East Valley Astronomy Club

January 1999 www.goodnet.com/~rkerwin/evac/evac.html Scottsdale, Arizona

Big-Name Speakers for February 10 EVAC Meeting!

California astrophotographers **Tony** and **Daphne Hallas** will be the featured speakers at the EVAC meeting on Wednesday, February 10. This is a special event, as it is the first time in club history in which we've brought in a speaker from out of state.

The Hallases are undoubtedly one of the best astrophotography teams in the world. Their work routinely appears in the major astronomical publications. As owners of a custom photographic lab, their darkroom finesse is unsurpassed. At the February meeting they will be discussing their technique, accompanied of course by stunning examples.

If you are unfamiliar with their photography, you can check it out on the World Wide Web at http://www.astrophoto.com.

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	

EVAC Meeting Highlights

December 9, 1998

Tom Mozdzen, Secretary

Call to Order: President Silvio Jaconelli called the meeting to order at 7:36 p.m., his first as President. There were 57 people present with 5 being guests. The new officers and board members stood to be recognized and introduced. Aaron McNeely and Don Wrigley handed to Tom Mozdzen meeting minutes, notes, and advertisements collected over the past two years.

Silvio introduced the following upcoming events:

Upcoming Events

January 9	**EVAC Local Star Party** at Florence Junction
January 13	**EVAC Meeting** at SCC Speaker: Bill Dellinges
January 16	**EVAC Deep Sky Star Party** at Vekol Road
January 16	**Arizona Science Center Star Party**—Contact Sheri Cahn (602/841-7034) for details
January 29	**EVAC Board of Directors Meeting** at Stan Ferris' home (602/831-7307), 7:30 p.m.
February 10	**EVAC Meeting** at SCC Speakers: Tony & Daphne Hallas

January 1999

All Times MST

For it was an extraterrestrial scene that I witnessed, one of great and magnificent grandeur in its proportions, and yet one completely incomprehensible to me.

-H.P. Lovecraft

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 ◯ *New Year's Day*	2 Isaac Asimov, b. 1920
3 Quadrantid Meteors	4 Moon near Regulus	5	6	7 Galileo discovers 4 satellites of Jupiter, 1610	8 Mars near Spica	9 ◑ **EVAC Local Star Party**
10 Moon lies east of Mars and Spica	11 W. Herschel discovers Titania & Oberon, 1787	12	13 **EVAC Meeting** 7:30 p.m. at SCC	14	15	16 **EVAC Deep Sky Star Party**
17 ●	18 *MLK Day* Moon near Venus	19	20 Sun enters Capricornus	21 Moon near Jupiter	22 Neptune in Conjunction with Sun	23 Moon near Saturn
24 ◐ Star-asteroid occultation (p. 7)	25 J.L. Lagrange, b. 1736	26	27 Moon occults Aldebaran	28 J. Hevelius, b. 1611	29	30 *Tomorrow*: Blue Moon—2nd Full Moon in month
31 ◯ Penumbral Eclipse						

New Business

AZ Science Center Observing Night: Due to uncertainties and probable conflicts, the date of January 16 is suspect. Sheri will update us during the next club meeting.

Insurance: Since two people have been paying the club insurance personally for the last two years, it was decided that the club will thank them by paying their dues for the next two years.

SCC Star Party: Steve Mutz informed us that the back parking lot will become available for star party use in the spring.

Christmas Party: Lots of fun, food, audio/visuals. Thanks to host Tom Polakis.

Money Matters: Dues of $20 are due next month. *Sky & Telescope* subscriptions are $27, and *Astronomy* is $29. Calendars are $6, Explore the Universe is $5, and Badges including postage are $7.

New Party Line: Call Stan Ferris 831-7307 for star party info, attendance, etc.

Permit Update: Florence Junction permit expired in August. We have applied for a new permit, and should be up to date soon.

Florence Junction Gunfire: If you hear gun fire at Florence Junction, there is an 800 number posted which you should use to call the police. Also, pay attention to the flag pole: A raised red flag means the military may be practicing shooting. Stay Away when red!

Show and Tell

Rick Scott took a trip to Cape Canaveral, courtesy of Allied Signal, to view the launch of the Deep Space 1

rocket. Rick showed us a nice variety of slides of the Visitor Center such as the Rocket Garden and the Astronaut's Memorial. He also had still photos and a video of the actual launch. The spacecraft is intended to come to within 3 miles of comets and asteroids along its 100 million mile journey.

Lou Papas and Gene Lucas spoke concerning the Hubble Space Telescope and their experience exhibiting at the Arizona Science Center. They had nice images and posters displaying the pictures from the HST. Lou and Gene had displayed material inside of the Arizona Science Center, where over 1000 visitors were estimated to have stopped by. Other EVAC members set up their telescopes on the patio—which began the legend of the "telescopes on a spit".

