

# East Valley Astronomy Club

January 2002

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

Scottsdale, Arizona

2001 Memberships have expired. Renew now. Last issue

## Greetings New Officers/ Board Members for EVAC 2002!!

Martin Bonadio EVAC President 2001/2002

First thank you all again for volunteering to help with the club. This is huge, and I'm excited about the new year.

If you need a copy of the club membership database, let me know and I'll send you one in whatever format you need.

### New Officers

President - Martin Bonadio  
 Vice President - Diana Jane'  
 Treasurer - Randy Peterson  
 Properties - Gary Finnie  
 Secretary - Tom Polakis  
 Events Coordinator - David Coshow  
 Newsletter Editor - Don Wrigley  
 Newsletter Coordinator - Silvio Jaconelli  
 Webmaster - Dave Kelley

### BOARD OF DIRECTORS

Craig Dokken  
 Jack Grbcich  
 Gene Lucas  
 Dave Hertel  
 Howard Israel  
 Paul Murray

## EVAC Memberships

A friendly reminder that all memberships expire on December 31 every year. If you haven't renewed yet, please plan to mail in your \$20 renewal payment (yes, it's still only \$20 per year!) to the EVAC P.O. Box ASAP (Check or money order made out to EVAC), or, if you prefer, you may pay at the regular meeting on January 9. The January newsletter will be the last one sent without a renewed membership!

## President's Comments

Martin Bonadio EVAC President 2001/2002

Happy New Year everyone!! I hope you all had a happy and safe holiday season. My first question of course is what neat astronomy gifts did you receive this year? Let me know and maybe you'd be willing to do a quick show-n-tell presentation this coming general meeting? As I write this before the holidays are over I can't help but hope that new Nagler Type 4 is sitting in my stocking!!

One comment that I have to make is regarding our use of the SCC room PS172. As you all know, we are guests of the school. Last month unfortunately, mis-communications resulted in our club meeting being delayed about 30 minutes while students finished their finals. However, several members of the club were loud, and many actually clapped when the last student finished. I am obligated to remind the membership that we really must remain respectful of the school's primary goal, and that in the future if there is such a delay that we take all steps to reduce our presence while we wait. I have sent a formal letter from EVAC as an apology to the Scottsdale Community College.

See **President** page 2

### EVAC & Other Events: 2002

	New Moon	Meet	Local	Deep Sky	Other
<b>Jan</b>	1/13	1/9	1/5	1/12	1/25 EVAC Board Mtg 1/19 EVAC Beg. Lab
<b>Feb</b>	2/12	2/13	2/9	2/16	
<b>Mar</b>	3/14	03/13	3/9	3/16	
<b>Apr</b>	4/13	04/10	4/6	4/13	

### EVAC Beginners Lab:

**Date:** Saturday, January 19th, 2002

**Time:** 5:30 - 8:30pm

**Where:** David Coshow's Home (Tempe, AZ)

2113 E Yale Dr, Tempe, AZ 85283-2439

David's home is located south of Baseline just off Price Rd. (101 frontage) on Yale Dr. We will setup in the pathways directly south of Yale. Entrances to this are southbound past Yale on Price. Or N/S on Country Club Way just south of Yale. For more information please feel free to call me @ 480-926-4900, or David @ 480-730-1132. You may also email us [mabastro@aol.com](mailto:mabastro@aol.com) (Martin), or [jdcoshow@qwest.net](mailto:jdcoshow@qwest.net) (David).

Next, welcome to the new officers. I'm as excited as ever about the continued progress of our club, and the fun activities that we will have this year. The board will be meeting on January 25<sup>th</sup> to go over the plan for the year, and I'll plan to recap February meeting.

Our club seems to be growing at a decent pace, so that means a lot of new members. In 2000 we topped 200 members, and in 2001 I hope that we reach 225.

With that said I thought it might be appropriate that I outline "star party etiquette" so that our new members/guests and those who will be attending star parties for the first time this year have a good understanding of the few rules that we have pertaining to amateur astronomy observing from a dark sky site.

