East Valley Astronomy Club

March 2001 www.eastvalleyastronomy.org Scottsdale, Arizona

MILITARY LAND, MEXICAN COYOTES, METEORITES, & ARIZONA'S SOUTHERNMOST STAR

By Bill Peters

It's funny how in the midst of doing one thing, looking for meteorites on a very remote Arizona dry lake, so many other interesting observations and discoveries can be made. I had originally intended to discover if it was possible for a civilian to go out onto the Barry Goldwater Gunnery Range, the vast track of land located between Yuma and Tucson just north of the Mexican border and south of Route #8, to search for meteorites. Through my inquiries I'd found that anyone could obtain a free pass to the area from either the base headquarters 3 miles south of Gila Bend, or from the Cabeza Prieta National Wildlife Refuge's (CPNWR) main office in Ajo, AZ. In fact, over 1300 people have obtained passes for the Range in just the last six months.

An old wagon trail called "El Camino del Diablo" or "the Highway of the Devil" runs from Sonoyta, Mexico to Yuma, AZ onto the Barry Goldwater Gunnery Range to my search destination: two dry lakes just yards from the Mexican border. A 4-wheel drive dirt road connects to the wagon trail from Highway 85 just south of Ajo after crossing the northwest sector of Organ Pipe National Park. The CPNWR provides a points-of-interest trail route sheet of the 128 miles through the Range from Ajo to Tacna (Near Yuma on #8) that lists observations along the trail.

I actually consider it a major success just that I was able to travel 50 miles on this old wagon road. Along the trail, I came across a couple of campers as well as two old west graves marked by crosses on piles of rocks representing travelers who never made it to their destinations.

"El Camino del Diablo"

At Las Playas Dry Lakes, where I spent the night, I came across a heavily-traveled, illegal vehicle border crossing cut through the fence exactly where the dry lake I was searching reached the border. When I naively approached the late model SUV that had just passed me and stopped at the hole in the fence I'd thought they must surely be US border patrol agents. When I quickly discovered that they could not speak English, I hastily retreated. I reported the incident to the real border patrol as a probable point of stolen vehicles exiting US jurisdiction courtesy of Mexican coyotes (smugglers).

In the early evening, I witnessed a brilliant 1st mag. star rise from the side of a mountain due south along the meridian. A mere 45 minutes later it set behind another mountain. I

quickly sketched the nearby unfamiliar star field for reference. Fifteen minutes later the well-known southerly star Canopus rose 5º farther north in the sky! What was this mystery star? My Wil Tirion star chart revealed it was Archernar in the constellation Eridanus at declination –57.25!

When I observed Achernar from Las Playas Dry Lakes, I was on some of the lowest terrain in the state .7 degrees north of the Nogalas, AZ - Mexican border and still the star was 2/3 of a degree above the horizon! Since then, I've begun to ponder what truly is the southernmost star that can be observed from the highest vantage point with the most southerly latitude in AZ?

Miller Peak, 9466', at latitude 31.39 a scant 4 miles north of the Mexican border wins the best south viewing location in the state. Maps show a marked trail leads up to the summit from the main road below where there is a fire tower open to the public. At that altitude one should be able to make out an additional 1.5 -2º of sky. An observer should be able to spot three of the four stars of the Southern Cross, including elusive Mimosa at declination -59.7º. Even Alpha Tucana -60.2º, Beta Centauri Hadar -60.3º, or Alpha Centauri –60.85 are within the realm of possible observing. A great challenge would be to photograph the Southern Cross from this location along with a photograph of star trails showing the southern hemispheric arc from the top of Miller Peak.

It may even be possible to photograph the spectacular NGC 3372 Eta Carina nebula at dec. -59.41. The challenge is on, who can photograph Arizona's southernmost star and deepsky object and bring it to EVAC for show and tell?

My Scope

By: Chris Schur

When I wanted to get started on astrophotography with a larger instrument back in the early 80's, I was greatly discouraged by the extremely high cost of a well-made, machined mounting that would carry the planned 16-inch Newtonian. Most estimates were over $10,000 but I was determined to do almost anything to make it happen. I next enrolled in a machining course at work, and upon completion, began to build my first machined mounting. It took the better part of a year to finish it, having never machined anything in my life, and then I ordered a ten-inch Mathis worm gear to drive it. While waiting for the gear, I finished off the new scope and put a hand-picked DS16 mirror in it.

That was almost 20 years ago, and since then, I have constructed a new declination head, which was added to the heavy duty drive, and created a stout German equatorial that can carry in excess of 250 pounds effortlessly. Tracking accuracy has been markedly improved by a factor of ten or more in the past year alone to accommodate the much more stringent requirements of CCD astrophotography, and can track unattended for hours on end to arc-second accuracy.

