



East Valley Astronomy Club

February 1998

www.goodnet.com/~rkerwin/evac/evac.html

Scottsdale, Arizona

EVAC Meeting Highlights

January 13, 1999

Tom Mozdzen, Secretary

Call to Order: President Silvio Jaconelli called the meeting to order at 7:37 p.m. There were 78 people present with 6+ being guests. Officers and board members again stood to be recognized.

Silvio introduced the following upcoming events:

Upcoming Events

- February 6 **EVAC Local Star Party**
at Florence Junction
- February 10 **EVAC Meeting at SCC**
Speakers: Tony & Daphne Hallas
- February 13 **EVAC Deep Sky Star Party**
at Vekol Road

EVAC & Other Events: 1999

	New Moon	Mtng	Local	Deep Sky	Other
Jan	17	13	9	16	
Feb	16	10	6	13	
Mar	17	10	13*	20	13: Messier Marathon*
Apr	16	14	10	17*	17: Sentinel Star Gaze*
May	15	12	8	15	9-16: Texas Star Party 28-31: Riverside TMC
Jun	13	9	5	12	12-19: Gr Canyon SP
July	13	14	3	10	1-7: Universe '99
Aug	11	11	7	14	13-14: Stellafane
Sep	9	8	4	11	17-19: Astrofest
Oct	9	13	2/30	9*	9: All-AZ Star Party* 4-10: Okie-Tex SP
Nov	8	10		6	
Dec	7	8	11	4	

Room Change for February 10 EVAC Meeting!

The February EVAC Meeting, featuring special guest speakers California astrophotographers **Tony and Daphne Hallas**, will be held in the auditorium of Building PA (Performing Arts) at the Scottsdale Community College. The auditorium will hold approximately 700 people, so bring some friends!

The Hallases are world-famous astrophotographers. Check out their work at <http://www.astrophoto.com>.

New Business: AZ Science Center Observing Night – Canceled – AZSC would like to reschedule sometime in the future.

Silvio noted that several club members were in the limelight: Tom Polakis has had an article published in *Astronomy* magazine. Several EVAC members were mentioned in a *Sky & Telescope* article.

Silvio presented an article from the *Scotland Times* about a nebula. The outline of the nebula was similar to the outline of Scotland, proving Scotland is the center of the universe or something similar.

Show and Tell: Joe Orman shared several photos of various objects with the club members. The first set consisted of lightning bolts captured during a storm. The next set displayed meteor trails from the Leonid meteor shower in November at Florence Junction. One photo had seven trails visible. For the finale, a fantastic glint of magnitude -7, an Iridium satellite flare, was displayed.

February 1999

All Times MST

In lustrous dignity aloft
The splendid zone he decorates
For mark around what glitt'ring orbs
You'll soon confess no other star

see *alpha* Tauri shine,
attests the power divine:
attract the wandering eye
has such attendants nigh.

—Admiral Smyth

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Moon near Regulus	2 Uranus in Conjunction	3	4 PAS Mtng Mercury at superior conjunction	5	6 EVAC Local Star Party PAC Mtng
7 Moon near Mars	8 	9	10 EVAC Meeting 7:30 p.m. at SCC	11	12 Impact at Sikhote-Alin, Russia, 1947	13 EVAC Deep Sky Star Party
14 <i>Valentine's Day</i>	15  Annular Eclipse <i>President's Day</i>	16 Sun enters Aquarius	17 Moon near Venus	18 Moon near Jupiter	19 Copernicus, b. 1473	20 Moon lies east of Saturn
21	22  Moon approaches Aldebaran	23 Appearance of Supernova 1987A	24 Jupiter crosses celestial equator into north	25	26 SAC Mtng	27
28 Moon near Regulus						

Guest Speaker: Bill Dellinges described with words and photos, the design, construction, and recruitment of labor to bring his backyard observatory to reality.

The room was built on a 12'x12' slab of concrete. The walls were chosen to be 6' high to block direct lights, but to allow the scope to peek over the top. The tripod was chosen to be a permanent column of concrete 35" tall (33" after settling). Bill mused that his next observatory might not have this feature.

Bill recruited a local carpenter for the walls (\$1335), an electrician for the wiring (\$280), a relative for the roof (\$250), and a roofer for the shingling (\$50).

Angle iron rails supported make-shift pulley wheels. The 1300 pound roof has shown no signs of being flight worthy, even in some of our recent gusty wind storms. The roof slides to the north, but in retrospect, a westward sliding roof would have worked better to block the Phoenix glow.

Animals such as mice and squirrels have come to enjoy the observatory as much as Bill—perhaps more as Bill doesn't use the building in the summers.

The backyard observatory was dedicated to Dr. William Kaufman.

The meeting was called to a close at 9:00 p.m.

February Guest Speakers: If you didn't know already, February's guest speakers will be world famous astrophotographers Tony and Daphne Hallas. The Hallas will be EVAC's first ever guest speakers from outside of Arizona. The presentation will consist of a discussion of their darkroom techniques along with plenty of jaw-dropping astro slides.

If it's Clear...

February 1999

Fulton Wright, Jr. Prescott Astronomy Club

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

On Saturday, February 6, about 7 p.m. you can see Saturn's 4 brightest moons in order. With a medium (6

inch) telescope look 50 degrees above the southwest horizon for Saturn. Titan is brightest and furthest celestial west of the planet. Starting about halfway closer to the planet are Rhea, Dione, and Tethys, each dimmer and closer to Saturn.