People asked about the following subjects:

The Next Generation Telescope: Plans for the Next Generation Telescope are under study—perhaps 2008 for hardware?

Shape of Hubble Images: Why do Hubble images always looked "L" shaped? This is because each image is formed by 4 separate CCD imagers: 3 standard resolution and one high resolution.

The meeting was called to a close at 8:30 p.m.. The club treated members to beverages and cookies. A few members brought astronomy items to sell for the swap meet.

President's Comments

Silvio Jaconelli, President

Well. my first night (December EVAC Club meeting) as EVAC President was a lot smoother than I dared to hope!!

My first Board Meeting will be in late January, and I would like to share with you my thoughts in preparation for that meeting. Any (constructive) inputs you may have will be welcomed—please catch me at any EVAC meeting and I will be happy to listen to inputs. Now I will not promise anything, but I will definitely listen!

Firstly, please do not expect radical changes—I think that we have a good balance the way things are currently run, so I see no need for any major changes. Thanks to Sherri and her Board are due here!

Heavenly Details

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

January 1999
The First Month

(all times EST)

This spectacular sky-year begins auspiciously with a full **Moon** on January 1, which happens only a few times per century. **Earth** is closest to the **Sun** (perihelion) on the 3rd, at a distance of 91,400,005 miles. **Venus** slowly emerges from behind the Sun, appearing low in the southwest at dusk. The evening star is in conjunction with green **Uranus** on the 13th, an event visible with the aid of binoculars. For more-observable gatherings, watch the Moon skim very near to brilliant **Jupiter** on the evening of the 21st and pass near bright **Saturn** late on the 23rd, shortly before conjunction.

Full Moon: 1st day, 21st hour, 49th minute
Last Quarter: 9th day, 9th hour, 22nd minute
New Moon: 17th day, 10th hour, 46th minute
First Quarter: 24th day, 14th hour, 15th minute
Full Moon: 31st day, 11th hour, 6th 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!*

A focus area for me will be in the administrative side of things. I intend to ask each Board member to assume an area of specific responsibility (such as, new members, legal, outside contacts, event schedules, etc. etc.) so that the Board will have full control and knowledge of all aspects of club business. For example, our annual Incorporation returns are about three years delinquent—this was handled by a non-Board member and was overlooked when that member left the Club. Also, I have been having a difficult time getting an updated membership listing. Ditto for the Club Constitution. I feel that all such responsibilities must

rest with the Board, and we can cover them at least four times each year at our quarterly Board meetings.

A new direction that we might take might be to resurrect the position of club historian—this would be a person responsible for keeping track of all our monthly meeting summaries, the quarterly Board Minutes and Resolutions, monthly newsletters, and even newsletters from other clubs (I already have a club in Ontario, Canada that wants to trade monthly newsletters with EVAC). The club historian would also keep copies of all our insurance records, incorporation returns, Club Constitution, etc. I believe that to-day there is no such centralized repository of data.

I want to explore the area of public star parties—such events have been a good source of funding in the past, though it seems that this source of money has gone away. We can have national speakers at club meetings only if we have enough cash flow available to fund them. Also on the subject of finances, we may decide to re-explore the possibility of distributing the monthly EVAC newsletters electronically to those members who choose that mode of distribution—the current hand mailing has always been a major source of cost in the past, and just maybe we can save on part of it.

As president, I intend to write articles for the EVAC newsletter (my most recent was on planetary observing); future topics will include solar observing, multiple targets in the same field of view, and observing targets of topical interest. I also want to have a regular "President's Tip of the Month" feature. All of this is designed to make observing a more enjoyable experience for members. Now I will be the first person to raise my hand to acknowledge that I am NOT an expert, but I intend to share what little I know with anyone who will be kind enough to allocate me some of their time. I DO want, however, to encourage our membership to do likewise. It is incredible just how much good information is out there—it is just a matter of mobilizing ourselves to have it printed in the newsletter or have it included in our 'show & tell' at the monthly club meetings. Most of what I have picked up came from other club members, so PLEASE, I ask you to use the Newsletter and 'show & tell' to share your knowledge with your fellow club members. And if you know of someone out there with something worthwhile to share, then please ask them to share it. I want people to say "Wow, I learned a lot of neat stuff at EVAC .....".

And finally, I would like to explore the possibility of expanding the two-way communications between the Board and the club membership at large—things like publication of the Board Minutes, publication of the annual Treasurer's report, conducting membership surveys, etc. Just something that will help us all keep in sync with each other.

Well, please let me have your (constructive) inputs—this is your club and I am here to serve you. I will attempt to raise as many of your inputs as possible at our Board meetings.

