

# East Valley Astronomy Club

January 2000

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

Scottsdale, Arizona

## President's Message

Written by Silvio Jaconelli

First of all I need to apologize to host Martin Bonadio for not making it to the club's annual Christmas Party - my entire family was hit with this nasty bug that has been doing the rounds and we were all bedridden or that entire weekend. My apologies, plus thanks to Martin for being such a considerate host. I can't wait until next year.....

Our December club meeting seemed to illustrate how we are victims of our success ! With such interesting speakers, various topics, new programs to explain, and a lot of 'show & tell' items, it was just not possible to fit it all into two hours (or even two and a half hours !). What I would like to do is to know the number and lengths of 'show & tells' before the meeting starts (maximum of 10 minutes per 'show & tell') and use this as a gauge as to how long to allot to the main speaker. Our club surveys show that the guest speaker is the top pick of our membership, with 'show & tell' a close second so we need to get a good balance between the two. See the notice elsewhere in Newsletter for a little more detail on this.

Finally, I am looking forward to the ASU Planetarium visit on Wed Jan 19th. There will be one showing and that will be at 7:30pm. Contact Chuck Crawford if you have not yet signed up and would like to attend. Chuck has also been filling me in on the upcoming Kitt Peak outing - this is shaping up to be a great event. And he is looking into an additional trip this summer to the VLA in New Mexico, which also sounds like a lot of fun ! I'd like to thank Chuck for his efforts here.

Until next month .....

## January Speaker

January's speaker will be club member Tom Polakis. The subject of his talk will be "Deep Sky 101." Tom will discuss equipment and techniques used to make deep-sky observing the most rewarding experience possible.

Tom Polakis has been an active amateur astronomer for 25 years, the past 5 of which he has spent in Arizona. While he enjoys astrophotography, CCD imaging, and many other astronomical topics, his area of special interest is deep-sky observing his "Celestial Portraits" feature discussing deep-sky objects visible in each constellation appears regularly in Astronomy magazine."

<b>EVAC &amp; Other Events: 2000</b>					
	New Moon	Meet	Local	Deep Sky	Other
Jan	6 <sup>th</sup>	12 <sup>th</sup>	1 <sup>st</sup> , 29 <sup>th</sup>	8 <sup>th</sup>	1/9 Beg. Lab 1/10 Board Mtg. 1/19 Planet. Show 1/20 Lunar Eclipse
Feb	5 <sup>th</sup>	9 <sup>th</sup>	26 <sup>th</sup>	5 <sup>th</sup>	
Mar	6 <sup>th</sup>	8 <sup>th</sup>	25 <sup>th</sup>	4 <sup>th</sup>	Texas Star Party
Apr	4 <sup>th</sup>	12 <sup>th</sup>	29 <sup>th</sup>	1 <sup>st</sup>	Messier Marathon
May	3 <sup>rd</sup>	10 <sup>th</sup>	27 <sup>th</sup>	6 <sup>th</sup>	5/13 Kitt Peak Tour
Jun	2 <sup>nd</sup>	14 <sup>th</sup>	24 <sup>th</sup>	3 <sup>rd</sup>	6/3 - 6/10 Grand Canyon Star Party
July	1 <sup>st</sup> , 30 <sup>th</sup>	12 <sup>th</sup>	22 <sup>nd</sup>	1 <sup>st</sup> , 29 <sup>th</sup>	Universe '00
Aug	29 <sup>th</sup>	9 <sup>th</sup>	19 <sup>th</sup>	26 <sup>th</sup>	Stellafane
Sep	27 <sup>th</sup>	13 <sup>th</sup>	23 <sup>rd</sup>	30 <sup>th</sup>	N.AZ Star Party
Oct	27 <sup>th</sup>	11 <sup>th</sup>	21 <sup>st</sup>	NA	10/7 Lowell Tour 10/28 All-AZ Star Party
Nov	25 <sup>th</sup>	8 <sup>th</sup>	18 <sup>th</sup>	NA	Elections
Dec	25 <sup>th</sup>	13 <sup>th</sup>	16 <sup>th</sup>	23 <sup>rd</sup>	Christmas Party

# 'Show and Tell' Guidelines

Written by Silvio Jaconelli

In order to better regulate the use of our two-hour allotment at our monthly club meetings, the President is asking that all 'show & tells' be made known to him anytime up to the start of the meeting at 7:30pm. He can be reached by 'phone at 602-244-4699 (leave voice mail if need be), by email (s.jaconelli@onsemi.com) or in person anytime up to 7:30pm on the evening of the meeting. Please simply specify the time required, up to a maximum of 10 minutes. If the number of 'show & tells' becomes too large, they will be done in the order that the notifications were given to the President. Any overspill will automatically receive priority at the following monthly meeting. Members are encouraged to contribute 'show & tell' slots as these are of great interest to the general membership.

# A Report on the Xmas Party

Written by Ken Levy and Martin Bonadio

There was warm friendship, great food & drink. During the evening Martin set up his 10" telescope for great looks at Venus, Jupiter, Saturn, and a fantastic look at the Moon. For those of us that lingered on, Martin played a DVD version of Armageddon. I went home barefooted because it blew my socks off. Thanks Martin, it was extraordinary.

This year's Christmas party was a great success. About 30 club members came all bearing wonderful dishes (since this was a potluck). There was plenty to talk as we reflected on our astronomical experiences from the year, and talked about those great new scopes and other goodies we expected for Christmas in the days following.