On Monday, February 8, at 7:47 p.m. you can see two events of Jupiter's moons a minute apart. With a medium (6 inch) telescope look 15 degrees above the west horizon for Jupiter. Ganymede will just be disappearing behind Jupiter as Io's shadow leave the planet.

On Tuesday, February 9, about 6 a.m. you can see the Moon's south pole at its best. With a small (3 inch) telescope look 40 degrees above the south horizon for the Moon. Libration tips the Moon's south pole toward us for about a week around this date.

On Sunday, February 21, about 7:30 p.m. you can see the Moon's north pole at its best. With a small (3 inch) telescope look 55 degrees above the southwest horizon for the Moon. Libration tips the Moon's north pole toward us for a few days around this date.

On Tuesday, February 23, about 7:00 p.m. you can see a close conjunction of two planets. With your unaided eye or binoculars look 20 degrees above the west horizon for Venus (magnitude -4) and, one third of a degree below it, Jupiter (magnitude -2). You can watch the two approach each other during the few days prior to this date.

On Sunday, February 28, about 7:00 p.m. you can see a grouping of three planets. With your unaided eye or binoculars look 20 degrees above the west horizon for Venus (magnitude -4), 5 degrees below it for Jupiter (magnitude -2) and 5 degrees below and to the right of Jupiter for Mercury (magnitude -1).

Observing the ISS—It's Easy!

Joe Orman, EVAC
p27491@email.mot.com

Did you know you can regularly see the new International Space Station with the unaided eye? ISS looks like a medium-bright star (typically between 1st and 4th magnitude) moving across the sky, generally from west to east. It can also be fun to try to follow with binoculars or a telescope. The first two components were launched in late 1998; it will get brighter as more modules are added over the next five years. Here are a couple of web sites which generate visibility predictions

Heavenly Details

courtesy of
The Old Farmer's Almanac 1999
www.almanac.com

February 1999
The Second Month

(all times EST)

Venus now ascends further out of the **Sun's** glare during evening twilight. This is the scene of the year's most spectacular conjunction and one of the best of the decade: From February 22 to 24, dazzling **Venus** and brilliant **Jupiter**, after the **Moon** the sky's two brightest objects, nearly "touch." **Mercury**, bright but not brilliant, dangles below them. (If you see anything beneath the Jupiter-Venus duo, you've found this elusive, innermost planet, since no bright stars are in that vicinity.) The crescent Moon passes near Venus on the 17th and Jupiter on the 18th. Meanwhile, **Orion** reaches its yearly pinnacle, conspicuous in the southern sky. Its belt stars point leftward to **Sirius**, the heaven's brightest star. The **Dog Star** is a binary system; the human eye actually sees the combined light of two close-together stars, **Sirius** and its white-dwarf companion.

Last Quarter: 8th day, 6th hour, 58th minute
New Moon: 16th day, 1st hour, 39th minute
First Quarter: 22nd day, 21st hour, 43rd minute

Maybe we're moonstruck, but we humans seem never to tire of watching the amazing spectacle of the sky. For your interest and edification, The Old Farmer's Almanac provides the dates and locations of solar and lunar eclipses for the year, as well as the days of the full moon for seven years. Check it out at www.almanac.com, then go outside and look UP!

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for your location. Both sites give the time, azimuth and elevation for each overhead pass, as well as when during that pass the station is hidden by earth's shadow.

<http://www.bester.com/satpasses.html>

You pick your viewing location from a list major cities. Azimuth is given to the nearest degree. This site also gives the viewing info for the Space Shuttle, the Russian space station Mir (due to be de-orbited later

this year), the Hubble Space Telescope, and several other selected satellites.

<http://www.gsoc.dlr.de/satvis/>

This site by the German Space Operations Centre gives the azimuth by compass heading only (for example, NW), but it also gives you the visual magnitude and range in kilometers! It also gives predictions for Mir, Iridium flares, and lists all satellites visible from your location on a given night. You can pick from a list of major cities or enter your exact location in latitude and longitude (this is especially important for Iridium flares, which are very location-sensitive).

One hint: the orbit does change over time, so be sure to download a fresh prediction within a day or two of when you plan to observe. Good luck and good viewing!

Sky Atlas 2000.0 Second Edition

by Wil Tirion and Roger Sinnott
Sky Publishing, \$49.95

A Review by Tom Polakis, EVAC

Veteran sky watchers may remember the introduction of Wil Tirion's "Sky Atlas 2000.0" in 1981. At the time it was revolutionary, being the first star atlas to use Equinox 2000 coordinates. Inside a bound package measuring 11" by 16" were 26 charts covering the sky at a scale of 7.8 mm per degree. The only suitable competition was Antonin Becvar's "Atlas of the Heavens," which over the years had revealed problems in need of repair. With its sweeping improvements, Tirion's work became the replacement for its predecessor, and took over as the standard intermediate-scale star atlas. 17 years later, the Second Edition of "Sky Atlas 2000.0" has been released. Its improvements on a classic are no less impressive than those we witnessed in 1981.

The second edition also employs 26 charts, but at a slightly increased scale of 8.2 mm per degree. The dimensions of the atlas thus increase by 1 1/2" in width and 3/4" in height to provide identical sky coverage on each chart. As with the first edition, the atlas is available in the Deluxe Version, in which objects are plotted in color on a white background, and the less expensive black-and-white Desk and Field editions. The Desk and Field editions represent the sky a smaller scale of 7.1 mm per degree.