Mount Details

The drive base was made from half-inch aluminum plates, bolted together with hardened cap screws and with steel dowel pins to keep the plates in permanent alignment. Since I couldn't afford huge bearings at the time, I made my own bearing blocks as well, and they contain class 1A roller type machinist's bearings. This carries a very heavy 2-inch solid steel shaft, that extends out the top at a 34 degree angle to a 6-inch polar thrust surface made from brass plate, teflon and an aluminum declination base. But that's the end of the machining part, the rest is homemade on the workbench with hand tools. The declination head contains a 3-inch shaft made from a four-foot length of fence post, that I had turned on one end in a lathe for smoothness, and the whole shaft was chromed at a bumper shop. It rests on brass shim stock bearings, and rotates with tight precision.

The most critical part of the declination head is the electric declination drive, used for astrophotography to both center objects and make guiding corrections. It must have absolutely no play, and has been carefully designed to move the axis with a threaded rod drive and a captive nut. A strong spring removes all play from the axis, and when reversing the motor, the declination movement has no backlash that is measurable.

The entire mounting rests on a concrete permanent pier, which is hollow and filled with sand for damping. Polar alignment has been done photographically, and is within 1/10 degree of the true pole.

The Telescope.

This is the part that has changed the most over the years, starting out with a 16" f/4.4 Newtonian, and progressing to at least half a dozen iterations of the present tube assembly. The current optics were made by Pierre Schwaar back in the late 80's, and was the best 12.5 inch he claims to have made at the time. It was coated with enhanced aluminum, and diagonal is a Lumicon enhanced silvered diagonal, yielding a very high transmission rate for the complete optics system. The tube was designed for extremely high-resolution prime focus astrophotography and CCD' imaging. It does not rotate, it is square, and rigidly bolted to the mount. Since this is not a visual scope, the rotation of the tube was omitted to keep flexure down to a minimum. Also, a square tube makes it easy to bolt 35mm cameras and my Schmidt cameras directly to the tube with a minimum hassle. It is made of ½ inch plywood, and has large open holes covered with black cloth to keep weight down, and allow the thermal regulation of the tubes interior to be more effective. The mirror cell is plywood, and the mirror is secured by a 3-point floatation system. Since the mirror is a 5:1 ratio of thickness, fancy support systems are not required to prevent mirror warpage.

The business end of the scope is high tech and extremely precise for the sharpest astrophotos. A JMI DXF-1 focuser, a state-of-the-art mechanism allows for the most precision focus for tech pan film, or CCD imaging work. It is a crayford type focuser, with one knob, 3x more gearing than the other for exact focus. The finder is an 8x50' Celestron, with dual heating elements on both

objective and eyepiece to keep frost from forming.

The diagonal mirror is a 3.1-inch minor axis 20th wave surface, mounted on a fiberglass housing to minimize thermal radiation in the optical path. Thin steel vanes support the assembly with no vibration or more importantly twist in the exact center of the tube.

Visually, the scope has superb resolution, easily splitting narrow doubles such as Eta Corona Borealis on good nights. A complete compliment of Nagler eyepieces greatly enhances the performance visually, although the non-rotating tube can put the eyepiece in difficult positions at times. Photographically, the instrument is superb. A Lumicon coma corrector in the off axis guider gives sharp images over the entire 35mm field, and low vignetting. While a few minutes of exposure can produce great images with its fast focal ratio and sharp optics, the smooth drive allows very deep long exposures of deep sky objects revealing details in galaxies such as hydrogen clouds and crisp spiral arms, and stars to deeper than 22nd magnitude.

MATHEMATICAL FORMULAE

By: Silvio Jaconelli

Being somewhat mathematically inclined (though there are many people who would disagree with that statement!), I have saved up a collection of ratios and formulae over my years in the hobby that have helped me improve my observing techniques. By employing these 'rules of thumb', we will be better able to choose the right equipment for the observing that we wish to do, and also make wise equipment purchases. Some of the formulae outlined below may already be better known, but hopefully there will be some that you will find useful. If there are other 'rules' out there that I am missing, I would encourage you to send them in to EVAC so that they can be added to the ones below.

Please pay special attention to the unit of measurement applied – these must be consistent throughout the equation. If computing magnifications, for example, and we use millimeters for the focal length of an eyepiece, then we must also use millimeters as the basis for the focal length of the telescope; we cannot mix millimeters and inches.

Finally, before I start, let me add that there may be some content below that is not universally shared by all the readers. The intent of this article is not to stir controversy, but rather to share the statistics and perceptions that I personally use.

MAGNIFICATION

An easy one to start with – magnification can be determined by dividing the focal length of the telescope by the focal length of the eyepiece. So a focal length telescope of 49 inches (translated into 1250 mm) will give a magnification of 62.5x when used with a 20mm eyepiece (1250 / 20), and 250x when used with a 5mm eyepiece (1250 / 5).

EXIT PUPIL

Exit pupil is the diameter of the image that the telescope produces. For fine detail observing (Moon, planets, etc), you will want a small exit pupil that puts the image into the better (middle) part of the eye (normally around 1 to 2 mm). For deep sky observing you will want an exit pupil that is no larger than the diameter of the pupil of your eye, so as not to waste light – normally no larger than 7 mm (or closer to 5mm for oldies like me !).