President's Tip of the Month

Silvio Jaconelli, President

Larger aperture scopes will tend to produce large diameter star images, especially on nights of poor seeing; this makes splitting close double stars difficult, especially in separations below 3 arc seconds. There are two different approaches to this problem :

1) Use a filter. For dimmer stars or where the bloating is not too bad, use a light blue; use darker colors the worse the seeing. And for really bright stars, use a nebula filter; I have used both broadbands and OIII filters with very good results, but only for stars brighter than 6th magnitude!

2) Stop down the aperture. This is especially helpful for really bad seeing. You will experience a distinct darkening in the images—maybe losing several magnitudes—but my 10" at f/30 (after stopped down) produces some very sharp star images!!

Lynn V. Hepburn

Sam Herchak, EVAC

I just recently learned that Lynn Hepburn, ATM and owner of Desert Optical Technologies, lost his battle with cancer on Oct 18, 1998. Many of us know him via the EVAC mirror making class in 1993, after which most of our mirrors were coated by Lynn for cheap.

If you were fortunate enough to meet him, you experienced what a "truly gentle man" he was. These words come up every time people talk about him. Behind that gentleness was an incredible mind as well. It didn't surprise me in the least to find out Lynn went through the U of A medical school "for something to do" several years ago.

We cherish our visits with Lynn and his wife Pauline. I'm sorry for her loss, our loss, and that of the ATM community.

If it's Clear...

Fulton Wright, Jr., Prescott Astronomy Club

January 1999

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

On Thursday, January 7, starting about 6:30 p.m. you can see several events of Jupiter's moons. With a medium (6 inch) telescope look 45 degrees above the southwest horizon for Jupiter. Here is the schedule of events:

6:30 p.m.	Twilight fades enough to see Ganymede's shadow on Jupiter
7:40 p.m.	Io moves in front of Jupiter
8:22 p.m.	Ganymede's shadow leaves Jupiter
8:54 p.m.	Io's shadow falls on Jupiter

On Saturday, January 9, about 6:30 a.m. you can see a nice grouping of objects. With your unaided eye or binoculars look 45 degrees above the south horizon for the Moon. Mars (magnitude 1) is the red dot 4 degrees down and to the left. Spica (also magnitude 1) is the blue-white dot 4 degrees below Mars.

On Sunday, January 10, at 6:31 p.m. you can see Europa's shadow fall on Jupiter. With a medium (6 inch) telescope look 45 degrees above the southwest horizon for Jupiter. You can see Europa itself emerge from in front of Jupiter 16 minutes later on the opposite side.

On Monday, January 11, after about 4:00 a.m. you can see the north pole of the Moon at its best. With a small (3 inch) telescope, look 20 degrees above the southeast horizon for the Moon. Libration tips the north part of the Moon toward us. A day or two before or after this date will also show this effect. The view will improve as the moon rises higher in the sky till around 7:30 a.m. when the Sun rises.

On Wednesday, January 13, from 10:15 p.m. to 12:45 a.m. you can see an eclipsing variable in the Trapezium at minimum. With a small (3 inch) telescope look 50 degrees above the south horizon for the constellation Orion. Point your telescope at the Trapezium, the quadruple star in the Orion nebula, M42. Normally star A, the westernmost one, is the same brightness as star D, the easternmost one. Check this out the night before or after. Every 65 days (and tonight's the night) A drops 1.5 magnitudes to the same as B, the northernmost one. (Star C, the southernmost one is always the brightest.)

On Thursday, January 21, at about 6:30 p.m. you can see the Moon and Jupiter near each other. With your unaided eye or binoculars look 40 degrees above the southwest horizon for the Moon. Jupiter will be 2 degrees up and to the right.

On Monday, January 25, after sunset you can see the south pole of the Moon at its best. With a small (3 inch) telescope look 60 degrees above the southeast horizon for the Moon. Libration tips the south part of the Moon toward us. A day or two before or after this date will also show this effect.

On Wednesday, January 27, at about 12:50 a.m. you can see the Moon occult a bright star. With binoculars or a small (3 inch) telescope, look 30 degrees above the west horizon for the Moon. Aldebaran should be above the left hand side of the Moon. A larger telescope will make it easier to see the reappearance from behind the sunlit limb at about 1:45 a.m.. The location of the reappearance will be pretty near the spot on the Moon nearest the horizon.

On Saturday, January 30, at about 7:00 p.m. you can see Saturn's moons in order. With a medium (6 inch) telescope, look 60 degrees above the southwest horizon for Saturn. Farthest away and easiest to see is Titan. Then comes Rhea, Dione, and Tethys, all closer to Saturn.