At first glance the most desirable change in the second edition is its depiction of stars. The first edition plotted roughly 43,000 stars down to magnitude 8.0. This quantity is nearly doubled with the new edition's magnitude limit of 8.5. Much has happened in the star cataloguing business since 1981, and this is used to advantage by authors Wil Tirion and Roger Sinnott. Most significantly, the second edition employs the Hipparcos/Tycho star catalogues, which results in improved accuracy in stellar positions and brightnesses. Star symbols are plotted in a continuous range of sizes—a big improvement on the whole-magnitude steps of the first edition. The increases in both depth and resolution should prove helpful to the observer intent on locating faint galaxies in sparse star fields.

For the deep-sky enthusiast, the second edition is vastly improved. The number of objects is only modestly increased from 2500 to 2700, but the selection criteria are more consistent. Fans of dull open clusters may be disappointed to learn that many of these objects were dropped from the database if they didn't meet the strict criteria for inclusion in the atlas. Galaxies are plotted as ellipses in their correct position angles. Dark nebulae from the catalogues of Barnard and Lynds are included, and large ones are plotted to scale. Milky Way contours are plotted in four levels rather than two. The transparent coordinate overlay presents a finer grid, and even includes the bullseye pattern of the popular 1-power Telrad finder.

It was irresistible to lay the first and second editions side by side. I found Chart #22 to be a suitable page for comparing the two editions. Centered on Sagittarius and Scorpius, this particular region of the sky can be prone to clutter. Less worthy cartographers than Wil Tirion have often met their demise in attempting to render this rich section of the sky. Inclusion of prominent dark nebulae in the second edition means that the Pipe Nebula so familiar to modern observers is shown in all its glory. Bright nebulae such as NGC 6334 that were simply "green boxes" in the first edition are outlined in correct shapes. The number of open clusters is glaringly reduced; for example the Stinger of Scorpius now contains 7, instead of 12, plotted open clusters. All planetary nebulae are labeled with NGC/IC or Perek-Kohoutek (PK) designations. Gone are planetary nebula designations such as Sp 1. While I didn't set out hunting for corrections from the first edition, they too been cleaned up. M24 correctly points to the small Sagittarius star cloud rather than a small open cluster in the vicinity. On another chart, the Vela Supernova Remnant is labeled as such, and not mistaken for the nearby Gum Nebula.

Planetarium Programs

Sam Herchak, EVAC

We find another good comparison by opening the two atlases to Chart #2. In the bowl of the Big Dipper, the multitude of faint galaxies will certainly be more easy to locate knowing their correct orientations on the sky and hopping from 8.5-magnitude finding stars. Over 200 star names are now included in the second edition. How many people would have known that Lambda and Mu Ursae Majoris are also known as Tania Borealis and Tania Australis? The double star catalogued as M40 has been plotted for those who feel compelled to complete the Messier list. All deep-sky objects are now labeled; the giant planetary nebula PK 164+31.1 in Lynx is an example.

General improvements in appearance are also laudable. The many lines and curves of celestial coordinates have a cleaner feel. The garish constellation boundaries of the first edition no longer get in your way and legends are more readable. Chart numbers are now accessible without folding out the page. And the confusing practice of the first edition of using a star-like dot to delimit different designations of the same object has been abandoned. All of these changes help when viewing chart under dim, red light.

Two brand new additions that appear in the second edition are Charts A and B, which feature selected areas at 2 1/2 times the scale of the other charts, and plot stars down to magnitude 10.5. The selected areas are great choices, featuring the fields of both celestial poles, the Virgo galaxy cluster, Orion, the Pleiades, and two high-proper motion stars. Again, these charts are a joy to peruse by day, somewhat like scanning over an inset map of your city in a road atlas of the country.

It is difficult to have any gripes with the second edition of "Sky Atlas 2000.0," but I do have one big one. I consider the backs of the charts to be a vast expanse of untapped space. I wished the authors would have taken a lead from Tirion's excellent, smaller-scale "Bright Star Atlas," and used the facing pages to provide catalogue data for all of the plotted objects. Perhaps it would have bumped the price up by another ten bucks, but it could have made this the end-all atlas of its scale. It would be a nice gesture for Tirion and Sinnott's to make their database available as a diskette or on-line, even if only as an ASCII text file.

Will I use the second edition of "Sky Atlas 2000.0" in the field? Well, no. I've discovered the joys of using a laptop computer and charting software at the telescope, and the advantages outweigh anything that a paper atlas could ever accomplish. Still, "Sky Atlas 2000.0" is a great enough piece of work to be enjoyed at the desk. For fifty bucks, there is enough in these charts to keep most observers occupied for a lifetime.

When I first started using planetarium programs on a home computer several years ago, I found them useful but at the same time, disappointing. Disappointing from an observing point of view because they just weren't accurate enough. Pluto's position was at least several arcminutes off and even with the Hubble Guide Star Catalog (HGSC) of 15 million stars/objects, you couldn't display the Trapezium in M42 correctly. But we all know what a difference a few years make in computing. Programming and databases have improved to the point that there is no reason your computer can't show Pluto and asteroid positions to within 1 arcsecond of their actual location and make starcharts as good as the Millennium Star Atlas! Without writing a book on what's available, I'll simply tell you my favorites.

For first-time buyers, "blow \$40" and get SkyChart III by Tim DeBenedictis (www.southernstars.com). This program has Windows/Macintosh versions and even includes stellar data from the Hipparchus, Tycho, and Hubble catalogs for that low price! It has a beautiful display, good interface, great documentation (on disk), telescope control for many popular models, and its solar system accuracy will amaze you. Lunar/asteroidal occultations, Galilean "moon" events, and artificial satellites from standard two line elements (TLE's) are accurate to within one minute of the actual times I have observed. At this point, it doesn't have as many display/filtering options as I'd like, but those are in the works.