### Star Party Etiquette

- Don't use white lights. Use red lights sparingly. If for some reason you MUST use a white light, shout out a warning.
- Make sure your car doesn't violate the above. Backup lights and even interior lights can ruin someone's night vision. If you're planning to leave before dawn, park so as to be able to leave without using your lights or put duct tape over them.
- If you come to a star party without a telescope please park some distance away from the observing site to save room for those with heavy equipment to carry.
- Never touch anyone else's equipment without permission. But don't be afraid to ask. Never touch any glass optical surface.
- Avoid loud and boisterous behavior. Stargazing is a quiet, peaceful activity. "Ooh's and Ahh's" are definitely permitted at all times.
- Don't litter. Leave the observing field cleaner than you found it.
- Drive very slowly so as to avoid kicking up dust.
- Watch your step (but don't use a flashlight). Be especially careful of wires on the ground. Some scopes require power and some folks use their car's battery. If your scope requires power try to make the wires as safe as possible.
- Watch for animals and insects. We live in the AZ desert – so there are likely to be critters like rattlers and scorpions about. Be careful where you step.
- Don't set up too close to another observer. When in doubt, it's always a good idea to ask, "Is it OK if I set up here?"
- If you're a visitor or a newbie, try not to monopolize another person's time. The astronomers are there to enjoy the sky, not to give lessons. (Except, of course, when the party \*is\* specifically organized to help the public and/or newbie's.)
- Be doubly careful when astrophotographers are doing their thing. It's always a good idea to let them have as much room as permitted.
- Children -- some folks welcome them, others don't. If you do bring a

child make sure that he/she acts like an adult. (OTOH, many adults could use a dose of childish wonder at the beauty of the sky.)

- Music – Please try to use headsets so that you don't disturb other people at the site.
- Smoking -- smokers should stay downwind of non-smokers and their telescopes.
- Alcohol – EVAC 100% bans it. Please do not drink while observing at EVAC functions.
- MOST OF ALL HAVE FUN!!!!

With that said many members have asked me how they can obtain a red flashlight or get the most from observing at a dark sky sight. I put together this short tutorial to help you along...

### **Eyesight Dark Adaptation and Flashlights**

First, to preserve your dark adaptation and that of others around you, a red flashlight is recommended. There are a number of models available commercially, or there are many ways a white flashlight can be modified temporarily or permanently.

#### Commercial models

My favorite is the **Starlite** by Rigel Systems. It uses two red LEDs with a nine-volt battery and has a brightness control. It has more than enough brightness for walking around in the dark, and can be dimmed for reading star maps at the scope. They are available from the Orion Telescopes ([www.telescope.com](http://www.telescope.com)).

**Maglite** makes a AA model that comes with several color filters and a rubber cap to hold them in place. The red filter works ok, but is still a little bright for reading star charts. Adding a frosted piece of plastic, or covering the filter with Scotch Magic Tape will diffuse the light slightly. This flashlight is not quite as bright as the Starlite, and there is no brightness control, but it is about \$10 less expensive, and readily available at many hardware stores.

#### Do It Yourself

There are many ways to improvise a red filter for a flashlight. Here are some ideas from amateur astronomers. The brightness of the flashlight will affect which option works best.

Red taillight repair tape can be used to cover the glass cover for the flashlight. This tape is available at auto supply stores.

A red plastic coffee can lid can be placed in front of the flashlight. Other types of red translucent plastic will also work. Bicycle taillights can be a source of transparent red plastic.

Lots of red plastic can be had at craft and office supply stores where they sell tinted transparent plastic report covers. This plastic can be cut to make filters, or just held in front of the flashlight. Rubylith, used by graphic artists, makes good filter material. It is available at art supply stores.

Multiple layers of red tissue paper can be rubber banded over the front of a flashlight.

