

East Valley Astronomy Club

July 1999

www.eastvalleyastronomy.org

Scottsdale, Arizona

July's Guest Speaker

Our guest speaker for July will be Mr. Bill Peters. Many of you know him from the club and several have participated in timing asteroid occultations with him. Bill's topic will be "Finding and Identifying Meteorites". We will be treated to a few nice examples of meteorites and a few meteor-wrongs. **Please bring any personal finds for study. Even just heavy old rocks are welcome.** Also, Bill may share his data on the Stanfield fall with us. This will be an informative and entertaining discussion.

June's Meeting Highlights

Tom Polakis, Secretary
June 9th, 1999

President Silvio Jaconelli opened the June meeting with new member introductions, followed by introductions of officers and Board members. This was followed by a calendar of upcoming events, which are posted at the front of this newsletter.

Tom Polakis followed with a discussion of the club survey of 61 members. The results were discussed in the June newsletter, and are available in raw form at his Web site at:

www.psi-az.com/polakis/evacsurvey/evacsurvey.html

Silvio then discussed a couple of changes in meeting structure that were motivated by the survey. Member presentations should be limited to 10 minutes, and placed on the agenda before meetings. As members would like meetings to end earlier, they will begin at 7:30 p.m. sharp. Club presentations are now slated to occur after the guest speaker.

Treasurer Kathy Woodford announced magazine rates available through the club. Sky & Telescope will run \$29.95, and Astronomy \$29.00.

Newsletter editor Tom Mozdzen followed with a few brief announcements. He is soliciting articles from members, as he would like to be more of an editor than a writer. The Adobe Acrobat electronic newsletters still have a few kinks, but we have a full six months to iron them out. After that time, those

who desire will receive them by e-mail only. Jason Nelson pointed out that pictures enhance articles in newsletters.






Vice President Pedro Jane' introduced the guest speaker, Steve Coe, from the Saguaro Astronomy Club. Steve spoke about the life of Lord Rosse. He was a mid-19th century astronomer who observed with the largest telescope of the time: a 72-inch reflector whose mirror weighed four tons. It was located at Birr Castle in central Ireland. Through "the Leviathan of Parsonstown" Rosse was able to see spiral structure in galaxies for the first time. Many of his observations were pioneering for their time.

Following Steve's talk, Joe Orman led off the member presentations with some excellent camera-and-tripod slides of moonrises, moonsets, and star trails. Glenn Vandiver showed video of the moon, planets, and an occultation of Regulus. The quality of the images photographed through a modest 8-inch f/7 was exceptional.

The meeting concluded with Laurice Dee's poster presentation about NASA's Cassini mission to Saturn, read by Sheri Cahn.

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	10-11: N AZ Star Party 17-19: Astrofest
Oct	9	13	2 nd & 30 th	9*	9: All-AZ Star Party* 4-10: Okie-Tex SP 8-10: Starry Nights Fst
Nov	8	10	(oct)	6	
Dec	7	8	11	4	

July 1999							All Times MST						
Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
								1		2		3 EVAC Local Star Party	
4 Crab supernova, 1054		5		6  Earth at aphelion		7 Moon near Jupiter		8 Moon near Saturn		9		10 EVAC Deep Sky Star Party Moon close to Aldebaran	
11 Total solar eclipse visible from Mexico & Hawaii, 1991		12  Venus near Regulus		13 <i>Tomorrow: Venus at greatest brilliancy</i>		14 EVAC Meeting 7:30 pm at SCC Moon lies E of Mercury		15 Moon near Venus		16 Comet Shoemaker-Levy 9 began impacting Jupiter, 1994		17	
18 Moon near Porrima		19 Moon lies N of Spica <i>Tomorrow: Moon lies N of Mars</i>		20  Sun enters Cancer		21		22		23 Moon lies N of Antares		24 Ceres in conjunction with sun	
25 <i>Tomorrow: Mercury at inferior conjunction</i>		26 Neptune at opposition		27 <i>Tomorrow: Moon occults Neptune</i>		28  Partial eclipse		29 S Delta Aquarid meteors		30		31	

Solar Observing

by Silvio Jaconelli, EVAC President

It is a common perception that, for astronomy, the only thing worse than a full Moon in the sky is the Sun. Well, not necessarily!!