Astronomical Treasures of the Egypt Exhibit

M. Aaron McNeely, Secretary

It was with much anticipation that I awaited the arrival of the great exhibit of Egyptian artifacts now at the Phoenix Art Museum. Entitled "Splendors of Ancient Egypt," the exhibit is billed as "a sweeping view of one of history's greatest civilizations from Egypt's predynastic period 5000 years ago to the Seventh Century A.D." "Splendors" is the largest collection of Egyptian artifacts to ever tour the United States. The collection is normally housed in the Roemer and Pelizaeus Museum of Hildesheim, Germany.

To answer the most pressing concern, yes, the exhibit does display a mummy!

The astronomical connections of some of the following may be a stretch, but there is one wonderful object that is indisputably a scientific relic and treasure of the history of science. Following the general order of objects in the exhibit:

Alabaster Bust of Chephren
4th Dynasty: 2500 B.C.

Chephren is one of the pharaohs associated with the pyramids of Giza, undoubtedly some of the most astronomically-influenced structures ever built. The bust was shattered and has been partially reassembled into a surreal and beautiful image.

Limestone Sculpture of Vizier Hem-iu-nu
4th Dynasty: 2350 B.C.

Hem-iu-nu is considered to be the individual that organized construction of pharaoh Khufu's pyramid at Giza. The statue displays an overweight person of the upper class with delicate facial features. The egyptologist who helped organize the exhibit claims that this statue is one of the greatest art treasures ever discovered.

Gilded Coffin of Amen-em-opet
18th Dynasty: 1490 B.C.

This beautiful coffin displays star symbols.

Sandstone Relief of Akhenaton
18th Dynasty: 1350 B.C.

This carved image displays pharaoh Akhenaton bathed in the rays of Aten, the sun god. Akhenaton broke with tradition and instituted a monotheistic (one-god) cult dedicated to the worship of the sun god Aten. After his death. the pharaohs reinstituted the traditional polytheistic (many gods) religion and destroyed most traces of this pharaoh.

Limestone Sculpture of Official Antef
12th Dynasty: 1991-1783 B.C.

This limestone seated sculpture displays star symbols. It is somewhat similar in form to the seated sculpture of vizier Hem-iu-nu.

Stone Chip Drawings: Ram & Bull
19th Dynasty: 1200 B.C.

These paintings were implemented upon irregular flakes of limestone generated by the excavation of tombs. Okay, this is a stretch: Perhaps they represent Aries and Taurus? We do know that our traditional zodiac became disseminated into Egypt and is displayed in the famous Denderah Zodiac in the Louvre.

Limestone Pyramidion of Scribe Moses
19th Dynasty: 1250 B.C.

Shaped like a tall, pointed pyramid, this relic displays an image of the scribe Moses (a common Egyptian name) kneeling in adoration of the solar disk. Two other sides display baboons. The Egyptians associated baboons with sun worship because they screech at sunrise. On one face is the solar disk itself displayed between two rounded, stylized representations of hills. The pyramidion originally served as the capstone for a brick monument that was constructed over a rock-cut tomb.

Gilded Coffin of Paser
18th Dynasty: 1420 B.C.

Remarkably similar to the coffin of Amen-em-opet, Paser's coffin also displays star symbols. According to the exhibit description: "The combination of gold and black suggests the colors of the night sky through which the spirits of the dead had to make their way in their progress to the next life."

Papyrus "Book of the Dead" of Djed-Hor
Ptolemaic Period: 300-100 B.C.

This remarkable, unrolled papyrus scroll contains instructions for the deceased spirit to use in its travels into the afterlife. The hieroglyphic, intricately-inked text is replete with evocative phrases and images of things such as the "Four Rudders of Heaven," "the Seven Celestial Cows" (a reference to the Big Dipper (?), envisioned by the Egyptian as the leg of a cow), and the "Bull of Heaven." The inked drawings also display the boat by which the sun travels in its daily journey, and a myriad of other fascinating and bizarre images.

Limestone Offering Stele of Pa-nakht-em-opet
19th Dynasty: 1200 B.C.

Displayed as kneeling in veneration, Pa-nakht-em-opet offers to the sun god Ra portrayed as the "sun on the horizon."

Bronze Mirror
18th Dynasty: 1920 B.C.

The circular mirror incorporates images of the sun and crescent moon and alludes to their cycles of rebirth.

Bronze Votive Images of Imhotep and Khons
Ptolemaic Period: 663-20 B.C.

The famous Imhotep, architect of the first pyramid, the Step Pyramid of Djoser at Saqqara, became deified after death as a patron god of artists and scholars. Imhotep is displayed in bronze as a seated figure holding an open papyrus scroll. Imhotep has been identified as an inspiration for the Greek god of medicine Aesculapius who inspired the constellation Ophiuchus. Via a long line of descent, Ophiuchus may be one of few constellations to actually have been inspired by an authentic historical person.