The highlight of the evening was an interesting white-elephant gift exchange. Among the prizes were tea bags, earrings, and a great stepladder kit designed by one of the members!! Kudos!! It was a lot of fun...

# EVAC Meeting Highlights

Tom Polakis ([polakis@sprintmail.com](mailto:polakis@sprintmail.com))

December 8, 1999: The October meeting was attended by a full house of 75 people. After visitor and Board member introductions, President Silvio Jaconelli announced upcoming events.

Vice-President Chuck Crawford is setting up a planetarium visit at ASU. For more information, call Chuck at (480) 985-8824. He also is organizing club field trips to Kitt Peak National Observatory in May and Lowell Observatory in October. Silvio announced that he will be holding a beginners' lab at his house on January 9 from 4 to 8 p.m.

Sam Herchak showed a videotape of a Channel 12 story about EVAC members' issue with Home Base of their selling illegal Mercury vapor lamps. Floor announcements were next. Anne Beeby mentioned that the City of Mesa would shield lights that shine into your yard. Pedro Jane' encouraged members to pick up a copy of the Sate Land Permit for the Florence Junction site. Diana Jane' said that they need more orders for EVAC shirts. They have 4, and need 12. Treasurer Dee Ann Zacher indicated that Astronomy's 2000 calendars are available.

The main speaker for the evening was ASU's Dr. Jack Farmer. His presentation was about the search for life on Mars. Dr. Farmer is the leader of NASA's astrobiology program. After giving an overview of the features of Mars, he discussed the possible existence of subsurface water on the planet. Recent studies conclude the large northern plains could have once been an ocean. Given the robust nature of microbial life, Mars could harbor this form of life. A 2005 sample return mission is still on the boards.

Club member presentations followed. Tom Polakis showed photographs he took of the transit of Mercury, the nova in Aquila, and the appearance of Mercury in the morning sky. Joe Orman presented a slide show that included pictures of the moon from the city, constellations, and Leonid meteors. Chris Schur discussed his most recent astrophotographic technique of luminosity unsharp masking. By blending 7 exposures of M31, he was able to capture the outer regions and usually overexposed core in one image. The meeting was terminated abruptly at 10:00.

# Planetarium Show - January 19, 2000

Arranged by Chuck Crawford

I have 39 members signed up for the show. Because we have not gone over the 50 seating capacity there will be one show at 7:30pm. There is still some room for a few more to attend (10 in fact) so anyone still interested and not signed up may do so first come first serve at the January general meeting or by calling Chuck at 480-985-8824.

**Note:** If for some reason you arrive just after the group has left, the planetarium is located in the B wing of Bateman Physical Science Center, on the south side of University Drive, just east of the Palm Walk pedestrian bridge. (Warning: once the show starts there is no admittance inside the planetarium.)

## Directions

Take University Drive west, cross Rural and then over the railroad tracks. Turn right at the first light after passing under the pedestrian overpass (looks like an arch), this right turn puts you on College Ave. Park in the visitor's parking lot on the right-hand corner. This unfortunately is a fee parking area. Walk over the pedestrian bridge and wait as a group until the director meets us at the south side of the bridge very close to 7:30. He will take us as a group to the facility.

# Kit Peak Tour - May 13, 2000

Arranged by Chuck Crawford

It is time to make reservations for the upcoming tour of Kitt Peak. The charter bus companies tell me May is one of their busy times so we must act fairly fast in reserving a bus for that date. Therefore I ask that those who plan on attending this event make their reservation as early as possible either by signing up at the January

meeting or by contacting me at 480-985-8824 or email [astroc@ionet.net](mailto:astroc@ionet.net). The transportation cost per person is \$ 20 and all checks should be made payable to the East Valley Astronomy Club. Please note on the check "Kitt Peak tour".

You will need individual finances for any tour fee at Kitt, if assessed (unknown at this time), and food. Paul Scowen, astronomer at ASU, has agreed to accompany us, and possibly a colleague of his so the possibility of a more complete tour than the norm is very real. More on that later as details he is working on are completed.

This should be a very enlightening experience for everyone and a fun time. I urge all who are interested to plan to participate in this our first outing. Planned for October 7, 2000 is the tour of Lowell Observatory and Meteor Crater. I am also checking on the possibility of

a tour in mid-summer, if we can brave the heat, of the Very Large Array in New Mexico. If this would be of interest to the members please let me know by email ([astroc@ionet.net](mailto:astroc@ionet.net)) or at the meeting in January.

We plan on leaving the Scottsdale CC east parking lot at no later than 8:00 AM by bus that morning make a stop along the way for early lunch, brunch or whatever and then arrive at Kitt well before noon. The tour will probably be completed before dusk and on the way back make a stop for dinner. Arrival back at Scottsdale should be around 8:00 PM that evening.