A large red party balloon can be stretched over a flashlight. Get the expensive kind (the ones that cost 25 cents) that's deep red in color. Just cut off the balloon's neck and place over flashlight..

continue from page 2 **President...**

A piece of red construction paper, or even a piece of white paper colored red both sides with a magic marker can be used. It isn't terribly bright, but bright enough, and it diffuses the light and meet our objective.  
Well that's about it for this month. Please feel free to email or call me at anytime with club ideas, suggestions, or comments. My home number is 480-926-4900 and email: [mabastro@aol.com](mailto:mabastro@aol.com) I welcome feedback. In fact I **want** to know how we're doing as a club. Above all else, enjoy the New Year everyone!! Clear Skies!!

## If it's clear...

by Fulton Wright, Jr.

Prescott Astronomy Club for January 2002

Shamelessly stolen information from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find data. When gauging distances, remember that the Moon is 1/2 a degree or 30 arcminutes in diameter.

Don't forget that on Friday, December 28, at 1:27 AM, you can see the Moon cover Saturn. With a medium (6 inch) telescope look 50 degrees above the west horizon for the almost full Moon. Saturn peeks out again about 2:41 AM.

On Friday, January 11, about 6:15 PM, you can see Mercury. With your unaided eye or binoculars look 10 degrees above the southwest horizon for the mag 0 planet. You can see it for about a week around this greatest eastern elongation.

On Monday, January 21, at 6:17 PM, you can see a tight alignment of Jupiter's moons. With a small (3 inch) telescope look 30 degrees above the east horizon for Callisto, Europa, and Io lined up north to south and extending half the diameter of Jupiter. Here are the times of some interesting events with Jupiter's moons:

Jan 1 3:16 AM Ganymede moves in front of Jupiter  
3:17 AM Ganymede's shadow falls on Jupiter  
Jan 2 3:02 AM Io moves in front of Jupiter  
3:04 AM Io's shadow falls on Jupiter  
5:16 AM Io moves from in front of Jupiter  
5:18 AM Io's shadow leaves Jupiter  
Jan 3 9:28 PM Io moves in front of Jupiter  
9:32 PM Io's shadow falls on Jupiter  
11:42 PM Io moves from in front of Jupiter  
11:47 PM Io's shadow leaves Jupiter  
Jan 4 8:23 PM Ganymede appears from Jupiter's shadow  
9:07 PM Io appears from Jupiter's shadow  
Jan 5 10:33 PM Europa moves in front of Jupiter  
10:48 PM Europa's shadow falls on Jupiter  
Jan 6 1:21 AM Europa moves from in front of Jupiter  
1:37 AM Europa's shadow leaves Jupiter  
Jan 7 7:50 PM Europa appears from Jupiter's shadow