The standing, mummiform figure of the moon god Khons is topped by an image of the crescent moon. Many other works in this exhibit display images of pharaohs or gods bearing solar or lunar disks as part of their crowns. See, for example:

Ebony Statuettes of Queen Tiye and Amenhotep III (18th Dynasty: 1350 B.C.)

Limestone Reliefs from the Chapel of Thoth (Ptolemaic Period: 295 B.C.)

Limestone Relief of Psametik II Offering to the God Khnum (Late Period: 590 B.C.)

Granite Relief of Ptolemy II Offering to the Goddess Isis (Ptolemaic Period: 332-30 B.C.)

Granodiorite Stele of Lady Cherdu-ankh
Ptolemaic Period: 200-100 B.C.

The Lady, killed prematurely by a crocodile, was honored by the erection of the stone monument. At the top is a frieze of 23 star symbols in a long line and an image of the winged-disk of the sun (some scholars claim that this famous Egyptian symbol was inspired by a view of the sun's corona during a total eclipse).

Painted Wood End Panels and Coffin of Official Nakht
11th Dynasty: 2020 B.C.

Here is the astronomical treasure that I alluded to earlier, and coincidentally (nearly) the last object to be exhibited. This flat panel, the inside of the top of wooden coffin, displays a list of the "decons," evenly spaced stars used by Egyptian astronomers to, at a glance, be able to determine the time throughout the evening period of darkness at any time during the year. The decons were also used to divide the year into 36 periods of 10 days each. If you look closely at the panel you will notice that that 27 hieroglyphic columns are displayed. Twelve different hieroglyphic "sentences" are written in a repeating order throughout the entire space of the 27 columns.

How this all worked was difficult to determine (for myself), yet, at this point I experienced a sort of epiphany at the exquisite merger of two of my great loves, astronomy and ancient Egypt! The Big Dipper was also represented as a painted cow's leg studded with seven stars! In my view, let me reiterate that we have here an astronomical treasure of the first magnitude, an Egyptian star list which the museum placard describes as a "rare celestial clock." And what is even more amazing is that this wonderful thing is sitting at the intersection of Central Avenue and McDowell in downtown Phoenix! The acquisition of this Egypt exhibit is a major coup for the culture starved of the southwest.

Asteroid Occultation

Bill Peters, EVAC
bpeters@asu.edu

On Sunday morning, January 24, a tenth magnitude star named ppm128176 will undergo occultation by the asteroid 349 Dembowska at 12:41 UT (5:41 pm). For more information contact me at 602/813-4242.

For Sale

Remaining item is at further reduction: Heavy Duty Bogen Tripod #3246—Height 28" to 78", fluid head #3063, $300 new, yours for only $100.

Three items added: Pro Optic 500 mm f5.6 telephoto lens, erect image diagonal and 25 mm plossl lens for 20x. super for photos and doubles as spotting scope, $225 new, now $125 with tripod.

Tuthill 80 mm Ultimate Finder $395 new, brand new in box, exact image as Uranometria with erect image diagonal and lens—now $225.

Moon Globe—$10, Constellation lamp $25.

Call Jody Humber in Phoenix at 602-412-2329 or e-mail at jjhumber@juno.com

Entire 156-episode collection of *Star Trek: The Next Generation* professionally duplicated by Columbia House. Most volumes never opened. Asking $2100. Please call 990-1569 evenings and weekends, 542-2245 Tuesday through Friday, or 602/549-6762 and leave message if no answer. *Stephen G. Roquemore.*

1999 EVAC Lunar Occultation Predictions

Sam Herchak, EVAC

Included in this newsletter are predictions of occultations visible from the Phoenix area in 1999. I computed these with the DOS program Occult 4.06 by David Herald of the International Occultation Timing Association (IOTA) running on my PowerPC Macintosh computer with the application "Virtual PC" and Windows 95. The predictions are for the coordinates of the Phoenix airport and have about 2 second accuracy at that point (notice some daytime events for Aldebaran and Mars). Special events include Aldebaran in January, Uranus in October, and NGC2175 in November. Although visual occultation timings (vs. video) for the Moon are of little scientific value now, they are still beautiful to watch. Lunar grazing and asteroid occultation timings however are of great value. Any members wishing to help collect this type of data should check out IOTA at the following website or contact myself (924-5981): http://www.sky.net/~robinson/iotandx.htm. The format for the predictions is as follows:

Day—The day of the event.
Time—The Universal Time, in hours, minutes and seconds.
P—The type of event (phase).
D—disappearance.
R—reappearance.
Gr—grazing occultation at site. At mid-occultation, or closest approach, the star is less than 4" from the limb of the Moon (either above or below).
Star No—the star identification number from the USNO XZ catalogue
D—a double star code.
Sp—the star's spectral type.
Mag—the star's magnitude.
% illum—the percent illumination of the Moon. If followed by a +, values are for a waxing Moon; - for a waning Moon and e for illumination during a lunar eclipse.
Elon—the elongation of the Moon from the sun, in degrees. During a lunar eclipse, this gives the percent distance of the star from the center of the umbral shadow, and is followed by 'U'.
Sun Alt—the altitude of the sun, but only if it is greater than -12 deg.
Moon Alt—the altitude of the Moon.
Moon Az—the azimuth of the Moon.
CA—Cusp Angle - the angle of the event around the limb of the Moon, measured from the nearest cusp. Negative values indicate a bright limb event. The cusps are usually N (north) or S (south), but near full Moon can be E (East) or W (west). If a lunar eclipse is in progress, CA gives the % distance from the center of the umbra, and is followed by a 'U'. Values up to 103% are possible.
PA—Position Angle - the angle of the event around the limb of the Moon, measured counterclockwise from true (celestial) north.
WA—Watts Angle - the angle of the event around the limb of the Moon, measured eastward from the Moon's north pole. Essential for reappearances, as it locates the event with reference to lunar features. Use a protractor to mark a map of the Moon around the circumference at 10 deg intervals, starting at the north pole. Mare Crisium is at about 300 deg.
Long Libn—the libration of the Moon in longitude, as seen from the site at the time of the event.
Lat Libn—the libration of the Moon in latitude. The longitude and latitude librations are the selenographic coordinates on the Moon's surface through which a line from the Moon's center to the prediction site on the Earth passes.
A—coefficient for correcting the prediction for changes in site location. The units are seconds of time per minutes of arc. The correction to the prediction for a change in site, in seconds of time, is found by multiplying A by the change in site longitude (in minutes of arc, positive to the East) from the prediction site.
B—same as for A, but for changes in latitude (positive to the north).

EVAC Lunar Occultation Predictions for Phoenix

E.Long. -112 00 30 Lat. +33 26 15 Alt. 345 m. Telescope dia 75 mm.

1999 January

Day	Time h m s	P	Star No	Sp D	Mag	% illum	Elon	Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
5	11 33 17	R	1466vA0		5.2	87-	137		64	220	88S	288	267	+6.2	-0.1	+2.0	-1.2
			1466 = 6.0 & 6.0, Sepn 0.050														
24	5 30 53	D	0249	K0	4.7	43+	82		21	263	28N	7	29	-3.1	+6.3	+0.5	+3.5
27	3 28 24	D	0667vG5		5.3	76+	121		73	177	89S	79	88	+0.9	+6.8	+2.2	+0.5
			0667 = 5.4 & 7.9, Sepn 0.024, PA 238														
27	7 52 27	D	0692aK5		1.1	77+	122		31	270	50S	119	127	+0.3	+6.8	+0.6	-2.2
			0692 = 1.1 & 11.3, Sepn %132.4, PA 32: & 13.6, Sepn 30.800, PA 110														
			0692 = Alpha TAU, 0.75 +/- 0.95V, Var Type LB:														
27	8 45 14	R	0692aK5		1.1	77+	123		20	277	-63S	232	240	+0.3	+6.8	+0.7	+0.2r Type LB:
28	5 49 48	D	0832	M0	4.7	85+	135		67	235	80N	72	75	+1.9	+6.1	+2.1	+0.3
			0832 = CE TAU, 4.23 to 4.54V, VaR Type SRC														

1999 February

Day	Time h m s	P	Star No	Sp D	Mag	% ill	Elon Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
3	13 34 22	R	1644	A0	4.1	91-	145 -11	33	254	80S	281	257	+4.3	-2.4	+1.1	-1.4
25	5 27 29	D	0947	aF5	5.2	73+	117	59	251	88S	91	89	+3.3	+5.4	+1.9	-0.8
	0947 = 5.2 & 11.2, Sepn 11.3, PA 202: & 10.5, Sepn 66.603, PA 277															
27	5 46 00	D	1236	RG0	5.1	90+	143	73	207	66S	124	110	+4.6	+2.7	+2.0	-1.8
	1236 = 6.2 & 9.0, Sepn 0.190															

1999 March

Day	Time h m s	P	Star No	Sp D	Mag	% ill	Elon Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
1	3 30 02	D	1466	vA0	5.2	99+	167	40	102	48S	153	132	+5.4	-0.4	+1.3	-2.2
	Distance of 1466 to Terminator = 13.3 ; to 3km sunlit peak = 4.8															
	1466 = 6.0 & 6.0, Sepn 0.050															
11	12 27 08	R	2639	tB1	6.0	39-	77	29	147	35S	214	217	-4.6	-4.3	+3.5	+4.4
	2639 = 6.0 & 13.0, Sepn 6.0, PA 216															