For experienced observers, Guide by Bill Gray (www.projectpluto.com) is the best buy at \$89 (and in my opinion, simply the best available). It is far easier to tell you what it can't do—CCD image processing is about it! Otherwise, this program does it all. Besides unprecedented accuracy (a recently observed asteroidal occultation shows up as a 0.6 arcsecond "miss" with Guide), its displays are incredible. Instead of just showing the Milky Way area or the Veil Nebula as outlines, Guide has "isophotes" that show the relative intensities and gradients of the object. Instead of just showing the position of the Galilean moons around Jupiter, Guide shows their shadows on the planet (if appropriate). Instead of just a disk representing the Moon and planets, Guide has bitmap images. Zoom in on Mars and there is Syrtis Major (if actually visible from the observing location at the specified time). It's virtual observing!

The CD-ROM is packed with databases. When you "Get info" on an object (whether it be planet, asteroid, star,

or galaxy), you'll get at least half a page of information. Guide displays the data from all the included catalogs because parts of one are often more accurate than parts of another. For deep sky objects, Herschel descriptions from the NGC 2000 and the SAC Databases are included. You can also import/display information from RealSky and the new 500 million star A1.0/2.0 catalogs from the US Naval Observatory. The program allows precise astrometric measurements from CCD images and will even compute orbital elements from those measured positions.

The interface is highly configurable by the user, has a tremendous amount of supporting documentation (although some is hidden in obscure places), and will run on any PC including DOS machines. Although a Mac version is not in the works (possibly Linux though), I run it just fine on my Apple PowerPC computer with Windows 95 and the application Virtual-PC. The Sky, Megastar, Starry Nights, and Voyager II are all lacking compared to Guide in my opinion.

I highly recommend both companies. They have been a pleasure to deal with, providing prompt service and responses to my questions or suggestions. If only Christmas weren't so far away now....

Backyard Astronomy

Public Star Party Tips (Part 1)

Bill Dellenges, EVAC

We amateurs often pursue our starry hobby alone. But there comes a time now and then when we work with the public. With this in mind, I have a few suggestions I've picked up over the years that I think will enhance your public stargazing sessions.

If your event is not previously advertised, consider posting a sign nearby indicating that you're there! If you are set up in the dark, people may very well walk right past you as they leave a building and walk to their car, or if they do see you, think you don't want to be bothered (or that it might cost something). How about, "Free! See the ring's of Saturn!" Sounds hokey, but it will pull them in.

If available, use a motor driven telescope. Public events can be hectic, let the scope do the driving while you answer questions and assist folks looking into the eyepiece.

Use long eye relief eyepieces (e.p.'s) so inexperienced observers can easily look into them and allowing eyeglass wearers to keep their specs on. This will keep

refocusing chores to a minimum. If high power is required, use a Barlow in conjunction with a long focal e.p. that has typically a large eye lens (the lens at the top of the e.p.). This way, you get the benefit of both high power and long eye relief. Avoid those e.p.'s with the tiny eye lenses (usually your higher power ones) as laypeople have difficulty with them. They'll hold up your line of people as you struggle to assist them in finding objects in an e.p. with a lens the size of an eraserhead. Personally, I don't like to go below my old Tele-Vue 26 mm. I can see the field stop with my glasses on—it has a huge eye lens. Another option are the new Lanthanum e.p.'s which all have a 20 mm eye relief right down to their 2.5 mm e.p.! I have two, the 10 and 15 mm and can see the whole field with glasses on. It appears Al Nagler has recently introduced his version of high eye relief e.p.'s with his new "Radian" line that also offer a 20 mm eye relief (and a wider 60 degree apparent field than the Lanthanum's 50 degrees). Try one of these babies out—they'll make a large target for novices to zero in on.

That's it for this installment. Next month, helpful hints 4-7.

Winter "Funnies"

Silvio Jaconelli, President

Another article on my series of things to look for from your backyard. All of the things below were observed from my Gilbert back yard using a 10" f/7.6 reflector. The objects that I have selected have a common theme—they all made me smile !

So please get a star chart, look up the coordinates, haul your scope out to the backyard, and have fun !

The "37 Cluster"

The first object is NGC 2169 in Orion at 6 Hr 08 Min, +13° 50'; this is in the club of Orion, right between (and less than a degree below) the fourth magnitude pair of stars Nu and Xi Orionis. These stars are arranged in a shape that forms the number "37" if you have a scope that does not flip images left to right; most catadioptrics and refractors with star diagonals will show "37" flipped mirror image. This cluster has up to 30 stars, though you probably need to be in the desert with large aperture to see that many; from my backyard I can only see about 18. Also look for the Otto Struve double $\Sigma 848$ at the top corner of the "3" in this asterism—an 8th magnitude pair with a separation of 2.5"—a nice split to go after. I found the best magnification to be 250x. Credit for pointing this one out to me goes to Lika Romney, one night out at Florence Junction.

The 'Casper' Nebula

Also in Orion is M78, located at 5 Hr 47 Min, +0° 10'; find this one by imagining the three belt stars of Orion to be the right hand side of a "V"—M78 will be the top tip of the left side of the "V". One look at this nebula will explain why I call this one "Casper"; it is a 10th magnitude reflection nebula with two 10th magnitude stars in the middle that gives the object the appearance of a ghost's head. And you get the very distinct impression that the stars are two eyes that are staring right back at you!!! See if you can spot the 13th magnitude star at the other end of the nebula—easy from the desert, but tough from town. I found 180x to be the best magnification for this object.