Jan 10 11:11 PM Io moves in front of Jupiter  
11:26 PM Io's shadow falls on Jupiter  
Jan 11 1:26 AM Io moves from in front of Jupiter  
1:41 AM Io's shadow leaves Jupiter  
8:10 PM Ganymede disappears behind Jupiter  
8:30 PM Io disappears behind Jupiter  
11:02 PM Io appears from Jupiter's shadow  
Jan 12 12:23 AM Ganymede appears from Jupiter's shadow  
7:52 PM Io moves from in front of Jupiter  
8:10 PM Io's shadow leaves Jupiter  
Jan 13 6:58 PM Callisto moves in front of Jupiter  
9:38 PM Callisto moves from in front of Jupiter  
9:59 PM Callisto's shadow falls on Jupiter  
Jan 14 12:50 AM Callisto's shadow leaves Jupiter  
6:55 PM Europa disappears behind Jupiter  
10:25 PM Europa appears from Jupiter's shadow  
Jan 18 10:14 PM Io disappears behind Jupiter  
11:28 PM Ganymede disappears behind Jupiter  
Jan 19 12:57 AM Io appears from Jupiter's shadow  
4:24 AM Ganymede appears from Jupiter's shadow  
7:21 PM Io moves in front of Jupiter  
7:50 PM Io's shadow falls on Jupiter  
9:36 PM Io moves from in front of Jupiter  
10:05 PM Io's shadow leaves Jupiter  
Jan 20 7:26 PM Io appears from Jupiter's shadow  
Jan 21 9:10 PM Europa disappears behind Jupiter  
Jan 22 12:19 AM Callisto disappears behind Jupiter  
1:01 AM Europa appears from Jupiter's shadow  
3:01 AM Callisto appears from behind Jupiter  
5:12 AM Callisto disappears in Jupiter's shadow  
Jan 23 7:00 PM Europa moves from in front of Jupiter  
8:08 PM Europa's shadow leaves Jupiter  
Jan 26 9:07 PM Io moves in front of Jupiter  
9:44 PM Io's shadow falls on Jupiter  
11:21 PM Io moves from in front of Jupiter  
11:59 PM Io's shadow leaves Jupiter  
Jan 27 9:21 PM Io appears from Jupiter's shadow  
Jan 29 7:15 PM Ganymede's shadow falls on Jupiter  
7:30 PM Ganymede moves from in front of Jupiter  
10:21 PM Ganymede's shadow leaves Jupiter  
Jan 30 7:02 PM Callisto's shadow leaves Jupiter  
7:57 PM Europa's shadow falls on Jupiter  
9:18 PM Europa moves from in front of Jupiter  
10:45 PM Europa's shadow leaves Jupiter

# 2002: A Year of Sky Events

by Joe Orman

Photo Pages: <http://pages.prodigy.net/pam.orman/JoeHome.html>

Mark your calendar for these interesting planetary alignments, conjunctions, occultations & meteor showers in the year 2002. Times are calculated for Phoenix; other locations may differ. Most will be easy to see with the unaided eye, some very challenging -- take a look!

- **January 14** (evening): Mercury 4 degrees to upper right of crescent moon, low in WSW after sunset.
- **February 20** (afternoon-evening): Moon occults Saturn in daylight, high in sky (disappears 4:17pm , reappears 5:14pm MST). Saturn 1 degree from moon after sunset.
- **February 22** (evening): Jupiter 1/2 degree from gibbous moon, very high in sky after sunset.
- **March 17** (evening): Mars 4 degrees to upper right of crescent moon, high in W after sunset.
- **March 20**: Spring equinox (12:16 pm MST). Sunrise straight east (6:32am, azimuth 89.6 degrees), sunset straight west (6:40pm, azimuth 270.7 degrees). Always use proper eye protection when viewing the sun.
- **March 21** (evening): 1st-quarter moon occults star cluster M35, high in sky (disappears approximately 9:30pm , reappears approximately 10:15pm MST).
- **April 14-16** (evenings): Alignment of Jupiter, Saturn, Mars and Venus, in W after sunset. Moon 4 degrees to upper left of Venus April 14, 2 1/2 degrees to left of Mars April 15, 3 degrees above Saturn April 16.
- **April 16** (daytime): Crescent moon only 4 arc-minutes away from Saturn (11:33am MST), high in E. Grazing occultation for extreme NW Arizona, full occultation NW of Arizona.
- **April 20 – May 15** (evenings): All 5 (!!!) naked-eye planets (Jupiter, Saturn, Mars, Venus, and Mercury) in line, in W after sunset. Saturn, Mars and Venus make 3-degree triangle on May 5. Mars and Venus 1/3 degree apart on May 10. Moon 2 degrees from Mercury on May 13, 1 degree from Venus on May 14, between Jupiter and Venus on May 15.
- **June 3** (evening): Jupiter and Venus 1 1/2 degrees apart, with Mars below, in W after sunset.
- **June 10** (afternoon): Partial solar eclipse, 5:19pm to 7:19pm MST, in W. 60% eclipsed at maximum.
- **June 12** (evening): Crescent moon 2 1/2 degrees to right of Jupiter, with Venus above and Mars below, in W after sunset.
- **June 13** (evening): Crescent moon 2 degrees above Venus, Jupiter and Mars below, in W after sunset.
- **June 20** (evening): Venus 1/3 degrees above Praesepe ("Beehive" star cluster), in W after sunset.
- **July 2** (morning): Saturn and Mercury 1/4 degree apart, low in ENE before sunrise.
- **July 2** (evening): Jupiter and Mars 3/4 degree apart, extremely low in WNW after sunset (too close to sun to see?).
- **July 8** (morning): Saturn 1 degree to right of crescent moon, low in ENE before sunrise.
- **July 10** (evening): Venus 1 degree above 1st-magnitude star Regulus, in W after sunset.
- **August 9** (evening): Mercury 4 degrees to lower left of crescent moon, very low in W after sunset.