With the sunspot counts gearing towards maximum in the next few years, I have been focusing (pun intended !) my attention on our closes star – the Sun.

BEFORE OBSERVING THE SUN, YOU MUST ADOPT PROPER SAFEGUARDS AND USE PROPER EQUIPMENT TO AVOID SERIOUS INJURY. IF YOU ARE NOT SURE, DON'T DO IT AND PRE-CHECK WITH AN EXPERIENCED SOLAR OBSERVER.

Firstly, let me share my thoughts on equipment. This is a very subjective area where each of us will have our own individual experiences and preferences. Observing the Sun is like observing the Moon and planets - your scope must have excellent optics, which tends to point towards longer focal length instruments (greater than f/6 ?). There is a lot of solar work done at f/30!! Shorter focal lengths MAY not have the quality required for the best views, and besides the open truss systems that these 'fast' scopes frequently employ may not have baffling good enough for the Sun. I

personally use a 6" f/10 instrument which has an enclosed tube.

Aperture is one area that is NOT critical. The Sun is so bright that all the light needed will get through apertures as low as 2". Some refractors and SCTs have objective lens covers with removable screw-off covers of around 2" diameters designed to facilitate solar observing. I personally use a 6" (f/10) instrument. However, the same cardinal rule of aperture still applies here -the greater the aperture, the more finer detail that can be seen; it's just that large apertures are not required to see sunspots.

Filtration is all important. Inadequate filtration can be a serious safety hazard. Everything that I have read states that the filtration needs to take place BEFORE the light enters the scope (that is, in front of the objective) rather than at the eyepiece; to have so much energy enter the tube is overkill and potentially hazardous, so it is better to reject 99.999% of the (unneeded) energy before it gets into the optical system. I tried single sheet (thick) mylar but I was disappointed with the results. The sun spot images became fuzzy at around 45x, and there was no sign of granulation.

Recently at the Arizona Science Center, I looked through Bill Dillenges' 5" AP refractor with a glass filter and I was delighted with the detail that I saw, so much so that I tried to order a 6" glass filter for my 6" reflector. No luck - the waiting period was 6 months. I

contacted Roger Tuthill - they have a different brand of mylar - this stuff is very, very thin, and you have to put two sheets together (with the aluminized surfaces of each sheet being in the inside). Even these two sheets together were a lot thinner than the single mylar sheet that I was previously using. Tuthill claims that the thinness of their mylar allows for better resolution -and I must agree with them - sunspots are crisper, plage (see later) is clearer, and granulation is there (subtle, but still there).

I am told that Tuthill is patenting his mylar process. I was able to double my magnification with the Tuthill mylar while still retaining the same level of clarity. And a comparison with Bill's AP glass filter ? Well, the AP glass filter did provide the better images though I am unsure how much of the improvement was the scope versus the filter.

I also ran a comparison test with an 80 mm refractor using a Thousand Oaks glass filter, but the smaller aperture of the 80 mm instrument just could not compete with the larger aperture of the 6" scope. The light grasp of the 6" scope is 4 times that of the 80 mm, a huge differential.

Images through glass filters tend to be orange, but the mylar will give blueimages; if this is not pleasing, then a red or orange filter will provide color 'correction'. Color filters are very helpful for the planets, especially Jupiter and Mars, but they did not help at all with the Sun; my red filter did make the image very pleasant to look at, but wiped out many of the interesting features.