The "Christmas Tree" Cluster

Swing over to the feet of Gemini—the Pollux side—and look for the star cluster NGC 2264 at 6 Hr 41 Min, +9° 40'. This is a fourth magnitude open cluster where the stars are arranged in the shape of a Christmas Tree—you will need to use a very wide field eyepiece and twist your head in different directions to see the overall shape, but once you do make it out, you cannot mistake it. This target is best viewed at 50x so that the whole asterism fits in your eyepiece's field of view—about half a degree. This cluster is within a band of nebulosity similar to the Rosette Nebula. While the Rosette is easy with the 13" and an OIII filter from the desert, the nebulosity here has always escaped me. Look this one up in Burnham's (it's officially in Monoceros) and you will get a long description of everything that there is to see here. From the desert and with Burnham's at my side, I could spend easily half an hour on this object.

The Fake Comet

Hubble's Variable Nebula—NGC 2261—is situated at 6 Hr 39 Min, +8° 40', which is just around 1.5° to the south-southeast of the Christmas Tree cluster. This is a 10th magnitude nebula—things are getting tougher—anchored to a variable star that spans magnitudes 10 through 13 within an irregular cycle (I just hope that you do not go looking for this one when the object happens to be at 13th magnitude !). I used magnifications of between 150x and 250x for this object. The nebulosity is triangular shaped and the star is at the tip of one corner of the triangle, giving the entire object the appearance of a comet. This is a very interesting object, and again Burnham's goes into this in great detail. The appearance of the nebula shows considerable changes from time period to time period, presumably as the result of dark matter moving around very close to the variable star and projecting shadows onto the nebula. And, apparently, the star here has just

been newly formed from the dust and gas from the nebula itself.

The Eskimo Nebula

This is our only planetary nebula on this tour—a star in its death throes giving off puffs of gas. This is NGC 2392 located just a few degrees east of the Pollux leg of Gemini; look for it at 7 Hr 29 Min, +20° 55'. It is a bright and compact object, and has a 7th magnitude "companion star" less than 10 arc seconds away, so some people see what they think is a double star and continue searching for the nebula; don't be fooled !! It is about 45" in diameter and fairly bright at just under 10th magnitude. Try filters on this one to see if you can enhance the image; be warned though, different filters can have different results with different scopes, so you may well end up preferring the unfiltered view while another person using a different scope may well prefer a filtered view. For bright planetaries, I like to use an OIII filter, though this filter renders faint planetaries invisible (like NGC 2202 in Orion, magnitude 12.4). The name "Eskimo" is derived from the view seen from large scopes—what appears to be a person's face with a fur lined parka around it. I just see a bright circle of light, no other detail. There is a 9th magnitude central star that some people say is the Eskimo's nose.

NGC 1999

Let's finish up our tour with a challenge followed by a visual treat. First, the challenge—NGC 1999 in Orion at 5 Hr 34 Min, -6° 42'. This is a nebula found south of the star cluster south of the Orion Nebula; use a star chart to star hop to this nebula. At first, you will probably not recognize the nebula—it is only 9th magnitude and is difficult to distinguish from the surrounding stars. However, careful study of the area will reveal a "star" that just does not focus—that's the nebula. A bit of a challenge ! This nebula surrounds variable star V380, which ranges in magnitude from 8th to 13th. I found 150x to be the best power for this object.

The Crowning Glory

This is one of my obsessions in life—the Orion Nebula. I am really sorry to bore you with this, but I just cannot put my scope away for the night without first dwelling on this object—it is just incredible, no exaggeration. I always take a few minutes to let the image soak into my brain. ALL magnifications are appropriate for this object—I start at 50x to see the entire field, and then work up to 300x in increments of 80x in order to split the trapezium and to show the mottling. I use 300x to see how many stars I can see in the Trapezium—the 10" routinely pulls in 5, and as often as not pulls in the

6th as well; these last two (5 and 6) are 11th magnitude, so aperture and magnification are important here. Yes, this one always brings a smile to my face.

Things NOT to look for

This last section is devoted to saving you time—things that I will NEVER be able to spot with MY eyes using MY scope from MY backyard :

The Horsehide Nebula in Orion—Heck, I cannot even see that with a 13" out in the desert !

Hinds Variable Nebula in Taurus—Maybe on a good dark night with no Moon, but I have still to see this one from my backyard.

The Cone Nebula in Gemini—this ranks right up there with the Horsehide Nebula; even my 13" in the desert cannot pick this one up.

Witches Head Nebula, a two degrees west of Rigel; witchcraft would be needed to see this from my backyard—heck, my favorite observing manual has a "-" in the magnitude column for this object !

1998 Leonid Meteor Shower

Report from Florence Junction, AZ

Bernie Sanden, EVAC

A friend I work with is such an avid meteor observer that a condition for taking the job we offered him was that he could be assured of having time off for the 1999 Leonids. That was in 1994. This year, Bob and I considered driving NW of Wickenburg to view the Leonids just in case this turned out to be THE YEAR. However, as the day approached, and the realities of having to work the next day restricting my freedom to view the shower from a distant location, I had to settle on a site nearby. I heard that Don Wrigley was planning to watch from the Florence Junction site, so after a call to Don, I and a few others met up at Don's place to gather before heading out to the site. While viewing Saturn in Don's backyard using his 6" refractor and 10" reflector, the show was already underway. As the radiant rose, we saw two bright meteors skimming overhead a full 120 degrees within 15 minutes of each other. Before the night was out, we had witnessed perhaps the best meteor shower we ever will...that is, unless we are fortunate enough to be at the right place at the right time to observe the 1999 Leonid "storm"

should it occur. As far as this years' Leonids, the drama of the night and the blaze of scores of roman candles lighting the night sky are still etched in my memory as if it happened last night. The event was a heck of a lot of fun, as well, thanks to the group I was fortunate enough to share the unfolding events with.