- **August 11** (evening): Crescent moon 5 degrees to upper right of Venus, in W after sunset.
- **August 12** (night): Perseids meteor shower. Moon, just past new, will not interfere. Shower radiates from constellation Perseus, which rises in NE about 10pm MST. May produce 50 to 100 meteors per hour. Best time to look between midnight and dawn.
- **August 31** (evening): 1st-magnitude star Spica 1 degree to upper right of Venus, low in WSW after sunset.
- **September 4** (morning): Crescent moon 3 degrees to left of Jupiter, with Praesepe ("Beehive" star cluster) between, in E before sunrise.
- **September 22**: Fall equinox (9:56pm MST). Sunrise straight east (6:16am, azimuth 89.1 degrees), sunset straight west (6:26pm, azimuth 270.6 degrees). Always use proper eye protection when viewing the sun.
- **October 5** (morning): Mars-moon-Mercury triangle 5 degrees apart, low in E before sunrise.
- **October 10** (morning): Mars 3 degrees above Mercury, low in E before sunrise.
- **November 8** (evening): Moon occults 2nd-magnitude star Sigma Sagittarii, in SW after sunset (disappears in twilight 6:18pm, reappears at night 6:58pm MST).
- **December 1** (morning): Moon-Mars-Venus triangle within 3 degrees, in ESE before sunrise.
- **December 7** (morning): Mars 1 3/4 degrees to right of Venus, in ESE before sunrise.
- **December 13** (night): Geminids meteor shower. Gibbous moon will interfere until it sets about 1am. Shower radiates from Castor in constellation Gemini, which rises in NE around 7pm and is near zenith in early morning hours. Best time to look between moonset and dawn. May produce 60 meteors per hour.
- **December 19** (morning): Saturn 3 degrees to left of setting full moon, low in WNW at dawn.
- **December 30** (morning): Moon-Venus-Mars triangle 5 degrees apart, in SE before sunrise.

I would like to thank Sam Herchak for his kind assistance in compiling this list.

## ***Astronomy Magazine* WARNING**

Randy Peterson  
EVAC treasurer

With my renewal notice this month, I received an "urgent warning" note from Kalmbach Publishing, the publishers of "Astronomy" Magazine. Apparently two unauthorized companies are contacting current subscribers of *Astronomy*, asking you to renew through them.

Kalmbach states, "**DO NOT RENEW your subscription with any phone solicitor.** Authentic renewals will only come from P.O. Box 1612, Waukesha, WI. Most importantly, do not give them your credit card information or payment of any kind."

Just FYI.

# A SHORT STAR HOP AROUND CASSIOPEIA

By Sylvio Jaconelli

I have always preferred an observing session that focuses on a small area of the sky, and to 'work' that area in detail. This was how I developed my observing techniques when I first started. In this article, I have chosen CASSIOPEIA as my target area, and it covers objects that are easily visible from urban areas using modest equipment (except for object Burnham 1 which will require very good optics). Refer to the attached diagram as a guide.

Look almost overhead in December/January and you cannot mistake the obvious 'W' shape of the constellation.