There are two different ways to calculate exit pupil, both giving the same result:

a) Eye piece focal length divided by telescope focal ratio. As an example, a 20 mm eyepiece used with an f/8 telescope will yield an exit pupil of 2.5 mm.

b) Telescope aperture divided by magnification. This is the formula used to calculate the exit pupils of binoculars – a pair of 7x35 binoculars will give an exit pupil of 5 mm (35 / 7). Then using the same equipment in a) above, assuming a telescope focal length of 49 inches (translated into 1250 mm), we find that the magnification from the 20 mm eyepiece will

be 62.5x. Then assuming an aperture of 6 inches (translated into 153 mm), we get an exit pupil of 153 divided by 62.5, or the same (approximate) 2.5 mm as in paragraph a) above.

RESOLUTION OF THE NAKED EYE

This is around 4 arc minutes (or 240 arc seconds) for someone with keen eyesight. This means that if you can make out the two major components of Epsilon Lyrae (the famous 'double double) with the naked eye, then you should congratulate yourself for your keen eyesight ! I guess that my own eyesight is capable of only 6 arc minute resolution, so I would need around 2 x magnification to make out the two major components of Epsilon Lyrae. See the discussion below on 'Double stars' for more on resolution.

MAXIMUM USEFUL MAGNIFICATION

This is a hot topic of debate among amateur astronomers ! This is probably due to the fact that there are just so many variables involved, and not all of them are in any way related to the equipment employed. The biggest non-equipment factors are the distortions caused by the atmosphere, and the cooling down of the telescope itself.

I do tend to agree with what I've read that the average maximum magnification that you can expect on an average night of seeing using average equipment of average quality will be around 300 x. And this upper limit is independent of the aperture size of the telescope. This limit will be higher on nights when the seeing is steadier than average, or when the equipment being used is of high quality. I can attest from personal experience to the fact that a high-end APO refractor can be pushed to 500 x on the Moon, planets and double stars much more readily than other telescopes, not because refractors are intrinsically better than other telescopes but because their smaller apertures can handle bad seeing better, because their light paths are less subject to thermal effects, and because you get better quality from ANY type of telescope when you pay top dollar for it.

As a general rule, the highest maximum useful magnification is the aperture in inches multiplied by 50. Re-stated, it is the aperture in millimeters multiplied by 2. So the 6-inch scope described above (152 mm) would have an expected maximum magnification of around 300 x. Likewise, a 4-four inch telescope (102 mm) would have an expected maximum magnification of around 200 x.

FIELD OF VIEW

This is a widely-used piece of data used to determine what eyepiece is best suited for a specific purpose. For hunting down elusive tough-to-find items, the widest possible field of view is useful to help locate the target object. Then again, to get the highest possible magnification but still keep an acceptable frame of reference (for example, what's the highest magnification possible for the Orion nebula without cropping the view), we would select an eyepiece that has the required True field of view.

There are three methods to calculate the true field of view (FOV):

a) A gross approximation of True FOV can be obtained by taking the apparent FOV and dividing this by magnification. The apparent FOV is the angular view you would see at 1x, or by looking through the eyepiece with the naked eye. The apparent FOV is always given with the literature at the time of purchase, and tends to be the same for all eyepieces of a particular design (Naglers – 84 degrees, Panoptics – 68 degrees, Plossls – 50 degrees, etc). Staying with the equipment described earlier, if the 20 mm eyepiece were a Plossl with a 50 degree apparent FOV, then the true FOV would be the 50 degree apparent FOV divided by 62.5 x = 0.80 degrees.

b) A second (and much more precise) method uses the field stop diameter of the eyepiece. The field stop is the annulus inside the eyepiece itself, right next to the inside of the lens; this field stop is the real determinant as to how wide we can see – the narrower the opening of the field stop, the narrower will be the true FOV. The formula is:
Field Stop x 57.3 / Telescope Focal Length.

Let's assume that the 20 mm Plossl above has an 18 mm Field Stop, then the True FOV would be 18 x 57.3 / 1250 = 0.83 degrees. This FOV is very close – and more accurate - to the answer derived in a) above.

c) The third – and also very accurate – method of calculating the true FOV is to calculate how long it takes for a stellar object to drift from one side of the eyepiece to the other. For optimum accuracy, switch off all drive motors, choose an object close to the celestial equator and close to due south, and make sure that the object enters the eyepiece at the 3 o'clock position and exits at the 9 o'clock position (the full width of the FOV). A stellar object will traverse 360 degrees in 24 hours, or put another way, will traverse 360 degrees in 86400 seconds. Accordingly, the true FOV in degrees will therefore be: Transit Time in Seconds / 86400 x 360

Let's assume that the drift transit time using the same equipment from b) above is 3 minutes and 20 seconds. Then the true FOV will be 200 / 86400 x 360 = 0.83 degrees, the same answer as in b) above.

SECONDARY MIRROR MINOR AXIS SIZE FOR A NEWTONIAN

Ever wonder what's the best size of secondary mirror for your Newtonian? Well, the answer depends on many factors, including the primary use (planets or deep sky), whether it will be used for photography, etc. But a rough rule of thumb is : Intercept distance divided by telescope focal ratio.