Upon returning home from work the next day, I sent a quick summary out to the AZ-Observing e-mail astro newsgroup. Six weeks later, I don't think I have anything to add. It pretty much sums up my observations for the night:

Amazing how much variance there is between meteor count reports within the state. Anyhow, here's the numbers from the Florence Junction site about 30 miles east of Phoenix. Limiting magnitude varied drastically across our sky due to Phoenix light pollution to the west and intermittent cirrus. Best part of sky was probably about magnitude 6.5, worst about 4.5. Observers Don Wrigley, Frank Kraljic, Chris MacFarland, Tom Polakis (between 3:30 and 5:30 a.m.), and myself. Frank took the "group" count, I did an individual count:

Local Time (-7 UT)	Indiv	Group
1 a.m.— 2 a.m.	78	88
2 a.m.— 3 a.m.	110	148
3 a.m.— 4 a.m.	114	196
4 a.m.— 5 a.m.	164	236
5 a.m.— 6 a.m.	109	

No group count between 5 and 6 a.m., Frank was content to sit back and watch the show. My proportionally lower count (relative to the group count) between 3 and 4 a.m. is partly due to the direction I was facing and my obsessive involvement with a Thermos full of hot chocolate.

Main impressions:

- -5 or brighter meteor every 10 minutes or so, at least 4 very bright (ground-lighting) meteors left visible trains that lasted over 5 minutes. The "best" of these occurred at about 5:45 a.m. towards NE approx. magnitude -12, leaving a train that lasted over 15 minutes in the twilight sky, eventually forming an inclined ring 5 degrees long. The trains that persisted were great binocular objects, being distorted in the upper atmosphere. Big 'ol false-Veil Nebulae.
- Spurts and lulls, sometimes saw a dozen in a couple minutes followed by only a few in the next few. Many simultaneous meteors. My favorite in this regard were three that shot out near the Sickle of Leo in different directions, all within about 2 seconds, clearly identifying the radiant. The spurts really got the group whooping. We were all a bunch of adrenaline junkies by dawn.

- Unlike other Leonid showers I've seen, in which green was the color I most often recalled, most of these appeared yellow and orange (could it be due to the fact that I have historically observed the Leonids above 5000 ft elevation?).

- Lots of background meteors (not reflected in the above counts). Most appeared to radiate from Pleiades/Hyades area, so we assumed they were Taurids. We counted 12 per hour between 1 a.m. and 3 a.m..

- Meteors screaming down the length of the zodiacal light cone was something I've never seen before. Something very aesthetic about it.

- Although the count rose as the radiant did, the number of long, slow meteors decreased. It was a trade-off—either proportionally more of the "knock-your-socks-off" kind, or a lot of frenzied activity mostly involving short and quick ones. In fact, two of the best meteors we saw were observed from Don Wrigley's backyard in Apache Junction around 11:00 p.m., which seemed to skim for over 120 degrees of the sky, nearly overhead.

- Saw two distinct glints in the sky between clouds on the drive back to Phoenix, about 20 minutes before sunrise. Hated to think so much was still going on and we were missing it. All and all the best meteor shower I've ever observed, but can only imagine how the "storm" might look. Be prepared, 33 years will be here before you know it...

Meteor Observing

Frank Kraljic, EVAC

The following are ten proven techniques to observe more meteors:

1. Taunting the sky

"Come on. Think you're all bad. I dare you to put out another bright one. I dare you!"

2. Threatening the sky

"If you don't start producing sky, I ... I... I'll shine my flashlight at you!"

3. Pleading with it

"Please... Please, sky. Another big one. I beg you. I'll be your best friend."

4. Reverse Psychology

"I'll just look at that bright star over here and not even pay attention to your meteors. No attention at all."

5. Low self-esteem approach

"I won't see any, I know I won't. There's no use. I'm no good at this. I should go home."

6. Talking to God

"God..., I know its been a while since I've sought guidance from You, but ... I need a sign to know that my life is not a failure. (long pause) God? ... Are you listening?"

7. Negotiate

"Okay, how 'bout this? If you shoot a whole bunch of meteors, I promise I'll help out an that public star party next month. That sounds like a good deal, right?"

8. Motivation

"C'mon sky, you can do it. All right! More of that. You're the money, baby."

9. Putting down the shower

"You suck. The Geminids put on a better show than you!"

10. Swearing

!#\$%^&*

...and, if none of these work, you're obviously doing something wrong and made the Sky Gods angry. Lay in your lawn chair and reflect about the past events.

Rio Salado Astronomy

N. Brian Hopkins, Rio Salado College
Hopob@aol.com

As many of you are aware, astronomy students from Rio Salado College have been attending some of your various star parties. These students have expressed how very helpful you folks were, how much they learned from their visit, how much they admired your knowledge and the fine workmanship of the hand-crafted telescopes, and how willing and eager many club members were in sharing their knowledge.

These students were in a lab component of an introductory astronomy course, called Survey of Astronomy. The lab portion is designed to allow the student to become familiar with the sky, telescopes, and methods of astronomy. Instead of a theoretical

approach, students are required to make their own observations of the actual sky including phases of the moon, constellation recognition, interpreting star and planet charts like those in *Astronomy* magazine, telling time by both sun and stars, seasonal sun angles, etc.