Seeing is a very fickle issue. We tend to think that seeing is a night time phenomenon; not at all. As the air quickly warms up during the day and as the winds start to come up, the seeing gets worse. So I tried looking at the Sun in the early morning - but now I have to contend with the distortion caused by the low elevation - you just can't win sometimes. I suspect that that is why I cannot push my magnification up past 150x and still keep very harp clarity -the seeing just will not allow it. This is speculation on my part; **are there any observers out there willing to share their opinions on this in this newsletter?**

Well, what is there to look at? First, there are the sunspots themselves. The center of the sunspots (the "umbra") themselves appear black; they are not really black - they just appear that way because they are significantly cooler (4,000 degrees Kelvin) than the rest of the sun's surface (6000 degrees Kelvin). Each black spot is surrounded by a penumbra, a lighter gray area, not as cool as the umbra. Sunspots can be extremely large - up to 50,000 miles in diameter. Recently on a trip to Beijing, I saw a sunspot naked-eye as the Sun was at an elevation of around 45° and greatly dimmed by the horrible air pollution that plagues that city.

A word about sunspots: these normally appear in clusters, many times with clusters appearing in pairs. It is believed that these pairs represent the start and end points of huge solar flares that arc out from the sun and then return back to the surface, having followed a horseshoe path. These flares are caused by intense magnetic activity. One group is positively charged, while the other member of the pair is negatively charged; when the leading group in one hemisphere is positively charged (with the lagging group being negatively charged), then the leading group in the other hemisphere will be negatively charged (and the lagging group positively charged).

While it is widely accepted that sunspots follow an 11 year cycle between minimums, some observers refer to the cycle as really being 22 years. Every 11 years the polarity of the leading and lagging cluster in a pair will reverse. So for 11 years the leading cluster will be positively charged (and the lagging cluster negatively charged), then the polarities will be reversed for the next 11 years with the leading cluster now being negatively charged!

Sunspots take about 12 days to cross the solar disk, due to the 25 day rotation period of the Sun. Granulation looks like the pitted surface of an orange, and is caused by convection currents from well within the Sun rising up to the surface much like oatmeal boiling up in a pot. You will not see any movement, though, as the distance from Earth to Sun is just too great. Granulation is very tough to make out, and you have to really look hard to see it. I see it best at around 50x and looking at the center of the disk. The next feature that I look for is plage/faculae. These bright features are found close to all sunspot groups and are associated with the intense magnetism found close to sunspots. They are cloud emissions caused by areas of intense magnetism that result in temperatures about 300° Kelvin higher than the surrounding area. These resemble (to me) the Veil nebula in Cygnus. The word "plage" is French for "beach", because the feature resembles light-colored sand standing out from the darker surroundings. I see these best at around 50x at the limbs of the solar disk. Then I look at the limbs for limb darkening.

Looking at the central part of the solar disk exposes the observer to the full brightness of the solar disk; however, the radiation emitted from the limbs of the disk reaches the observer at an large angle to vertical and consequently will make the limb appear slightly darker than the center of the disk. Again, 50x shows limb darkening best. The use of any color filter will hide this limb darkening.

A sunspot count is always interesting. We are only a few years away from the maximum point in the 11 year sunspot cycle, so now is the time to start to focus in this area so that you will have had some solar observing experience once the cycle reaches its

maximum. Some years at minimum, no spots are counted, while at maximum hundreds are spotted at any one time.

But be warned, many of these "hundreds" are very small and will take high resolution optics to notice them. Let me at this point illustrate the advantage of belonging to an astronomy club; based on observations from my own backyard, I had come to the conclusion that 75x was about the maximum useful magnification that I could use - higher magnifications just caused the image sharpness to start degrading. Well, I got together with Mike Spooner (the builder of my 6" scope) and Sam Herchak to get some independent assessments of my own observations.