1999 April

Day	Time h m s	P	Star No	Sp D	Mag	% ill	Elon Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
18	2 45 17	D	0516	kG5	7.3	5+	27 -10	14	277	64N	60	74	+0.4	+6.8	+0.4	-0.1
	0516 = 8.1 & 8.1, Sepn 0.100, PA 90															
22	7 10 14	D	1175	vK2	5.0	44+	83	11	285	85N	95	84	+6.0	+3.3	-0.0	-1.1
	1175 = 5.8 & 5.8, Sepn 0.100, PA 90															
26	10 17 18	D	1644	A0	4.1	84+	133	7	273	79S	125	101	+5.1	-2.5	-0.0	-1.8

1999 May

Day	Time h m s	P	Star No	Sp D	Mag	% ill	Elon Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
5	7 23 46	R	2666	aK0	5.0	81-	128	15	128	76N	280	284	-4.0	-3.7	+1.1	+0.8
	2666 = 5.1 & 7.6, Sepn 1.8, PA 286															
8	9 47 10	R	3079	A0	4.2	53-	93	17	124	57S	220	238	-7.1	+0.3	+1.5	+2.7
22	4 14 30	D	1487	aB8	1.3	49+	89	49	248	37S	164	142	+7.1	-1.0	+0.3	-3.6
	1487 = 1.3 & 7.6, Sepn 177.8, PA 307															
22	5 03 42	R	1487	aB8	1.3	49+	89	39	258	-46S	246	224	+7.0	-1.0	+1.8	-0.1
29	8 16 31	D	2247	A5	5.6	99+	169	36	207	52S	163	150	+0.2	-5.7	+1.6	-3.6
	Distance of 2247 to Terminator = 11.1 ; to 3km sunlit peak = 3.6															

1999 June

Day	Time h m s	P	Star No	Sp D	Mag	% ill	Elon Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
1	10 08 10	R	2638	B0	5.4	96-	157	34	198	68N	284	287	-3.7	-3.6	+2.5	-0.9

1999 July

Day	Time h m s	P	Star No	Sp D	Mag	% ill	Elon Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
30	8 56 38	R	3237	vB8	4.4	96-	158	43	178	82N	262	285	-5.4	+2.6	+2.5	+0.3
	3237 = 5.2 & 5.2, Sepn 0.050															

1999 August

Day	Time h m s	P	Star No	Sp D	Mag	% ill	Elon Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
4	9 31 59	R	0364	A0	4.3	53-	94	35	104	79N	262	281	-2.8	+7.4	+1.1	+1.3
6	8 45 18	R	0635	K0	3.9	31-	68	8	76	51S	219	228	-0.4	+7.0	-0.4	+2.0
Graze of 1135 K0 nearby at Lat = +32.93 +0.37(E.Long +112.01), CA = 6.6N																
9	11 26 00	GR	1135	K0	6.8	5-	25	6	71							
Closest Distance to graze path is 52km at azimuth 156																
9	11 26 29	m	1135	K0	6.8	5-	25	6	71	7N	357	347	+3.7	+3.0	+9.9	+9.9

1999 September

Day	Time h m s	P	Star No	Sp D	Mag	% Ill	Elon	Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
2	9 26 46	R	0608aF0		6.0	56-	97		40	99	25S	195	205	+0.4	+6.9	-0.1	+3.6
	0608 = 6.0 & 8.8, Sepn 3.8, PA 221																
4	12 39 43	R	0940cB9		5.7	32-	69	-6	59	107	86N	274	272	+2.5	+4.6	+1.9	+0.6
	0940 = 5.7 & 9.2, Sepn 90.0, PA 206																
22	3 54 00	D	3126	K0	4.3	88+	139		38	164	54S	107	126	-5.6	+1.4	+2.7	-0.2
Graze of 0405vF0 nearby at Lat = +34.27 +0.36(E.Long +112.01), CA = 12.5N																	
28	4 34 02	GR	0405vF0		4.4	90-	142		15	88							
Closest Distance to graze path is 84km at azimuth 337																	
28	4 39 44	R	0405vF0		4.4	90-	142		17	89	27N	323	341	-0.5	+7.4	+1.7	-2.7
	0405 = 4.5 & 8.5, Sepn 0.050, PA 133																

1999 October

Day	Time h m s	P	Star No	Sp D	Mag	% Ill	Elon	Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
16	22 48 06	D	2797cF2		3.0	44+	83	24	28	146	65N	58	67	-3.6	-1.9	+2.4	+2.0
	2797 = 3.8 & 3.8, Sepn 0.100, PA 150																
19	5 07 39	D	Uranus		5.8	65+	107		28	220	59N	42	60	-6.9	+0.9	+1.0	+0.8
Duration of Partial Stage for Disk = 10 secs																	
29	6 28 48	R	0995bB5		4.1	74-	118		23	80	84N	281	276	+5.1	+3.9	+0.5	+0.7
	0995 = 4.3 & 6.0, Sepn 0.200, PA 139: & 8.6, Sepn %112.500, PA 329																