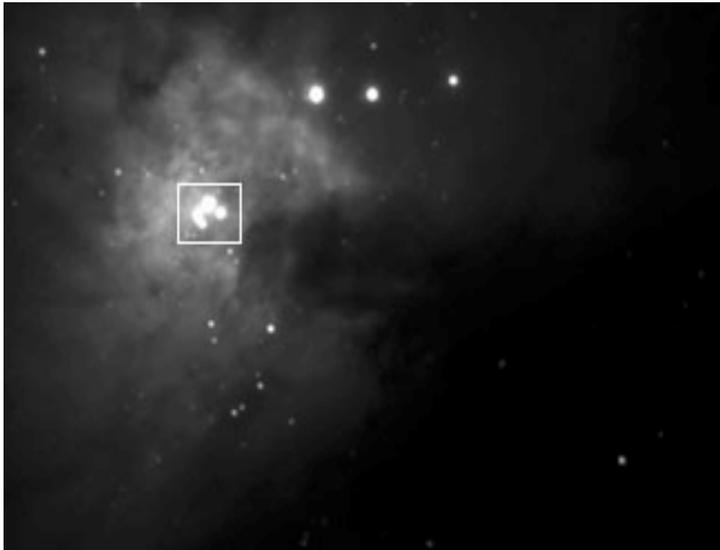
# Stars of the Trapezium

Written by Martin Bonadio ([mabastro@aol.com](mailto:mabastro@aol.com))

Many of us EVAC members have taken the time to look at the Great Orion Nebula (M42). Located about 1600 light years away it's one of the most fascinating objects to see in an amateur instrument. In fact it's so bright that it is easily observable from an urban backyard with even the smallest telescopes (and a decent pair of binoculars too).

However, some of you might not be aware that buried inside this gem is another treasure: "The Trapezium". Also known as Theta Orionis, this object is a small cluster of stars located right in the heart of the Nebula itself. In fact most of the ionizing radiation

for this part of the nebula comes from the hottest of these stars. This is what is responsible for making M42 such a great target for us here on Earth.

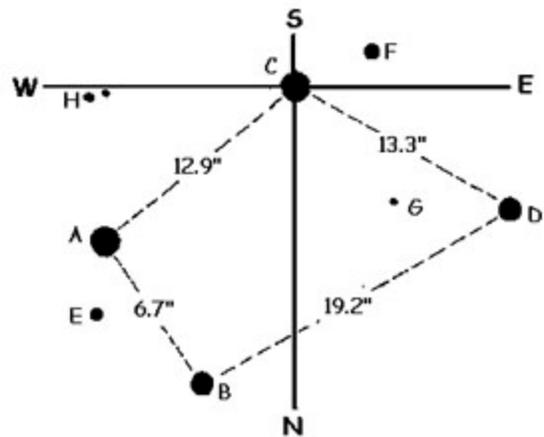


*The Trapezium is located in the heart of the Great Nebula of Orion (M42).*

With an instrument as small as 3" you can easily make out 4 stars there (seen in the photo above). These are labeled components A - D. They form the asterism of a small "trapezium" shape (hence the name it is given). However, with steady seeing and a larger instrument even more detail can be found here. Star A is also identified as a variable (eclipsing binary) with a period of 65.432 days. (Burnham's Celestial Handbook, V2, p1327). So watch for the change over the period.

*There are actually 8 components of varying magnitude:*

COMPONENT	MAGNITUDE
A	6.7 - 7.7
B	6.4
C	5.4
D	6.3
E	11
F	11
G	16
H	16,16



*A chart showing the "Trapezium" and the locations of the A-H components.*

The E and F components are a great observational challenge for amateur astronomers and are perfect for judging the quality of the "seeing" as well as the optical quality of your telescope. They can typically be observed with an aperture of 4-6 inches on nights of very good seeing. For larger scopes (10" of aperture or more) seeing becomes less of an issue making them an easier target. The E component is located about 4 arc-seconds from A, while F is about 4 arc-seconds from C.

G and H are a more interesting challenge and are generally reserved for those with CCD cameras and or astro-photo equipment. Unfortunately, both of these dim stars may be out of reach for many amateur instruments. The H component itself is actually a double with a 1.3 arc-second separation. Atmospheric seeing generally causes these two fainter stars to become part of a blob of the brighter stars. However, the task is not impossible

Personally, I've only been able to account for seeing thru the E component. I believe I've been vaguely seen F on recent night of good seeing using my 13.25" Dobsonian, but I'm not recording it in my logbook just yet. A closer look is in order very soon!! I'd be interested in hearing your testimonials if you'll share them with me. How many have you seen? Any good photos? Happy observing...

For more information on the Trapezium region please visit this website:

[http://seds.lpl.arizona.edu/messier/more/m042\\_hst3.html](http://seds.lpl.arizona.edu/messier/more/m042_hst3.html)

# If It's Clear...

by Fulton Wright, Jr.  
Prescott Astronomy Club  
for January 2000

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

On Sunday, January 2, after 11:30 PM you can see several events of Jupiter's moons in quick succession. Here is the schedule:

- 11:41 PM Europa appears from behind Jupiter
- 11:48 PM Europa disappears in Jupiter's shadow
- 11:52 PM Io, on the other side, disappears behind Jupiter

On Tuesday, January 4, after 6:15 PM you can see several events of Jupiter's moons. Here is the schedule:

- 6:20 PM Io disappears behind Jupiter (celestial west)
- 6:29 PM Europa emerges from in front of Jupiter (west)
- 6:34 PM Europa's shadow falls on the other side of Jupiter (east)
- 6:48 PM Ganymede appears out of Jupiter's shadow (off to east)

On Tuesday, January 11, in the first half of the evening you can see lots of events of Jupiter's moons. Here is the schedule:

- 6:31 PM Europa moves in front of Jupiter (3 satellites show)
- 8:13 PM Io disappears behind Jupiter (2 show)
- 8:46 PM Ganymede disappears in Jupiter's shadow (1 shows)
- 9:03 PM Europa emerges from in front of Jupiter (2 show)
- 9:10 PM Europa's shadow falls on Jupiter (still 2)
- 10:50 PM Ganymede emerges from Jupiter's shadow (3 show)
- 11:39 PM Europa's shadow leaves Jupiter (still 3)
- 11:44 PM Io emerges from Jupiter's shadow (all 4 show)

On Thursday, January 13, after 6 PM you can see two of Jupiter's satellites appear out of thin air on the celestial east side of the planet. Here is the schedule:

- 6:13 PM Io emerges from Jupiter's shadow
- 6:20 PM Europa emerges from Jupiter's shadow

On Wednesday, January 19, about 7:15 PM, you can see the Moon occult 2 stars at almost the same time. The nearly full Moon will move in front of Zeta Gemini (mag 4) and SAO 79030 (mag 8, less than 2 arc minutes north) between 7:14 and 7:15 as seen from Prescott. The time shouldn't be much different anywhere in Arizona. The glare from the Moon will make it hard to see the dim star without a fairly big telescope.

On Thursday, January 20, from 8 to 11 PM (convenient) you can see an eclipse of the Moon. Here is the schedule of events:

- 7:03 PM Moon starts into penumbra (unobservable)
- 8:01 PM Moon starts into umbra (partial phase starts)
- 9:05 PM Moon completely in umbra (total phase starts)
- 10:22 PM Moon starts out of umbra (total phase ends)
- 11:25 PM Moon leaves umbra (partial phase ends)
- 12:24 AM Moon leaves penumbra (unobservable)

## 2000: A Year of Sky Events

Written by Joe Orman

Mark your calendar for these interesting planetary alignments & conjunctions in the year 2000. Times are calculated for central Arizona; other locations may differ slightly. Some will be easy to see & photograph, some very challenging -- take a look!

- **January 10** (evening): Crescent moon & Mars 4 degrees apart in SW after sunset.
- **January 20** (evening): Total lunar eclipse, 8:04 - 11:26pm MST (totality 9:06 - 10:23pm MST) high in ESE.
- **February 2** (morning): Venus & thin crescent moon 0.7 degrees apart, in SE before sunrise.
- **February 6** (evening): Thin crescent moon & Mercury 2 1/2 degrees apart, low in WSW after sunset.

- **February 22** (morning): Neptune (mag +8) 1/2 degrees above Venus (mag -4), very low in ESE before sunrise. May be difficult to see.
- **March 3 & 4** (mornings): Venus (mag -4) & Uranus (mag +6) 2/3 degree apart, very low in ESE before sunrise. May be difficult to see.
- **March 7-10** (evenings): Moon-Mars-Jupiter-Saturn alignment, in W after sunset.
- **March 15 & 16** (mornings): Mercury & Venus 2 degrees apart, very low in ESE before sunrise. May be difficult to see.
- **April 5-15** (evenings): Jupiter-Mars-Saturn close grouping, in W after sunset. Mars & Jupiter 1 degree apart on April 5, Mars & Saturn 2 degrees apart on April 15. Crescent moon next to Saturn on April 6.
- **April 28** (morning): Venus & Mercury 0.3 degrees apart, rising 25 minutes before sunrise. Too close to sun to see?
- **May 17** (morning): Jupiter-Venus conjunction, 0.03 degrees apart at sunrise, but only 3 degrees above horizon and 7 degrees from sun. Too close to sun to see?
- **May 18** (evening): Mars & Mercury 1 degree apart, very low in WNW after sunset. May be difficult to see.
- **May 28** (morning): Jupiter-Saturn conjunction, 1 degree apart, rising 40 minutes before sunrise, only 15 degrees from sun. Too close to sun to see?
- **May 31** (morning): Jupiter-Saturn-Moon arrangement, planets 1.4 degrees apart, 2 degrees above horizon 40 minutes before sunrise, with moon 10 degrees to upper right. May be difficult to see.
- **June 8** (morning): Jupiter-Saturn horizontal arrangement, 1.5 degrees apart, 7 degrees above ENE horizon 40 minutes before sunrise.
- **June 28** (morning): Jupiter-Saturn-Moon arrangement, planets 3 degrees apart, 20 degrees above horizon 45 minutes before sunrise, with moon 7 degrees to upper right.
- **July 16** (morning): Partially eclipsed moon sets in WSW at sunrise.
- **July 29** (morning): Thin crescent moon & Mercury 2 degrees apart, low in ENE before dawn.
- **July 31** (evening): Venus & thin crescent moon (24 hrs old) almost touching, very low in WNW after sunset. Grazing occultation for some locations in NW Arizona. May be difficult to see.
- **August 10** (morning): Mars & Mercury only 5 arc minutes apart, very low in ENE before dawn. May be difficult to see.
- **September 27** (evening): Mercury 5 degrees to lower right of Venus, low in WSW after sunset. May be difficult to see.
- **November 24** (morning): Thin crescent moon & Mercury 3 degrees apart, low in ESE before sunrise.
- **December 11** (evening): Venus (mag -4) & Neptune (mag +8) 2 degrees apart, in SW after sunset.
- **December 23** (evening): Venus (mag -4) & Uranus (mag +6) 1 degree apart, in SW after sunset.