What a revelation !! Sunspots that at 75x looked solid, showed up as separate components at 140x; sure, there was not the same clarity, but the resolution was better. One large sunspot (about the size of Earth ?) reminded me of the Trifid nebula in Sagittarius - at 140x it was resolved into 3 component parts ! I then dared to move up to 220x, thinking that the image would break up by then, but no - although the sharpness was further diminished, the 3 component parts were still easily identifiable PLUS a fourth sliver like wedge became evident right in the middle of the three larger components - WOW !!! I then tried counting sunspots at both 140x and 220x - I came up with close to 100 (yes, 100!) compared to less than half of that at 75x. The point is that enlisting the help of experienced club members really does enhance what you can get out of the hobby.

Secondly there are the unexpected images that suddenly appear in the eyepiece that provide unexpected bonuses :

- The silhouette of an upside down aircraft zipping through the field of view.
- The ghostly silhouette of a flock of birds when viewing close to the horizon.
- The soothing silhouette of a balloon wafting across the solar disk.

And recently I was viewing the sun on a cloudy day - now that was a real eerie experience. The black clouds seemed to rush across the solar disk while the Sun itself and the sunspot groups just sat there anchored rock solid. Words just cannot describe the unreal image of this through the eyepiece.

Well, I'm hooked on solar observing - are you ?

Another avenue I'd like to pursue is observing the sun in h-alpha. I am told that the surface detail is incredible, but these filters are very expensive. Mike Spooner warned me to NOT look through one unless I was prepared to spend around \$2000 (the approximate cost of the filter) - his prediction being that I would get addicted to the images!! If there are any members out there with such a filter, please look me out - I would love to do a Newsletter article on them.

Pedro Jane' is My Hero!

By Sam Herchak

One person CAN make a difference. I only hope more step up and do their part. Make no mistake; my pleas in the newsletter for help in stopping bad lighting didn't get much of a reaction from Pedro either. But then it got personal!

A few months afterwards, Pedro called and was furious. A neighbor across the alley had put up a "glare bomb" and his backyard was now awash in light, as was their bedroom window. "Now can he do this? Isn't this illegal?"

Well, yes Pedro. Remember the article I wrote for the newsletter earlier this year? I listed the website to review the Arizona Statutes. You also joined the International Dark-Sky Association (IDA), didn't you?

Well, like most amateur astronomers, Pedro remembered all of this, but never acted on it. It's a huge frustration for me and especially David Crawford, who founded IDA and has been preaching this message for 30 years! It seems our fellow astronomers prefer to drive further out of town, rather than stop the growth of bad (and often illegal) lighting.

So how can Pedro be my hero? Well, this incident got him involved. In just a few days (but many phone calls), he really kicked some butt! He got the statutes from me; pointed out to his neighbor that mercury vapor lights are illegal in Arizona; found out who sold it (Home Base); had his neighbor take it down and return it for a refund; contacted the corporate offices of Home Base, Home Depot, and True Value Hardware to remind them of the law; and finally sent in his \$30 to support IDA. Yes! Yes! Yes!

I'm still looking for more heroes. Do anything! Check your favorite hardware store and tell us if they sell mercury vapor fixtures (bulbs are still legal). Get educated and educate others. Promote not only astronomy and the sky, but good lighting. Property rights? Bad lighting and light trespass are no different than a neighbor's loud music. It's a nuisance and mostly illegal in Arizona. Tell them about it. Most people who bring up a light problem with their neighbor quickly reach a good result. Pedro is just another example.

Next month I'll share the news from the annual meeting of the IDA. Meanwhile, check out their website, learn more about the subject, and PLEASE, send in your tax-deductible membership.

Clear AND dark skies to all of you.

IDA (ida@darksky.org or www.darksky.org)
3225 N. First Ave
Tucson, AZ 85719-2103

1999 RTM Annual Meeting

by Tom Polakis, EVAC Secretary

This year's Riverside Telescope Makers Conference was held under a moon so Full that nobody was going to use it as an observing meeting. As this is the clearest time of year in the Southwest and Camp Oakes is hardly dark, a big moon is welcome. Save the New Moon for Arizona observing.