1999 November

Day	Time h m s	P	Star No	Sp D	Mag	% Ill	Elon	Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
18	4 28 48	M	3419aK0		4.5	68+	111		42	211	6S	150	174	-8.3	+4.7	+9.9	+9.9
	3419 = 4.5 & 8.5, Sepn 49.6, PA 312																
24	10 52 51	R	0764oG0		5.0	98-	164		54	256	24S	212	216	+0.8	+5.2	+1.9	+2.3
Distance of 0764 to Terminator = 6.4 ; to 3km sunlit peak = 1.1																	
	0764 = 5.6 & 5.6, Sepn 0.150																
25	6 27 21	R	0915vB2		4.7	94-	151		50	98	69S	255	254	+3.5	+4.1	+1.2	+1.3
	0915 = 5.5 & 5.5, Sepn 0.020, PA 178																
25	9 38 31	R	NGC2175	C	6.0	93-	150		76	197	65S	251	249	+3.1	+3.9	+2.2	+0.7
Galactic Nebula object; time to occult = 52 mins																	
26	4 21 13	R	1077bG0		3.7	87-	138		13	74	35N	334	326	+5.4	+2.8	+1.4	-2.3
	1077 = 4.5 & 4.5, Sepn 0.100, PA 90: & 11.7, Sepn 99.000, PA 348																
	1077 = Dzeta GEM, 3.62 to 4.18V, VaR Type DCEP, Phase .73																
26	13 41 01	R	1113aK2		5.2	85-	134	-6	46	266	62N	308	298	+4.5	+2.2	+0.8	-2.2
	1113 = 5.2 & 12.2, Sepn 14.1, PA 196																

1999 December

Day	Time h m s	P	Star No	Sp D	Mag	% Ill	Elon	Sun Alt	Moon Alt	Moon Az	CA o	PA o	WA o	Long Lib	Lat Lib	A m/o	B m/o
24	13 08 10	R	1193	A0	5.4	95-	155		36	271	53N	321	308	+3.8	+1.3	+0.2	-2.5
25	5 48 46	R	1310	K0	4.2	90-	144		32	89	66S	261	244	+6.3	-0.3	+0.7	+1.3
27	11 31 09	R	1576	A0	5.3	71-	115		66	165	74N	307	283	+7.7	-3.6	+1.9	-1.4

East Valley Astronomy Club

Membership Form

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"

Please complete the information on the form and return to the address below along with a check payable to EVAC for the appropriate dures amount. See below:

Kathy Woodford, EVAC Treasurer
PO Box 213
Apache Junction, AZ 85217

Enclosed:
____$20 Annual
____$15 April—Dec
____$10 July—Dec
____$ 5 Sept—Dec
____$27 *Sky & Telescope*
____$29 *Astronomy Magazine*
____$ 7 EVAC Nametag
____ Total

Please Print (indicate confidential information)

Name _____
Address _____
_____
Phone _____
Email _____
URL _____

How did you hear about EVAC? _____

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

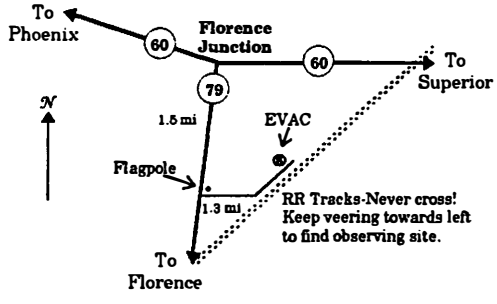
EVAC Star Parties

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.

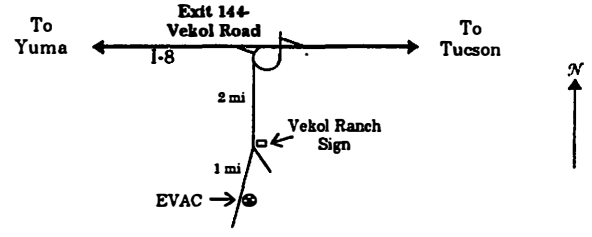


Deep Sky Star Party: Vekol Road Site

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.



Dont Forget: Tony & Daphne Hallas speak at the February EVAC Meeting!

Contents:

Next EVAC Meeting — Jan. 14th 7:30 pm

Valued member since 3/16/97

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

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, 1663 South Sycamore, Mesa, AZ 85202, 602/831-1520. 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.

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