# Backyard Observing

Written by Silvio Jaconelli

We are three or four months away from Messier marathon season, and with my penchant for backyard observing I am taking upon myself the challenge of observing all the Messier objects from my light-polluted suburban backyard.

I intend to observe between fifteen and twenty objects per month over the next five to six months, dictated in most part by the observation of the horizon from the town-home sub-division that I live in; I have a fairly good view looking from north-east to due south, twenty degrees above the horizon, so it will be interesting to see how many objects I can pick up during this six month period. The biggest obstacle that I will face will be the suburban sky glow - I

estimate that on an average night the sky will glow at around 11th magnitude so extended objects with magnitudes higher than 8th magnitude may be difficult to see.

Between cold fronts on Dec 7th I set up a 6" f/8 telescope in my backyard and began phase one of the Great Messier Backyard Challenge!! I knew before I started that this was going to be a tough evening – it was one of those cold humid nights with a lot of sky-glow, and I was using only 6" of aperture. Navigation would be tough due to the limiting magnitude of around 3 to 4. If I could hit all my targets tonight, then the rest of the Messier objects would be easy. My arsenal included a good star atlas and binoculars, plus Uranometria 2000 for those real tough dim extended objects. To get me off to a quick start I began with some real easy targets:

- **M57** - This is the famous Ring Nebula in Lyra, magnitude 9. Although not visible in binoculars, this one is very easy to find due to its location right between the two base stars of the Lyra parallelogram. It was very faint at 130 power - the fact that it was setting into the Phoenix light cone didn't help - but still recognizable. Total time – 5 minutes.
- **M36 M37 M38** - These are the three 6th magnitude open clusters in Auriga are all visible through 7x50 binoculars. Not being a fan of finder scopes, I employ a technique of looking through my Telrad with binoculars thereby simultaneously getting the binocular bright erect images and the Telrad bull's-eye pattern. It really works for me ! All three are obvious at 40 power. Total time - 10 minutes.
- **M42 and M43** - M42 is the 5th magnitude Orion Nebula and M43 is its 8<sup>th</sup> magnitude comma-shaped companion just off the southern edge. I rate these as naked eye objects. Real easy. Again, 40 power was more than adequate. Total time - 3 minutes.
- **M45** - This is better known as the Pleiades, or Seven Sisters. Also a naked eye object at magnitude 1, and very obvious at 40 power. Total time - 3 minutes.
- **M31 and M32** - M31 is the famous Andromeda Galaxy with a brightness of 4th magnitude, and a naked eye object from a dark sky site and easily visible in binoculars in town. Magnification of 40 power was all that this one needed, and by panning less than half a degree away I found the bright knot of 9th magnitude M32 looking just like an out of focus star. Total time - 5 minutes.

By now I was approximately 30 minutes into the marathon and had already observed 9 objects. But that was the easy stuff. Now it began to get tougher!!!

- **M74** - 10th magnitude galaxy in Pisces; I needed to use Uranometria 2000 to spot this one - after carefully checking the background star field to ensure that I was in the right place, I had to rock the scope back and forth in order to detect the faint glow from this object. Magnification was 40 power - higher power just spread what contrast there was over too great an area. Total time - 15 minutes.
- **M77** - 9th magnitude galaxy in Cetus; again I needed to use Uranometria 2000 to spot this one. It was visible at 40 power, but better at 130 power. Just as tough as M74 to spot. Total time – 20 minutes.
- **M34** - This is a 5th magnitude open cluster in Perseus, easily visible in 7x50 binoculars was very pretty at 40 power. This cluster spans about half a degree. Total time - 10 minutes.
- **M79** - 8th magnitude globular cluster in Lepus, south of Orion. This was about 25 degrees above the horizon when I observed this - not the best of locations. It was just visible at 40 power, and at 130 power the object was bigger but no detail was seen. I am sure that this will look much better at zenith. Total time - 5 minutes.
- **M78** - This is an 8th magnitude reflection nebula in Orion, and the same atmospheric extinction played havoc with this object as it did to M79. I had to star hop to it and I knew that I was there only because of the two 10th magnitude 'eyes' that are imbedded in the nebula. This one is better saved for the zenith. Total time - 5 minutes.
- **M1** - The famous (but disappointing) 8th magnitude Crab Nebula. I have never seen much detail in this nebula in any scope (- probably more a comment on my eyesight than on the object!). This was barely visible at 40 power and invisible at 130 power. Total time - 10 minutes.

The next three targets could NOT be spotted; they were extended objects with dimmer magnitudes - spreading the light from these objects over an extended area just caused them to merge into the background sky glow. I know that I was in the right part of the sky for all of them because I checked the surrounding star fields and got positive matches on all of them. I don't know if more aperture would have helped, but I do intend to try for these again when the

sky is darker. And I do intend to stay with the 6" aperture.

- **M33** - Triangulum galaxy; although this is 6th magnitude, all of this brightness is spread over a couple of degrees. I knew I was right on it but I just could not see it, no matter what magnification I tried. Total time - 15 minutes.
- **M110** - 9th magnitude companion galaxy to M31. I spent 15 minutes looking for this but to no avail, just like M33.
- **M76** - This is the 10th magnitude 'Little Dumbbell' planetary nebula in Perseus and I spent 20 minutes looking for this one before giving up. Nebula filters just did not help at all.

Not bad for 6" aperture from my light polluted sky on an evening of poor transparency! Well, more next month! ...