The 'intercept distance' is the distance from the optical axis line of the telescope (the imaginary line that runs dead center from one end of the telescope to the other) to the focal plane of the eyepiece. The focal plane can be assumed to be about 1 inch higher than the top of the focuser.

So assuming that the telescope above is a Newtonian assuming a 5" intercept distance , the required secondary size would be 5 / 8, or 0.625 inches. Where the answer is not a standard available size, I personally would drop down to the next LOWER size if the telescope will be used for visual Moon, planets and double star work, and I'd move up to the next HIGHER size for photography or deep sky work.

While on this subject, let me add another widely held opinion on diagonal sizes. I've heard very often that any diagonal size less than 20% of the primary size will have a negligible negative impact on images. It's when the diagonal exceeds 25% that you may begin to see image degradation.

DOUBLE STAR FORMULAE

Now a few formulae for double star observers.

a) The closest separation that a good telescope will give on a night of good seeing for two stars of similar magnitude is

4.56 divided by the diameter of the objective in inches. Answer will be in arc seconds.

So the 6" telescope can be expected to split double stars as close as .76 arc seconds apart (4.56 / 6)

Most nights I am unable to get down that far, either because my telescope is not of sufficiently high quality, or the seeing is just not good enough, or the stars are just too different in their magnitudes. Double stars with widely different magnitudes are tougher to split than stars of comparable magnitudes.

b) Similar uncontrollable variable factors also contribute to the magnification (as opposed to telescope diameter size) required to split double stars.

With all the variables being favorable, double stars can just be split with magnification as low as - 350 divided by the separation in arc seconds.

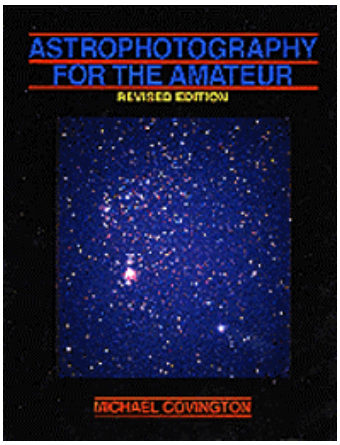
With a good telescope and average seeing, the more comfortable (easy on the eyes) magnification is - 700 divided by the separation in arc seconds.

So, a double star with equal magnitude components on a night of good seeing using a good telescope with a separation of 2 arc seconds should be able to be split at 175 x, but a more comfortable magnification would be 350 x.

Library Focus

By Joe Orman

This month's review: ***Astrophotography for the Amateur*** by Michael Covington.



Do you wish you could take beautiful pictures of the night sky? You may be surprised to find out how easy it is, with some basic equipment and a little planning. The stars, moon, eclipses, comets, meteors, and aurora -- each is a photographic opportunity, and each is a special challenge. Michael Covington's book, originally published in 1985 and now a classic in the field, provides excellent guidance for beginners and pros alike.

The book is divided into three parts: Getting Started, Advanced Techniques, and Equipment & Materials. I was glad to see the author encouraging beginners to start with the basic setup: slap the camera on a fixed tripod, point it at a nighttime scene, open the shutter, and try a variety of exposures -- so easy almost anyone can get enjoyable results! Only then are the more complex setups described: piggybacking a camera on top of a telescope, then finally photographing through a telescope. (Curiously, the book does not mention the step many people take between tripod and piggyback: a barn door or other homemade tracking mount.) Interspersed throughout the text are many fine photos as examples, some in color. These include a photo taken by EVAC member Chris Schur with his all-sky camera setup, which uses a hubcap as a spherical reflector. And Covington provides useful exposure tables for the moon, sun, and planets.

The club's copy of this book is the 1991 Revised First Edition. While this is still a useful resource and is highly recommended as a first step for beginners, some portions are conspicuously outdated. For instance, the eclipse tables only go through the year 2000. There is no mention of the Internet, which has become an invaluable aid in both planning photos and displaying the results. There is also no mention of digital photography or scanning; instead there are chapters on film and darkroom techniques -- and some of the films discussed are now obsolete.

Advanced photographers may want to buy their own copy of the expanded and updated 1999 Second Edition (which was reviewed by Chris Schur in the March 2000 Sky & Telescope). The updates include "new chapters on computer image processing and CCD imaging, greatly expanded advice on choosing cameras and telescopes, completely updated information about films, a much larger bibliography, and many new photographs."

Here are two examples of my own photos, taken using techniques described in Covington's book. I challenge every EVAC member to check out this book, try a few simple photos, and bring the results to a future meeting for Show & Tell. With this book as a guide, the sky is within everyone's reach!

Fixed-tripod star-trail photo of Orion rising. 24mm lens at f/4, 3 1/2 hour exposure on Kodak Elite Chrome 100. Photo by Joe Orman.

Tracked photo of Orion's belt & sword. 200mm lens at f/4, 5 minute exposure on Fujichrome Provia 1600. Photo by Joe Orman.

This and many other books may be checked out free of charge to EVAC members. Browse the library at the next meeting, or contact club properties manager Rick Scott at rmscott@home.com or (480) 821-5721.