Tony Ortega and I made our fourth and final annual excursion from Phoenix. Tony moves to L.A. later this month. We arrived in the early evening as the show and tell was beginning. Unfortunately there was no "theme" this year such as an eclipse or great comet. More unfortunately, the 2½ hours was occupied by scheduled talks, leaving no time for those who showed up with a tray of slides to race through in 10 minutes. Let's hope RTMC reverts back to the more disorganized, but more interesting, mini-show and tells in future meetings.

One of the first vendors I came across was Tom Mathis, the programmer for Carina Software's Voyager III. This is the same Voyager upgrade that was promised two years ago, when Carina's marketing guy showed up. He subsequently quit, in disbelief that the product would ever be released. Well, it's still not released, but that didn't stop Mathis from wowing passersby with the amazing graphics, which make the competitors look second class. The usefulness of the new features is debatable, as long as you don't debate them with Mathis, who will hear nothing of customers. My requests to show a half-degree field around a popular target were repeatedly overridden by Mathis showing off panoramic simulations that ran at lightning speed. Whether a product will ever really come out of this is anybody's guess.

Next to Mathis was Doug George, the one-man show behind Maxim DL, a CCD camera control and image processing. He calmly gave me a half hour of his time, running through the excellent features of the program. He used the CCD camera companies' camera control software as a model of what not to do. Maxim DL was given a favorable review by David Hanon in the July issue of S&T.

Saturday morning means the swap meet, which begins at the crack of dawn, and carries on through the morning. It's the usual 90 percent junk and 10 percent good stuff that I don't need, and I was happy again not to be spending money at RTMC. On the telescope field, the vendors were going in full force, with Meade and Pocono Mountain Optics generating the most interest. A new addition to the field this year was Discovery Telescopes. These are the people who have made many of the telescopes sold as Orion products, now eliminating the middleman. This would not be newsworthy, but their prices are typically a full third less than any of their competition. An 8-inch f/5

Dob sells for \$419. Their 8-inch f/5 on an equatorial mount costs \$599. They also sell focusers, finders, and eyepieces for similarly discounted prices.

Forget what I said earlier about not spending money at RTMC. Also set up on the field for the first time is SkyTent International. The idea of a portable tent domed observatory has been attempted and failed as many times, but somebody finally got it right. Their unit has a 10-foot base and 7-foot ceiling. The dome rotates with one finger. It is incredibly sturdy, as 30-mph winds later that night would not budge it. So I bought one, mainly to serve as my semi-permanent backyard observatory. If you want a good laugh, check out what I paid at their Web site at www.skytent.com. Belittling comments to me by e-mail are welcome.

The talks go on full force on Saturday, but it's typically too nice outside, and there are too many people to hang out with. I spent some time with Glen Sanner and Jeff Medkeff who made the trip from Sierra Vista. Just like at TSP, Glen's "Night Sky Observers Guide" which he co-authored with George Kepple, sold as quickly as he could display it. They have now sold out the first printing of 2000 in six months. Near them was Atlanta amateur Jerry Armstrong, who sells a great collection of meteorites and fossils. Car problems this year prevented him from bringing up any of his fine space art. A few booths over, Tony and Daphne Hallas displayed their jaw-dropping astrophotographs. Their CD's of images seemed to be selling as well as any of the prints.

I met up with Patti Kurtz, the former photo editor for Astronomy magazine. She seems to know half of everybody at the conference, so I got to meet the best of the best in astrophotography: Jack Newton, George Greaney, and Lee Coombs, to name a few. She also knows the competing magazine's staff well. This year Sky & Telescope sent Gary Seronik and Rick Feinberg. In talking about the future of S&T's observing coverage, Gary promises a good monthly feature in "Deep-Sky Scrapbook," in which many articles will be done by Houston's Jay McNeil, one of the country's best observers.

The Astronomy and S&T folks all know each other and seem to get along on the surface, but after a couple beers, you can tell that this is a heated rivalry. We can only hope that neither publication goes under. Should an astronomy magazine be a reference source full of technical articles for hobbyists or a general science magazine with special interest stories? Tony and I agreed that it's best to have both.