## New Members

During the month of December, the club gained 9 new members, which exceeded the number of new members joining the club in both October (2) and November (7). EVAC would like to welcome the following new members:

David Coshov	Jim & Carole Kemp
Robert Lillquist	John & Cathy Matthews
Gregory Meyers	Larry Smith
Matthew Stephenson	

Thank you all for joining the club. Please feel welcome to contact any of the officers with questions that you might have

## The Treasury Pen

By Dee Ann Zacher

**Month At-A-Glance:** December was an exceptionally busy month for me with the following: 23 member renewals, 9 new members, 14 Astronomy Calendars, 6 badges, 9 Sky & Telescope subscriptions, and 6 Astronomy magazine subscriptions. Member Renewals dropped from last month by one - New members exceeded last month by two - Sky & Telescope and Astronomy subscriptions also exceed last month by five and one respectfully.

**Membership Renewals:** January will be the last month a reminder will be published in the newsletter, letting everyone know that ALL memberships expire at the end of December. For those who have not renewed yet, please fill out a membership form and send it along with a check for \$20.00 to:

Dee Ann Zacher  
2143 E. Farmdale  
Mesa, AZ 85204

Membership forms are required with submission of renewals. Several club officers use them to update the membership database and welcome our new members. Magazine subscription renewals also require the renewal notice sent by the magazine.

**Astronomy Calendars:** The Y2K Astronomy Calendars have arrived! Please see me at the next club meeting to purchase one...they are going fast. Calendars are being sold for \$7.00 dollars each, and are sold on a first come first serve basis. Those calendars paid for in advance will be held for the purchaser.

## NASA News

Compiled by Tom Mozdzen

**NASA Reorganizes:** Just days before the opening of a new millennium, NASA launched a sweeping management reorganization Monday that aims to chart the course for agency troops at the Kennedy Space Center (KSC) in the 21st century.

Top priority: Raising NASA's International Space Station, a \$60 billion outpost now being built in concert with space agencies in Canada, Europe, Japan and Brazil. A close second: Developing new technologies needed to dramatically reduce astronomically high launch costs, while opening up the space frontier to private enterprise. "Right now, Job One is to get the station built," KSC Director Roy Bridges said in an interview with [www.space.com](http://www.space.com).

"We are very busy in the human space flight arena trying to get the station built. It is probably the toughest job NASA has ever taken on. Some people claim it was going to the moon. But I will tell you that building this station with 16 other nations is a darn tough job," he said.

Equally important, though, is assigning NASA's 1,665-person civil service work force in Florida to

develop new space transportation and spaceport technologies that will radically cut the cost of launching people and cargo into orbit. Doing so, Bridges said, will go a long way toward opening up the space arena to private companies and, eventually, you and your next-door neighbor. "This just sums it up: There is a top-level NASA strategic goal to increase safety and reduce costs several orders of magnitude in order to enable an expansion in the commercial market -- the so-called space tourism market -- where we have hotels in orbit and we use inexpensive space transportation to get people to and from them," Bridges said. "And to do that, we have got to play our role better than we have in the past, and that's really what this reorganization is all about."

### **Hubble Repair Mission Going Well:**

Astronauts aboard the shuttle Discovery have replaced the central computer of the Hubble telescope during a seven-hour space walk. British-born Michael Foale and Swiss Claude Nicollier carried out the delicate operation as they flew over Australia at an altitude of about 600km (360 miles).

The Hubble's ageing "brain" was replaced with one with three linked Intel 486 microprocessors, which will perform 20 times faster with six times more memory than its predecessor. A quick electrical check showed that all the connections were good. "The Hubble not only has new brains, it's thinking," Mission Control told the crew.

**Marathon walk:** The two astronauts were also replacing three fine guidance sensors, which point the Hubble precisely toward phenomenon it is observing. The space walk is the second of three scheduled by Nasa to repair the telescope, which shut itself down in November. US Discovery colleagues Steve Smith and John Grunsfeld completed an eight-hour marathon to replace the telescope's navigational system late on Wednesday. Stubborn bolts and a storage lid that would not shut meant their walk lasted more than eight hours - two hours longer than planned - and became the second-longest in Nasa history. They plan to go back out again on Friday to install a new radio transmitter and data recorder, as well as steel covers to protect the telescope from damaging solar rays.

**'Christmas gift':** A fourth scheduled space walk was cancelled after delays in Discovery's launch, because Nasa is determined to have the shuttle back on the ground before Millennium Eve to avoid the risk of any potential Y2K computer problems. If all goes well, Hubble will be released from Discovery's grip on Christmas Day - Nasa calls it a gift to the world's astronomers. The current servicing mission, STS-103, is the third in a series of five planned maintenance

expeditions before Hubble's retirement, scheduled for 2010.

# The Debate!

Compiled By Martin Bonadio

An interesting technical question was raised and debated throughout the month by a few of us in the club (actually it seemed to be mostly between Silvio and myself). I kept a log of all the responses and thought the rest of the club would enjoy following through all the testimony. Do you have anything to add?? Opinions?

**1st message: Silvio Jaconelli suggests:** Frank Kraljic was over at my place to view the recent Mercury transit and we got into a 'discussion' as to whether a solar eclipse really is an eclipse, or whether it is really an occultation of the sun by the Moon.