The NEAR Mission: The Latest Update & Some Background Information

By: Laurice Dee, Ph.D., Ambassador (AZ Representative) NASA-JPL Solar System Ambassador Program

Eros, one of the numerous near-Earth asteroids, already has its first permanent resident! The Near Earth Asteroid Rendezvous (NEAR) spacecraft made its historic touchdown on the space rock on 12 February 2001 at 1:02PM (MST) after a year-long tour of Eros. The spacecraft fired its engine at 8:31AM (MST) to begin its final descent toward Eros from about 16 miles above. The descent was mostly free-fall during the first three hours. During the final hour, mission controllers performed four braking maneuvers to slow down the spacecraft's velocity from 20 to 4 mph for a soft landing on the asteroid's surface. It came to rest in an area just outside (i.e., southeast) of the saddle-shaped depression, Himeros. NEAR became the first spacecraft in the history of solar system exploration to ever land, or even attempt to land on an asteroid. What is so amazing is that NEAR was not even designed as a lander!

NEAR was launched on 17 February 1996 and flew within 750 miles of one of the near-Earth asteroids, Mathhilde, on 27 June 1997. The spacecraft took images of the asteroid and took various measurements of its physical and chemical properties during the flyby. NEAR made its close approach to Earth on 23 January 1998 to receive gravity assist for its encounter with Eros. Upon arrival at Eros on 23 December 1998, the planned orbit insertion was aborted due to a software glitch that caused the spacecraft to go into a safe mode. As a result, NEAR flew within 2250 miles of Eros. After traveling more than halfway around the Sun, another attempt made by the spacecraft for its rendezvous with Eros on 14 February 2000 turned out to be successful. NEAR spent the last year studying the space rock's physical and chemical properties extensively. Numerous discoveries were made during the rendezvous with Eros. Additionally, the NEAR mission has achieved numerous 'firsts' in the history of solar system exploration. Having achieved all of its scientific objectives during the tour of Eros, the NEAR mission has been declared a success!

Because of the safe landing of the NEAR spacecraft on the surface of Eros and the ability of the Deep Space Network to lock on to the signal coming from the spacecraft, NASA officials decided to extend the mission for up to 10 days. The mission team is planning to perform in-depth study of Eros' surface by using the X-ray/Gamma-ray spectrometer instrument. The team will also be receiving telemetry from the spacecraft on a continuous basis.

The mission team had already sent commands to the spacecraft's X-ray/Gamma-ray spectrometer instrument on 15 February. As of this writing, the team members are still waiting to 'hear' from the spacecraft with detailed compositional analysis of Eros' surface.

President's Comments

By Martin Bonadio

I have to laugh because as I glanced at Silvio Jaconelli's comments from last March his comment read as follows: "Several recent star

parties have been clouded out, while the weekdays between star parties have been very nice. Frustrating to say the least." Does this sound familiar? I was so looking forward to the local Florence Junction star party on Feb. 17th. Fortunately, as I write this note and look outside it's clear, and the good news is that tomorrow is President's day – and I'm off work. Guess where I'll be tonight!! I hope that I'll have some good observing reports to follow…

We did enjoy a fantastic February meeting – even though it fell on Valentine's Day and many members weren't able to make it. Dennis Young from Sedona wowed all of us with his breathtaking Astro-scenery images, and his 28" telescope. I want to thank Dennis for driving down out of the Northern part of the state the day after a big snowstorm to make his presentation. His telescope is very well designed and his design even gave me a few ideas for how to better baffle my open truss telescope too! Unfortunately my 13.25" telescope will never look the same… ha ha.

Going forward we have a lot of great activities planned. In March, there will be another beginner's lab, and in April, we have the adopt-a-highway cleanup and the AZ-Science center events. So stay tuned.

I want to thank Jim Kline for his excellent efforts in keeping the newsletter going. Last month's edition was full of such great content. I always enjoy reading what our members have to say. One of the things that Jim and I have discussed is getting more observing reports and pictures included. So if you have any deep sky or planetary observations you want to share with us please send them to Jim – jkline29@home.com.

With that said, I always enjoy reading about what others see through their telescopes and find that it really adds to my viewing pleasure when I check them out for myself. Sometimes I am able to see the details and asterisms that others perceive, and other times I draw a blank. Nevertheless, no matter how many times I've looked at deep sky objects, someone always seems to point out some subtle difference that I can't resist looking for. A great example that I can remember is M46. It's a nice open cluster in Puppis. I've seen it a number of times but never noticed the tiny planetary NGC2438 that sits right in the middle of it (actually it's a number of light years closer to earth) until I picked up a copy of Stephen James O'Meara's "The Messier Objects" book. Sure enough – the next time I pointed my telescope at this object the planetary jumped right out. Shame on me for not paying more attention the first ten times I hopped past this cluster…

So with that said – what other tidbits of information do you all have to share with the group? What other details have I missed out on? Until next month clear skies (and I really do mean that).