The middle star in the 'W' is **Gamma Cassiopeiae**, a variable star. It is an unstable blue giant in the process of shedding off shells of gas; it is this shedding causes it to vary between magnitudes 2 and 3. The variability period is irregular.

Draw an imaginary line between Gamma and Alpha, and 40% from Alpha and slightly to the east is the wide double star **Eta Cassiopeiae** (ADS 671). The components are 4<sup>th</sup> and 8<sup>th</sup> magnitudes, and are colored red and yellow. The separation is 13" (13 arc seconds).

Now, anyone up for a challenge ? Just 1 degree SSW of Eta (00.50hrs, 56.21 north) is the multiple star **Burnham 1**. This star has four components, magnitudes 7.9, 9.9, 8.9 and 9.4. The separation between the first two is 1.4", the next is 3.8", and the final is 9.0". The first secondary shines at 9.9 magnitude, and my 8" telescope just could not separate this from the very much brighter 7.9 primary, even at 400x; the position angle of the secondary is 82 degrees. But the other two components were real easy at 200x. A point of interest is that this multiple star is embedded in NGC 281, a 7<sup>th</sup> magnitude nebula which has a diameter of a huge 35'. From my backyard with my 8", I just could find no trace of this nebula - it's light is spread out just too far for backyard observing. An O III filter didn't help either. Remember that magnitudes are stated in absolute brightness, so a brighter magnitude that extends over a wide area will look dimmer than a fainter magnitude compressed into a smaller area.

Starting at Alpha, draw a line to Beta and extend that line by just over the same distance - you will find the open cluster **M52**. Binoculars will show this cluster clearly. It is kidney shaped, and has a prominent 8<sup>th</sup> magnitude orange star off to the edge. The cluster shines at 7<sup>th</sup> magnitude, and has a diameter of approximately 13' (13 arc minutes).

Refer to the diagram, and see how by forming a very flat and wide isosceles triangle with Beta Cassiopeia and M 52 you can find **Delta Cephei** in the constellation Cepheus. This star is the prototype 'Cepheid Variable' - these variable stars are used as standard measuring candles to estimate the distances of galaxies - because of the predictable nature of these Cepheids, the dimness of them in far away galaxies will indicate their distances from us. The period of variability from magnitude 4.4 to 3.5 then back to 4.4 is 5.4 days, so changes in brightness can easily be noticed every couple of days. Another interesting fact about **Delta Cephei** is that it is also a double star - it's 6.3 magnitude companion is 41" away, which makes this double resolvable in binoculars; I'd guess that 10 power binoculars on a tripod ought to be sufficient to split it. The primary is yellow while the secondary has a very distinctive blue color - a very pretty double star much like Albireo.

Again, starting at Alpha, draw a line to Beta and extend that line by about the same distance but this time have the extended line head south rather than west. You will find another open cluster, **NGC 7789**, just south of a wide double star. This cluster shines at magnitude 6.7, and is 16' in diameter, so you may find it looks fainter than M52. I had to use high magnification in my 8" scope just to resolve this from my backyard.

Let's go back to Gamma, where we first started. This time, extend the line from Gamma to Delta two and a half full distances, and you will be at the famous **Perseus Double Cluster** (NGC 869 and NGC 884). This open cluster pair is one of the finest showpieces in the sky - they are both magnitude 3.5 (visible to the naked eye from a dark sky site), and can both fit in the same field of view of a wide field eyepiece at low power (approx 1.5 degrees). Each cluster is approximately half a degree in diameter.