**2nd message: Martin Bonadio writes:** I thought I would add some fuel to the fire and see if I couldn't put this hot debate to bed. I took this passage directly from the book: Telescopes and Techniques from C.A. Kitchin. Pages 95, 96:

*"An eclipse occurs when the two objects are of \*comparable angular size\*, for example the Sun and Moon, two of Jupiter's Galilean satellites, or two stars in a binary system. An occultation occurs when an object of much \*larger angular size\* passes in front of one that is angularly smaller, such as the moon in front of a star. A \*angular size\* passes in front of one that is angularly much larger, for example, Mercury or Venus in front of the Sun, or a Galilean satellite in front of Jupiter."*

Therefore, a solar eclipse occurs when the moon passes in front of the sun as seen from Earth. Their angular sizes are almost equal. The Mercury transit was most certainly a transit and not a eclipse based on it's smaller angular size as seen from Earth. Mercury would have to be much closer to the earth to have a similar angular size and be considered an eclipse. This would be similar to the role the moon plays with the sun. It's a smaller physical body, but's its angular distance from us crates the effect.

**3rd message: Silvio Jaconelli responds:** I am an ornery critter - I think that an eclipse has to do with shadows, not the actual bodies themselves. The jury is still out as far as I am concerned!!!!

**4th message: Martin Bonadio argues:** Perhaps, but it's the angular size of the bodies themselves that cast the shadows in the first place... Something that I'll add to this \*technical debate\* is that the shadows are cast because here on earth we happen to be in the right place so that they are cast upon us. The area of the shadow is the place where the event occurs. Asteroid occultations are a prime example, if you're too far off the center line you see nothing! So I understand the argument about shadows, but they are only the result of the fact that bodies with varying angular sizes align in different configurations creating the occultations, transits, and eclipses.

**5th message: Frank Honer writes:** First impression: It depends on where you are observing from. An eclipse is an obstruction of light from a celestial body by another celestial body. Io passing in front of Jupiter, as observed from the earth, would be a transit. Io passing in front of Jupiter as observed from specific places in Jupiter (transit path) would be a solar eclipse. Io passing in back of Jupiter as observed from earth would be an occultation. Io passing in back of Jupiter, as viewed from Io, would be a solar eclipse.

So the moon passing in front of the sun, observed from the earth, would be an eclipse. The moon passing in front of the sun, observed from the sun, would be a transit of the moon. This is not my final answer. I may want to use a lifeline later.

## Meet the New Vice-President

Written by Chuck Crawford

Chuck Crawford was formerly a teacher from Indiana where he was a secondary teacher for 31 years most of which was in Earth/Space Science and Astronomy. Chuck also coached football, baseball, basketball, track and golf during that time frame. He served 22 years as President of Space Link Systems, Inc. (an Indiana for-profit corporation involved in scientific instrument sales, education, science and athletic consulting and real estate sales and management), 8 years as an adjunct instructor in Physical Science and assistant football coach at the University of Indianapolis and 3 years as a telescope operator at Link Observatory, owned in trust by Indiana University and operated by the Indiana

Astronomical Society. Chuck also refurbished and operated the 10" reflector telescope at the University of Indianapolis. He attributes his interest in large telescope operations to Joe Goss, then President of the IAS, who was his mentor at Link.

After a science sabbatical of two years involving travel in 25 states and covering 22,000 miles he moved to Mesa where he continues his interest in astronomy and geology as President of Earth/Space Scientific Research Institute, Inc., an Indiana non-profit corporation now doing business in Arizona. His interests in these areas of science involve galactic and planetary studies and studies of dormant, extinct and active volcanoes although he has yet to set foot on an active one, an unrealized goal at this time. Chuck is also a Meade dealer, a remnant of his for-profit business in Indiana. Being a former athletic coach he retains an avid interest in spectator sports - football, basketball and baseball primarily. Travel; visiting historic sites, history of the Indian wars from the Native American viewpoint, sightseeing, golf and outdoor activities involving water, nature and the mountains are among his many other varied interests.

Chuck would like to see EVAC become more involved with outside activities such as group tours and community star parties, group educational activities done jointly with professional astronomers and new member hands on instruction. Increased membership is also another priority.

## Wanted

Do you have a high quality telescope that just does not have enough aperture? Would you be willing to work out a trade to a bigger telescope? As I re-assess my equipment needs, I see a need for a very small ultra-portable high quality telescope such as a Ranger, Pronto, 90MM ED refractor, or a 5" SCT - something that is camera tripod mountable. I will be willing to trade my 10" f/7 Dobsonian that has a Schwaar (high quality) mirror and OTA that sits on a home-made not-too-good Dobsonian base; the optics are first rate. Call Silvio at 602-244-4699 (work) or 480-926-8529 (home).



# East Valley Astronomy Club

## Membership Form

Please complete the information on the form and return to the address below along with a check payable to EVAC for the appropriate dues amount. Allow 3 mos. Lead time for magazine renewals. See below:

Dee Ann Zacher  
 EVAC Treasurer  
 2143 E. Farmdale Ave  
 Mesa, Arizona 85204  
 (480) 545-8769

Enclosed:  
 \_\_\_ \$20 Annual  
 \_\_\_ \$10 July—Dec  
 \_\_\_ \$29.95 *Sky & Telescope*  
 \_\_\_ \$29 *Astronomy Magazine*  
 \_\_\_ \$ 7 EVAC Nametag  
 \_\_\_ Total

Circle: New Member    Renewal

*Please Print* (indicate confidential information)