Vice President Comments

By: David Coshow

Our speaker for this month is Peter Wehinger. Peter is involved with Steward Mirror Lab in Tucson and is a faculty member at UA. He will be talking about the activity at the Steward Mirror Lab. As always, we will meet at 5:30 P.M. on March 14th, at the Black-Eyed Pea at Indian Bend & Pima in Scottsdale. Please call me at 480-730-1132 and let me know if you will be attending.

EVAC Meeting Minutes

By Tom Mozdzen

7:30pm: Martin Bonadio called the meeting to order. There were ~50 people in attendance with several guests present. We had Mr. Alexander present who was a club member in 1988 when the club was only 12 members strong. He indicated that the Vekol observing site was discovered in 1989, and we've been observing there ever since.

Upcoming star parties and events were discussed:

- Beginner's lab in March – date will be announced.
- Adopt-a-highway Sat April 7th (free lunch).

- AZ Science Center – April 14th – 4yr Anniversary.
    - EVAC slide show – Joe and Rick
    - Other EVAC activities TBD
- Messier Marathon March 24/25th 2001
- Dinner with the speaker @ 5:30pm at Black Eyed Pea

Various miscellaneous announcements were made.

Show and Tell - Laurice Dee – gave us an update on the NEAR spacecraft and its recent historic landing on the asteroid Eros.

8:10 pm Break: SIG discussions and other individual discussions.
8:30 Main Speaker – Dennis Young gave an very exciting two-part presentation. He first showed us a number of his Astro-Scenery images, explaining how each one was acquired. Later, he talked to the group about his 28" telescope – assembling it in just minutes as he explained the design. After his speech a number of members chatted with Dennis about the design and the accessories he uses with the scope.

9:45 pm Meeting Adjourned. Snacks and Chats.

Spring Adopt-A-Highway Cleanup

By Martin Bonadio

It's time again to have some fun picking up trash! Our Club has its semiannual cleanup of the EVAC Mile scheduled for Saturday, April 7th starting at 8:00 AM. Our task is to pick up trash from the shoulder of the highway to the right-of-way fence (State crews are responsible for the median dividing the highway).

Look for a sign up sheet at the March monthly meeting or call Martin Bonadio @ 480-926-4900 or email mabastro@aol.com with your RSVP. With 10 volunteers, we can finish by 11am. Meet at Florence Junction (intersection of Highway 60 and 89) on the north side in the far west corner of the parking lot (closest to the radio tower). As in the past there will be a **club-sponsored lunch** at the Village Inn in Apache Junction (managed by our own Randy Peterson) following the cleanup! These cleanups have always been a great time. Last fall, Don Wrigley made a fortune selling off an entire CD collection he came across!! You could be the next big treasure hunt winner!!

Hopefully, we'll have some first-timers. If so they need to know:

Participants must be at least 12 years old and work in groups facing oncoming traffic. Dress appropriately; long pants sturdy shoes/boots, long sleeves and/or sun block, hat, and heavy GLOVES. Safety vests to be worn will be provided. Please bring some water too, as you'll work up a sweat.

Pick up bags and other litter with caution-it could contain hazardous material, be hiding a snake, etc. A stick with a nail or hook is recommended to use instead of your hands, while a large bucket cuts down trips to the trash bags. Few large objects are found out there, but if lifting one, keep your back as straight as possible, the object close to your body, and let your legs and arms do the work.

Don't let anything surprise you-our fellow citizens dispose of everything imaginable along our roadsides. If anything looks odd or is really heavy, leave it alone! Note it's location and we'll notify the State about it afterwards. When a trash bag becomes full, place it on the very edge of the pavement, not in the pullout lane.

As with any government program, there are a few requirements to complete before starting. One is a briefing from the cleanup coordinator. The second is to sign the usual waiver for the State saying participants won't sue if something happens. The forms are kept on file so one signature covers you for all future cleanups.

Contact me at 480-926-4900 if you want to help or have questions. Thank you.

AstroImage 2001 Seminar

By: Charlie Oostdyk

The Orange County Astronomers and its SIG, Electronics Oriented Astronomers, with California State University Physics Department and Sky & Telescope magazine jointly sponsor AstroImage 2001, a one day seminar on astronomical imaging. It will be held at the Ruby Center at California State University, Fullerton California, on Saturday, March 10th. Doors open at 0830 and the program will begin at 0900. The program covering both electronic and silver-based astronomical imaging, techniques, equipment, and applications will last until about 1700.

This is a continuation of the series of seminars on astronomical imaging begun in 1977 as the Astrophoto Seminars. It was renamed AstroImage several years ago when electronic imaging became an increasingly important part of the content. AstroImage Seminars draw about 150 people from all over the country to present and hear papers on the progress of amateur and professional astro-imaging on both film and electronic media. A trade show is also held during the seminar, with about a dozen manufacturers and outlets represented, showing the latest in camera, telescope, and software products. An important part of the event is an image show, presented both electronically using computers with large screen displays, as well as a print show for film images.