Go back to Delta, and this time extend the line from Epsilon to Delta by just under one half the distance - this takes you to another open cluster - **NGC 457**. This cluster shines at magnitude 6.4 and has a diameter of approximately 12'. There

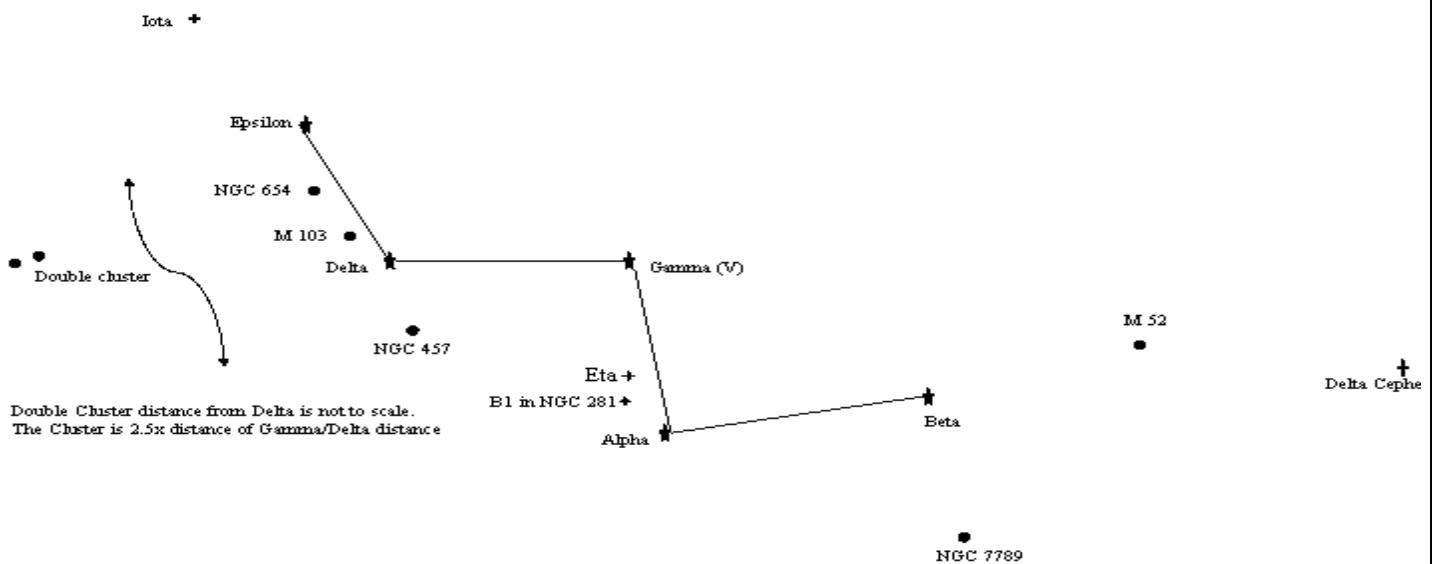
are a couple of things worth remarking here. Firstly, it has been called the 'ET Cluster' because if you try hard enough you can make the stars look like they form the shape of the movie phenomenon "ET". Also, it includes two very bright stars (magnitudes 5 and 6) - Phi 1 and Phi 2 - which resemble ET's eyes !.

Go back to Delta, and this time extend the line from Delta to Epsilon by one distance, to take you to another interesting multiple star - **Iota Cassiopeiae** shining at magnitude 4.5. At low power, Iota is the brightest star in a three star triangle. But at higher power, Iota is revealed to be a double star, magnitudes 4.6 and 6.9. Then an interesting thing happens when you boost the power even higher with clean optics - a very faint 3<sup>rd</sup> member becomes just visible (magnitude 9 or 10 ?), and this triple star now assumes a triangular shape identical to the bigger three star triangle first mentioned at the start of this paragraph ! Most interesting.

Once again, let's go back to the Delta - Epsilon line ! We find two more star clusters just off this line. The first is **M 103**, a 7.4 magnitude open cluster approximately 6' in diameter; this cluster is about one degree from Delta. About 60% of the way (and very slightly south) from Delta lies **NGC 663**, a 6.5 magnitude cluster with a diameter of approximately 8'. Be careful not to confuse the two - many people during a Messier Marathon will mistake NGC 663 for M 103, since NGC 663 is actually easier to see and almost a full magnitude brighter than M 103; in fact, NGC 663 should be visible through a finderscope, while all that a finderscope shows of M 103 is a triplet of stars. And to resolve M 103 from an urban sky will require high magnification. I always make sure that I find BOTH clusters - that way, you know for sure that you did find M 103 !