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_  
 Email \_\_\_\_\_  
 URL http:// \_\_\_\_\_  
 Newsletter Mailed or Electronically Delivered? \_\_\_\_\_

How did you hear about EVAC? \_\_\_\_\_

Major areas of interest (circle): General observing; Lunar/Planetary;  
 Deep Sky; Telescope making; Astrophotography; CCD/Computer;  
 Archaeoastronomy; Other: \_\_\_\_\_

### EVAC on the Internet

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

#### E-mail Mailing Lists

**EVAC-mls** is a mailing list for club announcements and quick notification of astronomical events.

To join, send E-mail with the "Subject: subscribe" to [EVAC-mls-request@psiaz.com](mailto:EVAC-mls-request@psiaz.com)

**EVAC-Board** is for EVAC business. All club members are welcome to participate.

To join, send E-mail with the "Subject: subscribe" to [EVAC-Board-request@psiaz.com](mailto:EVAC-Board-request@psiaz.com)

**AZ-Observing** is a fairly general mailing list about observing in Arizona. Included are star party information, who is going, as well as the latest observations and astronomical events.

To join, send E-mail with the "Subject: subscribe" to [AZ-Observing-request@psiaz.com](mailto:AZ-Observing-request@psiaz.com)

Although EVAC is a private club not open to the public, we do encourage potential new members to initially join us at our club meetings and/or star parties to help them determine the suitability of the club to meet their needs.

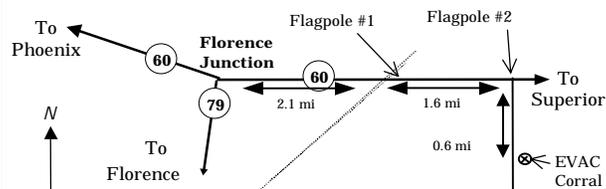
### EVAC Star Parties

#### Local Star Party: Florence Junction Site

General Information: The Florence Junction site is the official site for the East Valley Astronomy Club's Local Star Party, 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. (Report gunfire or illegal activity: 800/352-3796; Land use permit number: 26-104528.)

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

How To Get There: Take US 60 east to Florence Junction. Go past Florence Junction. 2.1 mi past FJ are railroad tracks, and on the right will be a flagpole. Do not turn there. Continue on for another 1.6 miles until you find the second flagpole on the right. This is your turn. Turn right, and continue on the dirt road for 0.6 miles. The corral is on the left right before a gas-line sign.

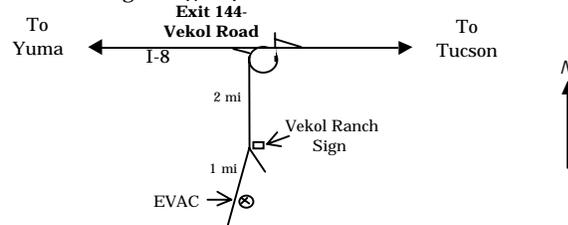


#### Deep Sky Star Party: Vekol Road Site

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 skyglow from Phoenix to the north. The site is within 1½ hours 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 dirt road 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.



# East Valley Astronomy Club—2000

Scottsdale, Arizona

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

## EVAC Officers

### PRESIDENT

Silvio Jaconelli  
(480) 926-8529

### VICE-PRESIDENT

Chuck Crawford  
(480) 735-8042

### TREASURER

Dee Ann Zacher  
(480) 545-8769

### SECRETARY

Tom Mozden  
(480) 497-5703

### PROPERTIES

Rick Scott  
(480) 821-5721

**Membership & Subscriptions:** \$20 per year, renewed in December. Reduced rates to *Sky & Telescope* and *Astronomy* available. Contact Dee Ann Zacher.

Email—<mailto:dazacher@uswest.net>

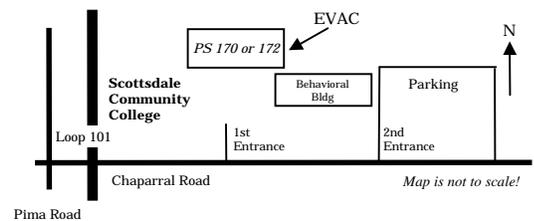
**Club Meetings:** Second Wednesday of every month at the Scottsdale Community College, 7:30 pm. Normally Room PS 170 or 172 in the Physical Sciences Building. See map below.

**Newsletter and Address Changes:** Contact Martin Bonadio 921 North Kingston Street, Gilbert, AZ 85233, 480/926-4900. [mabastro@aol.com](mailto:mabastro@aol.com). Contributions may be edited. The Newsletter is mailed out the week before the monthly Club meeting. An electronic version available in Adobe PDF format in lieu of a printed copy. Please contact Martin with your delivery preferences.

**EVAC Library:** The library contains a good assortment of books, downloaded imagery, and helpful guides. Contact Rick Scott for complete details, 480-821-5721

**Book Discounts:** Great savings through Kalmbach and Sky Publishing. Contact Dee Ann Zacher, club treasurer.

**EVAC Party Line:** Let other members know in advance if you plan to attend a scheduled observing session. Contact Stan Ferris, 480/831-7307.



**Martin Bonadio, Editor**

**921 North Kingston St. Gilbert, AZ 85233**

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**Reminder: Next EVAC Meeting  
Wednesday, January 12th, 2000**

**1999 MEMBERSHIPS HAVE EXPIRED.  
PLEASE MAKE SURE YOU RENEW!!**