All are invited to participate. Admission to the event is $25 for the day, which includes complimentary refreshments at 2 breaks. You may pre-register for AstroImage 2001 by sending checks made payable to Orange County Astronomers to: Charlie Oostdyk; Orange County Astronomers; PO Box 1762; Costa Mesa, CA 92628

More information on speakers & topics can be found at:
http://www.chapman.edu/oca/ai2k/ai2k.htm

For Sale

Perfect for astrophotography beginner or veteran as well as doing normal photography: Konica TC (small body, light weight) 35mm Autoreflex camera w/matched 50mm f17 lens, Vivitar close focus auto zoom 35-105mm lens, Vivitar close focus auto zoom 100-300 mm lens, cable release, adaptor rings (for telescope), eyecup attachment, complete instructions, Marsand case, all in excellent like new condition. Would consider as partial trade for Meade Series 4000 Ultra Wide Angle 14 mm and/or Super Wide Angle 40 mm eyepiece. Otherwise $ 575 obo. Contract: Chuck Crawford at 480-985-8824 or astroc@mindspring.com

Items from Pierre Schwaar's Estate: His 16" f/4 optical tube assembly with excellent mirror: $2,000 OBO.; 20" f/5 Super Bigfoot telescope with good optics: $3,000 OBO; Numerous coated and signed mirrors: 4.25 to 10"; Small glass blanks and telescope tubes: 3 to 10", Call or email for price list;. Digital photos available for 16 and 20" scopes. All proceeds to be donated by the Schwaar Family to charity in Pierre's name. Contact: Sam Herchak, at 480-924-5981 76627.3322@compuserve.com or Pedro Jane at 480-833-2002

ETX-125EC telescope like new including 883 deluxe tripod ($200); 497 Autostar controller ($100); hard side case ($150); Barlow lens ($48); all for the price of the telescope alone $895. Contact HBWRASSE@CS.COM 480-839-0101

Wanted

Want to buy a matched pair of high quality Lunar/Planetary eyepieces (Plossls, Orthos, etc) in the 14mm to 16mm range. Alternatively, I would buy one 10.5mm Televue Plossl. If I can buy the 14 to 16mm eyepieces, than I will sell the Televue Plossl for $25. Contact Silvio at 480-926-8529.

EVAC & Other Events: 2001

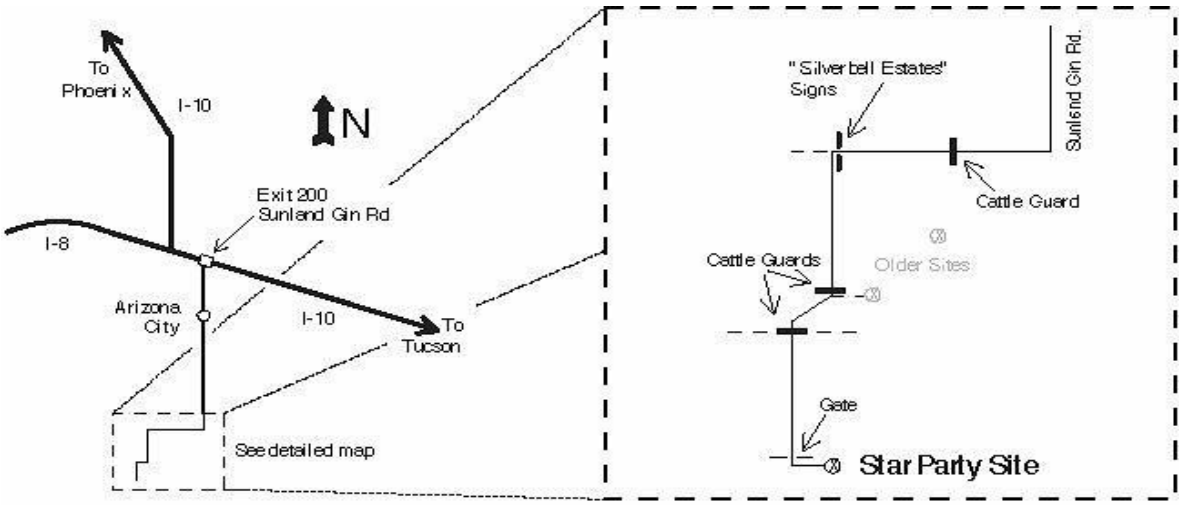
	New Moon	Meet	Local	Deep Sky	Other
Mar	3/25	3/14	3/17	3/24	3/24 Messier Marathon 3/31 Beginner's Lab
Apr	4/23	4/11	4/21	4/28	4/7 Adopt-a-highway 4/14 EVAC Slide Show
May	5/23	5/9	5/19	5/26	
Jun	6/21	6/13	6/16	6/23	
July	7/20	7/11	7/21	7/28	
Aug	8/19	8/8	8/11	8/18	

Deadline for March Newsletter Submissions is March 23rd, 2001. Send articles to JKLINE29@HOME.COM

Messier Marathon 2001

March 24th,2001

By Martin Bonadio



The directions are:

Take I-10 to exit 200 (Sunland Gin Road.) From here it is about 29 miles to the site. Turn right (south) after exiting the freeway. After about 15 miles, the pavement ends and about one mile further, the road turns sharply to the west. After another four miles, the main road will turn south just after the "Silverbell Estates" signs. Three miles past the signs, the road will veer off to the west, and five miles further, the road will pass through a gate. Turn left immediately after the gate and continue for another 2/3 of a mile, driving over a fence. The site is to the right.