Sunday's program was loaded with good talks and workshops. Lee Coombs talked about small scopes he's used for astrophotography. This was followed with Chris Schur's thorough talk about digitizing his photos. Chris loaded an impressive amount of content into a talk that only ran a half hour.

I was supposed to serve as the lone panelist for Jeff Medkeff's workshop on computers, but it was

double booked with my moderator slot for deep-sky observing. Jeff was able to put together a panel with a couple of the software vendors whose products he recently reviewed in S&T. He provided them with tomatoes to throw at him. Jeff said the panel was one of his best hours in front of a group, and I can say the same for my workshop period.

My panel consisted of Glen Sanner, David Chandler, Chris Schur, and Kent Wallace. They all gave excellent answers, and kept them concise, the key to a good panel. After 35 minutes of scripted questions, I ran around the audience with a cordless microphone a la Jerry Springer, but without the panelists throwing any blows. The show in the main hall was remarkably well attended, owing to the vendors leaving the field by Sunday afternoon. Kent is a top-notch planetary nebula observer with a low profile. He has observed over 400 of them now, using an 8-inch scope. He recently used his C8 in Western Australia for three months.

As I noticed in 1998, RTMC has become enjoyable irrespective of the moon's phase. It is less of a telescope makers conference each year, but it never really was one for me, anyway. One of these years, I'll find something else to do on Memorial Day weekend, but RTMC will always serve as the best default.

For Sale

1. Porro-prism 1 1/4" (never used) \$35
2. Tele-Vue 1 1/4" 40mm Plossl e.p., new in box, \$85
3. Tele-Vue 1 1/4" 20mm Plossl e.p., new in box, \$80
4. Meade 1 1/4" 18mm Superwide (670) e.p., new in box, \$135
5. Lumicon BRACKET for 80mm finder for C-14 \$35
6. Losmandy DC14 Dovetail Plate for C-14, \$100
7. Losmandy DR90 90mm I.D. rings for DC14 Plate, \$100
(\$175 for both above items)
8. Celestron 8x56 Ultima binoculars, excellent condition, \$185

Bill Dellings (480) 983 6651

Centurion Ultma 2000 fully computerized, 8 inch schmidt, with all accessories. Tripod, many eyepieces, camera mount, filters, gel cell battery and much more. I also have a set of three Brandon eyepieces in a wood presentation case. I am asking 350.00 for the Brandon eyepieces, and 3,350.00 for the scope and all other accessories. The scope has not been out more than four or five times and is in perfect condition. I am open for reasonable offers.

Don Farley: 981-7046 or cell phone: 602 499 9911

1999 Grand Canyon Star Party

by Steve Dodder

Well, it's in the books. The 1999 Grand Canyon Star Party is over, with more fond memories, more nice people and more sleep than last year.

This year, because of Rosie's work schedule and my basic laziness, we didn't get to the canyon until almost 8:00 pm. My plans to set up camp, set up some Malibu lights to guide folks to the lower observing field and get some observing in the first night didn't quite work out. We did manage to set up camp and get most of the lights up, though. Most thought it was a great idea, and couldn't wait for the rest to go up for Sunday's show. It was nice and clear, with what seemed like a lot of scopes set up in the parking lot. (Turns out there were 40 the first night and 54 (!) the second night. Both better than the best night last year.) We didn't get to try out the new solar scope right away Sunday, mostly because we had some more camp organizing to do. Actually, we just bought a popup trailer on the Thursday before this trip and spent the time getting it set up for future use. It should make things a lot easier in the future. The skies were glorious both Saturday and Sunday, and the crowds showed it. I had 86 people look through my scope, plus a few more while we made arrangements with the ranger for a special pass to the West rim for solar observing. (I have a "clicker" I use to keep track this year, and it piqued the interest of one of the local sponsors. She was taking a survey, something for the park service to determine the turn out for this event. More on this later, I hope.) This seemed like a good turn out for the field, as compared to last year, traffic-wise. We turned in around midnight, after the crowds died down.