There are ten distinct lab units to the course. One of the labs suggests that they attend a "star party" sponsored by one of the major amateur astronomy clubs in the Valley. Since these clubs promote and perpetuate interest in astronomy, this lab exercise is a benefit to all. (A few students are reluctant to attend a club star party, and so I have options for them, such as ASU Telescope Night, or a public star party).

The purpose of this particular lab is to allow students to get additional perspectives on astronomy through contact with dedicated amateur astronomers, to be able to view the sky in dark locations, to have the opportunity to observe distant celestial objects through fine crafted telescopes, and to develop additional understanding about telescopes/mounts and making intelligent decisions on possible future telescope purchases.

Students are given information on proper star party etiquette—that they are guests, that these are "sober" gatherings of serious celestial observers, and that beforehand they must contact a key person of the club they plan to attend. Students are advised about arriving before dark, turning off headlights near the sight, dressing warm, looking through a particular telescope only by permission of the prime observer, and, of course, that there are no facilities nearby.

Since these are beginning astronomy students, and some are attending a star party early in the course, I appreciate your patience with what may at times be naive or "off the wall" questions. A good number are very knowledgeable, highly motivated, and conscientious. They may surprise you by what they know and can share.

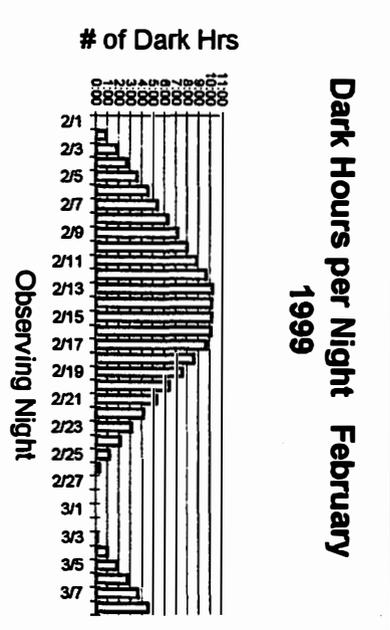
This astronomy course is offered two times per year, and it will commence again in late January. So you will likely be getting some more calls and visits. Your clubs are a fabulous asset to the Valley, and have also contributed greatly to my Astronomy Lab Course. Please advise me if any problems occur, however minor, or if you have any suggestions that would make the student's and/or your experience even more rewarding.

Again, I would like to express my sincere appreciation for your dedication in helping preserve astronomical education in the Valley.

Dark of the Moon Table — Feb 1999

OBSERVING NIGHT	START OF DARK		END OF DARK		TOTAL DARK	OBSERVING NIGHT	START OF DARK		END OF DARK		TOTAL DARK
	None	None	None	None			None	None	None	None	
MON/TUES	2/27 7:22 PM	2/28 8:16 PM	2/19 10:08 PM	2/20 5:40 AM	7:32	FRISAT	2/19 10:08 PM	MS	2/20 5:40 AM	SOT	7:32
TUES/WED	2/27 7:23 PM	2/28 8:13 PM	2/20 11:14 PM	2/21 5:38 AM	6:25	SAT/SUN	2/20 11:14 PM	MS	2/21 5:38 AM	SOT	6:25
WED/THURS	2/27 7:24 PM	2/28 8:13 PM	2/23 12:19 AM	2/22 5:38 AM	5:19	SUN/MON	2/23 12:19 AM	MS	2/22 5:38 AM	SOT	5:19
THURS/FRI	2/27 7:25 PM	2/28 8:13 PM	2/23 1:24 AM	2/23 5:37 AM	4:13	MON/TUES	2/23 1:24 AM	MS	2/23 5:37 AM	SOT	4:13
FRISAT	2/27 7:25 PM	2/28 8:13 PM	2/24 2:27 AM	2/24 5:36 AM	3:09	TUES/WED	2/24 2:27 AM	MS	2/24 5:36 AM	SOT	3:09
SAT/SUN	2/27 7:26 PM	2/28 8:13 PM	2/25 3:28 AM	2/25 5:35 AM	2:09	WED/THURS	2/25 3:28 AM	MS	2/25 5:35 AM	SOT	2:09
SUN/MON	2/27 7:27 PM	2/28 8:13 PM	2/26 4:22 AM	2/26 5:33 AM	1:11	THURS/FRI	2/26 4:22 AM	MS	2/26 5:33 AM	SOT	1:11
MON/TUES	2/27 7:28 PM	2/28 8:13 PM	2/27 5:12 AM	2/27 5:32 AM	0:20	FRISAT	2/27 5:12 AM	MS	2/27 5:32 AM	SOT	0:20
TUES/WED	2/28 7:29 PM	2/29 8:20 PM	none	none	—	SAT/SUN	none	—	none	—	—
WED/THURS	2/28 7:29 PM	2/29 8:20 PM	none	none	—	SUN/MON	none	—	none	—	—
THURS/FRI	2/28 7:30 PM	2/29 8:20 PM	none	none	—	MON/TUES	none	—	none	—	—
FRISAT	2/12 7:31 PM	2/13 8:22 AM	none	none	—	TUES/WED	none	—	none	—	—
SAT/SUN	2/13 7:32 PM	2/14 8:48 AM	3/3 7:51 PM	3/3 7:58 PM	0:07	WED/THURS	3/3 7:51 PM	MR	3/3 7:58 PM	MR	0:07
SUN/MON	2/14 7:33 PM	2/15 8:45 AM	3/4 7:51 PM	3/4 8:53 PM	1:02	THURS/FRI	3/4 7:51 PM	MR	3/4 8:53 PM	MR	1:02
MON/TUES	2/15 7:34 PM	2/16 8:42 AM	3/5 7:52 PM	3/5 8:47 PM	1:55	FRISAT	3/5 7:52 PM	MR	3/5 8:47 PM	MR	1:55
TUES/WED	2/16 7:35 PM	2/17 8:42 AM	3/6 7:53 PM	3/6 10:41 PM	2:48	SAT/SUN	3/6 7:53 PM	MR	3/6 10:41 PM	MR	2:48
WED/THURS	2/17 7:39 PM	2/18 8:41 AM	3/7 7:54 PM	3/7 11:34 PM	3:40	SUN/MON	3/7 7:54 PM	MR	3/7 11:34 PM	MR	3:40
THURS/FRI	2/18 8:03 PM	2/19 8:41 AM	3/8 7:55 PM	3/8 12:27 AM	4:32	MON/TUES	3/8 7:55 PM	MR	3/8 12:27 AM	MR	4:32