East Valley Astronomy Club

EVAC on the Internet

EVAC Homepage: www.eastvalleyastronomy.org

E-mail Mailing Lists

EVAC-mls is a mailing list for club announcements and quick notification of astronomical events.
To join, send E-mail with the "Subject: subscribe" to EVAC-mls-request@psiaz.com

EVAC-Board is for EVAC business. All club members are welcome to participate.
To join, send E-mail with the "Subject: subscribe" to EVAC-Board-request@psiaz.com

AZ-Observing is a fairly general mailing list about observing in Arizona. Included are star party information, who is going, as well as the latest observations and astronomical events.
To join, send E-mail with the "Subject: subscribe" to AZ-Observing-request@psiaz.com

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

East Valley Astronomy Club

Membership Form

Please complete the information requested. Return at the next club meeting or to the address below, with a check made payable to EVAC for the appropriate amount due. *IMPORTANT*: Please note that ALL memberships expire on December 31 of each year.

1. Check one of the following: ( ) New Member ( ) Renewal

2. Select appropriate dues options:

New Member select month joining:
( ) $20.00 January - March
( ) $15.00 April - June
( ) $10.00 July - September
( ) $ 5.00 October - December

Member Renewals *(current Members ONLY!)*
( ) $20.00 Annual Renewal (January - December)

Magazines: *Provide renewals notices with payment.*
( ) $29.00 Astronomy Magazine
( ) $30.00 Sky & Telescope

Name Badges
( ) $7.00 Each

Send To:
EVAC Treasurer
P.O. Box 2202
Mesa, Arizona 85214-2202

_____ **Total Enclosed**

3. Complete requested information below. Please Print.

Name:

_____

Address:

_____

_____

_

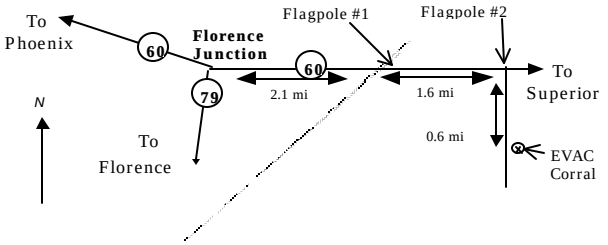
EVAC Star Parties

Local Star Party: Florence Junction Site

General Information: The Florence Junction site is the official site for the East Valley Astronomy Club's Local Star Party, typically held on the Saturday closest to Last Quarter Moon. Florence Junction offers reasonably dark skies within a short drive of most east Valley locations. (Report gunfire or illegal activity: 800/352-3796; Land use permit number: 26-104528.)

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

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

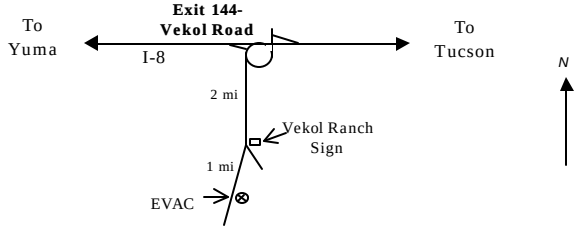


Deep Sky Star Party: Vekol Road Site

General Information: The Vekol Road site is the official site for the East Valley Astronomy Club's Deep Sky Star Party, typically held on the Saturday closest to New Moon. Vekol Road offers dark skies despite prominent sky glow 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.



EVAC Officers

PRESIDENT
Martin Bonadio
(480) 926-4900

VICE-PRESIDENT
David Coshow
(480) 732-1132

TREASURER
Randy Peterson
(480) 947-4557

SECRETARY
Tom Mozdzen
(480) 497-5703

PROPERTIES
Rick Scott
(480) 821-5721

NEWSLETTER
Jim & Chris Kline

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) 947-4557Email: 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.

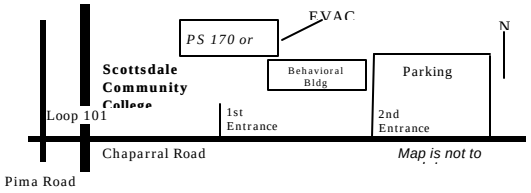
Address Changes: Contact Randy Peterson. PO Box 2202, Mesa, AZ. 85214-2202. (480) 947-4557. Email: rgp14159@aol.com.

Newsletter: Contact Jim & Chris Kline. 1209 W. Palo Verde Dr., Chandler, AZ 85224. Email: jkline29@home.com 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 Jim & Chirs of your delivery your preferences.

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

Book Discounts: Great savings through Kalmbach and Sky Publishing. Contact Randy Peterson, 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.



East Valley Astronomy Club

Jim & Chris Kline, Editors
1209 W. Palo Verde Dr. Chandler, AZ 85224

Contents:

Reminder: Next EVAC Meeting Wednesday, March 14, 2001