While in the neighborhood, take the time to check out the most impressive Galaxy in the northern hemisphere - the **Great Andromeda Galaxy (M31)**. This can be found by extending the Epsilon - Delta line south west by four distances and then east by one distance. Of course, in a dark sky site this 3.5 magnitude galaxy is a naked eye object, while in-town viewers can easily pick it up with binoculars. Also easy to spot in the same field of view is small and bright **M 32** shining at 8<sup>th</sup> magnitude - this companion galaxy is so close to M 31 that it can be seen to overlapped by the fainter outer part of M31 when observed from a dark sky site with large aperture; in fact, M 32 almost looks like a globular cluster. Much harder to spot is the fainter-looking **M110**, lying south west of M 31. While this galaxy is also 8<sup>th</sup> magnitude (same as M 32), it appears considerably dimmer because it's light is spread out over a much further area than M 32 (the light from M 32 is spread over 7', while the light from M 110 is spread over 14' thereby making M 110 appear very much dimmer). An aperture of at least 10" is probably required to see M 110 from a suburban site, while a 6" can easily pick up M32. My 8" picked up M32 in a snap, but M110 totally eluded me.

Yes, there really is a wealth of things to observe from our suburban backyards - good observing !



## EVAC Officers

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East Valley Astronomy Club—2001  
Scottsdale, Arizona

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

**Membership & Subscriptions:** \$20 per year, renewed in December. Reduced rates to *Sky & Telescope* and *Astronomy* available. Contact Randy Peterson. PO Box 2202, Mesa, AZ. 85214-2202. (480) 947-4557 Email: [rgp14159@aol.com](mailto:rgp14159@aol.com)

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

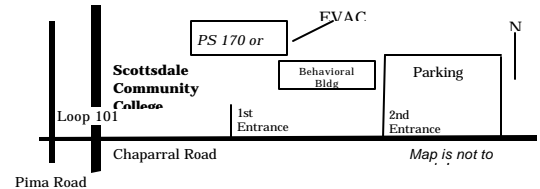
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**Newsletter:** Contact Don Wrigley. 423 W 5<sup>th</sup> Ave, Apache Jct, AZ 85220. Email: [DJWrigley@earthlink.net](mailto:DJWrigley@earthlink.net)  
Contributions may be edited. The Newsletter is mailed out the week before the monthly Club meeting. An electronic version is available in Adobe PDF format in lieu of a printed copy. Please notify Sylvio Jaconelli of your delivery preferences, Email: [SilvioJ@msn.com](mailto:SilvioJ@msn.com).

**EVAC Library:** The library contains a good assortment of books, downloaded imagery, and helpful guides. Contact Gary Finnie for complete details [gfinnie@kam-az.com](mailto:gfinnie@kam-az.com)

**Book Discounts:** Great savings through Kalmbach and Sky Publishing. Contact Randy Peterson, [rgp14159@aol.com](mailto:rgp14159@aol.com)

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



Articles for February's Newsletter should be sent to Don Wrigley by January 23<sup>rd</sup>.



Don Wrigley, Editor / Sylvio Jaconelli, Coordinator  
423 W 5<sup>th</sup> Ave, Apache Junction, AZ 85220

## Contents:

- New Officers & Directors
- Membership Reminders
- President's Comments
- EVAC Beginners Lab
- If It's Clear by Fulton Wright
- 2002: A Year Of Sky Events  
by Joe Orman
- A Short Hop Around  
Cassiopeia by Sylvio Jaconelli
- Astronomy Magazine Warning  
by Randy Peterson

**Reminder: Next EVAC Meeting  
Wednesday, January 9, 2002**