Morning came at 6:50 am. Had breakfast and set up the solar scope at Mather Point, just like last year. Unfortunately, the clouds started rolling in, just as we were leaving. Got some sprinkles as we pulled up, so decided to cancel. Heard thunder not too far off, until around 3:00 pm, but decided to set up both scopes for the night viewing anyway. Did better than I expected, with 64 shared views before the solid clouds packed in. I got a chance to talk with a nice newcomer to astronomy, Rick Bowen. He had just bought a C8 like mine, but didn't sign up for the party, and didn't bring it to the canyon. He enjoyed the views, and said he couldn't wait to get back to it when he left on Wednesday. I wished him luck.

Tuesday morning, we went searching for a larger spot, since I was expecting to share one with a guy from Utah. Found it, pulled up stakes and moved. It started to rain pretty good, just after we set up at the new place, but it cleared enough to set up the scope

behind El Tovar Lodge on the rim. I forgot my clicker, but we estimated around 100 people, before we broke for lunch.

By the way, every time we set up the solar scope, we also told people about the star party that night. Quite a few really want to go and many approach us after dark, to thank us for the invitation. These are perhaps the more rewarding moments of this trip-to tell someone about it and have them actually seek you out to thank you. It's really a good feeling. Many are, unfortunately, not able to attend, since they had made plans elsewhere or are just passing through with a tour or something. But it's still nice to see them enjoy the views while they're there.

Anyway, after lunch, we moved the scope to Mather Point. I picked up my clicker, and counted 201 people in just under an hour and a half. Wow! It was a complete blast. Not as many seemed to glance at the sun when told of our target, but still a fair number did, along with the inevitable accusation of having dirty optics. (I started describing the subject like this, "See the big green disk in the eyepiece? The spots on it are not dirt on the mirror, they are in fact, sunspots, about nine times the diameter of the Earth...") Back at camp, we shared a snack/dinner and headed off to Yavapai Point for the evening. The sky had other plans... Heavy clouds, lightning and sprinkles sent many of us scrambling to cover our scopes. Fortunately, I had only set up my scope and left the other in the case. (No extra charge, David :-))

Wednesday was much the same, except with more rain. Didn't set up the scope at all in the day time. Night time looked fairly promising, but the public split just after the slide show. A few clearings after 10:00 or so, but just astronomers showing astronomers the sky was not the idea behind this star party. At least we got some sleep...

Thursday we set out to try our luck on the West rim, setting up at Hermit's Rest..... Just in time to catch a major rain squall coming out of the canyon. Ended up breaking down and setting up the scope 4 times while the rain passed. On the way back, (major disappointment setting in...) I decided to try Pima Point-at least it was sunny there. Got the scope set up, showed 30 people the sun, and it starts to rain on us again. Rock bottom. Whine fest. Fellow astronomers blaming me and my "new" scope for the bad weather, and threatening, not altogether in jest, to chuck us both into the canyon as a sacrifice to the rain gods. But I run too fast..... Not a total loss that night, with mostly cloudy skies but with a few small, fast moving holes here and there. It seemed as soon as you had a clearing, spotted and found a target and showed 2 or 3 people, the clouds would cover it, forcing a new selection. We packed it in soon after the public did, around 11:30pm, after showing 83 people Mars, Venus, and several other DSO's. Oh well.