EOT = End of Astronomical Twilight MR = Moonrise SOT = Start of Twilight MS = Moonset NOTE: Applies to Phoenix area (Mtn Std Time)
 Bernie Sanden 1/99





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. See below:

Enclosed:

	_____ \$20 Annual
Kathy Woodford, EVAC Treasurer	_____ \$15 April—Dec
PO Box 213	_____ \$10 July—Dec
Apache Junction, AZ 85217	_____ \$ 5 Sept—Dec
	_____ \$27 Sky & Telescope
	_____ \$29 Astronomy Magazine
Date: _____	_____ \$ 7 EVAC Nametag
	_____ Total

Please Print (indicate confidential information)

Name _____
 Address _____

 Phone _____
 Email _____
 URL _____

How did you hear about EVAC? _____

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

Other: _____

EVAC on the Internet

EVAC Homepage

www.goodnet.com/~rkerwin/evac/evac.html

E-mail Mailing Lists

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

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

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 the "-request" mailing address at psiaz.com. For example, you would send the request for AZ-Observing to "AZ-Observing-request@psiaz.com"

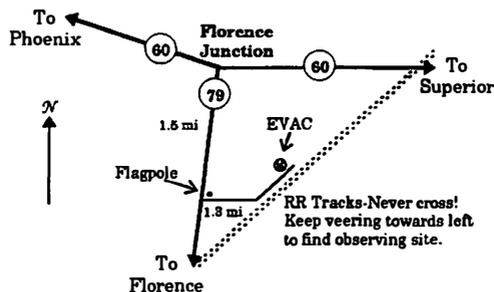
EVAC Star Parties

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.

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

How To Get There: Take US 60 east to Florence Junction. At Florence Junction, turn right (south) on SR 79. After 1.5 miles, you will see a tall steel flagpole and a dirt road to the left. Turn left onto the dirt road and continue for another 1.3 miles. Drive with caution as the road is rough in some areas. To the left there will be a large open area.

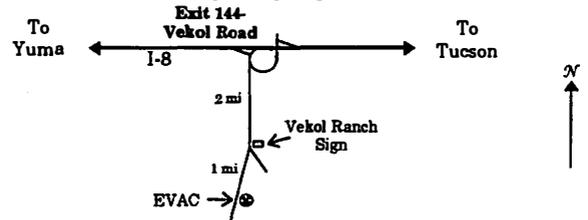


Deep Sky Star Party: Vekol Road Site

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.



Don't Forget: Tony & Daphne Hallas speak at the next EVAC Meeting!

- Rio Salado Astronomy
- 1998 Leonid Meteors
- Backyard Astronomy
- Planetarium Software
- Sky Atlas 2000-2nd Edition
- Observe the ISS
- If it's Clear...

Contents:

Valued member since
Next EVAC Meeting — Feb. 10th 7:30 pm



East Valley Astronomy Club
 M. Aaron McNeely, Editor
 4402 North 36th Street, #22
 Phoenix, AZ 85018



East Valley Astronomy Club—1999

Scottsdale, Arizona

EVAC Homepage—<http://www.goodnet.com/~rkerwin/evac/evac.html>

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602/497-5703

PROPERTIES
Enrico Alvarez
602/837-0486

MEMBERSHIP & SUBSCRIPTIONS: \$20 per year, renewed in December. Reduced rates to *Sky & Telescope* and *Astronomy* available. Contact Kathy Woodford, P.O. Box 213, Apache Junction, AZ 85217, 602/857-3438. Email—ariz.kat@juno.com

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: Mailed out the week before the monthly Club meeting. Send contributions to M. Aaron McNeely, 4402 North 36th Street, #22, Phoenix, AZ 85018, 602/954-3971. Email—amcneely@primenet.com. Contributions may be edited.

ADDRESS CHANGES: Contact Bill Smith, 3430 N. Mountain Ridge Unit 32, Mesa, AZ 85207, 602/854-8071. Email—bsmithaz@aol.com

EVAC LIBRARY: The library contains a good assortment of books, downloaded imagery, and helpful guides. Contact Enrico Alvarez for complete details. 602/837-0486.

BOOK DISCOUNTS: Great savings through Kalmbach and Sky Publishing. Contact Kathy Woodford, PO Box 213, Apache Junction, AZ, 602/857-3438. Email—ariz.kat@juno.com

EVAC PARTY LINE: Let other members know in advance if you plan to attend a scheduled observing session. Contact Stan Ferris, 602/831-7307.

