Saturday, October 1<sup>st</sup>

Farnsworth Ranch - south of Arizona City

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



# NGC 6822 (Barnard's Galaxy) Irregular Galaxy in Sagittarius

Magnitude: 9.4    Size: 14'.8 x 13'.2    Mean Surface Brightness: 23.8 mag/arc-sec<sup>2</sup>  
RA 19h 44m 57.8s    Dec -14° 48' 11"    Orientation: Nearly Face-On

## Get Out the Vote (Hopefully)

It's almost that time of year again... time to elect club officers for next year.

The EVAC governing body consists of four executive offices - President, Vice President, Secretary and Treasurer - each subject to a two-year term limit. The five Directors are the voting members that enable the President's proposals to be submitted to the membership for ratification. This Board is also subject to a two-year term limit. The remaining six administrative positions do not carry term limits, rather they are filled by willing volunteers appointed by the President. These positions include Event Coordinators, Properties Director, Newsletter Editor, Webmaster and Observatory Manager.

Unfortunately there hasn't been much voting in the EVAC elections. Usually an open position receives a solitary nomination, and this person is elected by default.

Maybe this year will start a new tradition, one in which every office will be contested. Every office, with the exception of Observatory Manager which has already been appointed for 2006, may be contested. Simply announce your intention to seek office during the October nominations, and count the votes in November!

## 2005 EVAC Governing Body

Office	Officer	Eligible in 2006
President	Steven Aggas	Yes
Vice President	Howard Israel	Yes
Secretary	Peri Cline	Yes
Treasurer	Wayne Thomas	Yes
Director	Joe Goss	No
Director	Dave Shafer	No
Director	John Holmquist	Yes
Director	Chuck Crawford	Yes
Director	Martin Bonadio	Yes
Event Coordinator	Gwen Grace	No term limit
Event Coordinator	Randy Peterson	No term limit
Property Director	Dave Williams	No term limit
Webmaster	Marty Pieczonka	No term limit
Newsletter Editor	Peter Argenziano	No term limit

# Participate in Your Club!

### Star Party Disclaimer

*The East Valley Astronomy Club (EVAC) is not responsible for the property or liability of any star party participant, nor will the club be held liable for their actions or possessions. EVAC is not responsible for any vehicular damage, theft, or mechanical difficulties that may occur while attending a star party. EVAC strongly recommends adherence to the doctrine of 'safety in numbers' when it comes to remote observing sites. In the interest of safety it is recommended that you don't go to remote sites alone and that someone knows where you have gone each time you go out observing.*

The Voyager is published monthly by the East Valley Astronomy Club and made available electronically (PDF) the first week of the month. Printed copies are available at the monthly meeting.

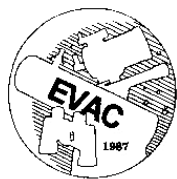
Please send your contributions, tips, suggestions and comments to the Editor (Peter Argenziano) at:

news@eastvalleyastronomy.org

Contributions may be edited.

[www.eastvalleyastronomy.org](http://www.eastvalleyastronomy.org)

**Keep Looking Up!**



East Valley Astronomy Club

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Vice President: Howard Israel

Secretary: *Peri Cline*

Treasurer: Wayne Thomas

Event Coordinators: Gwen Grace & Randy Peterson

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