Friday was diametrically opposed. We decided to get up EARLY, like last year around 6 am and set up ASAP at Hermit's Rest. It worked! We beat the main tourist rush there by about half an hour, being set up by 8:30. This allowed me time to make a sketch of the sunspot patterns to show people. It was interesting to see the amount of people increase almost exponentially with every bus load. Showed 338 people sunspots in right around 3 hours, and got my sketch translated into Chinese, Japanese, German, Dutch, and Portuguese. It was great! Had lunch and set up again behind Bright Angel Lodge. Not much luck here, however. Only 35 in over an hour! I thought since there were always a lot of people here, it would be a good place. But mostly, people just ignored us, or brushed past us on the way to the soda shop or curio shop. Surprise! Night time showed substantial improvement with 154 people. I missed a lot on my counter too, since we were so busy, we guess around 30 or so. The skies were clear, if not that steady, giving really good views of Mars and a crescent moon, etc.

There's something about the moon at high magnification that really gets the blood flowing. Most people are just amazed at the detail visible. I had a particular region of the moon that "has it all". A dark sea bottom, several large craters, with smaller craters on the floor, some very high mountains and a ridge that runs along beneath the mountains. Absolutely spectacular! I didn't move that scope for hours, and used the other one to run the rest of my "program". Lotsa fun.

We didn't set up the scope on Saturday morning, planning instead to go hiking on the West rim before the final astronomer picnic at noon. Didn't get much of a chance, since we had some trouble with the pop up though. Nothing serious, just needed to refill the water tanks. I set up the solar scope for the astronomers as we ate barbecue and lotsa good stuff. The scope was a hit, even with that somewhat jaded crowd! I was pleased as punch. Saturday night came bright and clear, with just a whisper of clouds to the South. Many of the astronomers left after the picnic, to join family members for Father's Day celebrations the next day, so we were fairly swamped with 15 less scopes set up that night. Some less hardy astronomers panicked at the prospect, but we all held it together somehow. I counted 329 people that night! Unprecedented for the lower observing field. The sound of voices asking and explaining astronomy was the best I've heard. I didn't get an official count, but there appeared to be only about 10 scopes above with about the same below. Only 20 or so for the biggest crowd of the week.

I managed to see two of the best globular clusters in the sky through the 28" telescope of Dennis Young from Sedona during the week- M13 and M4. M13 was amazingly rich, big and bright, as it is the showcase

cluster of the Northern hemisphere, but M4 was by far more complex. The subtle strings and curves and loops present in this nearest of clusters is simply fantastic. I'd love to show you all sometime!

We managed to say our good-byes to our friends, old and new, mostly on Sunday morning, since we went to bed late Saturday night-2:15 am or so. It was tough to leave as always, but good to get on the road home, too. I look forward to next year once again, hoping the weather will be better. But the weather notwithstanding, an over all improvement in the way things went and our overall satisfaction in sharing the sometimes simple and sometimes complex hobby of astronomy with others.

Thanks for reading, and let me know when you'd like to join us under the stars.

SEEING DOUBLE

by Silvio Jacconelli, EVAC President

This is the time of the year that many people turn to the 'double double' in Lyra (Epsilon Lyrae). This star is renowned because not only is it a double star - its two components can be split using binoculars - but each component itself is a double each just under 3 arc seconds apart; so in total Epsilon consists of FOUR stars, all four of them around 5th magnitude. While the two major components are easily split in binoculars, the approximate 3 arc second separations of the minor components makes for a tougher split - good optics and good seeing are required to split them cleanly; I use around 200x to get a split. Fortunately, the approximately equal magnitudes of these stars makes for easier splitting; it's when the component stars are vastly different in magnitude that splitting becomes tough (Antares, Sirius, Procyon, etc).

Lesser known is the fact that there are several 'double doubles' in the evening sky during the summer months, some easy, some downright tough ! And I have thrown in some other interesting objects for good measure. Refer to the attached sketch in order to navigate to the objects described.

1) LYRA'S TWO BINOCULAR DOUBLES

Let's start with something easy. The two stars in the Lyra parallelogram nearest to Vega are binocular doubles -the one nearest to Vega is tough, but the other is real wide and easy Check them out with your telescope at low power as well. They're fun.

2) LYRA'S OTHER 'DOUBLE DOUBLE'

Struve 2470 and Struve 2474 form Lyra's other 'double double'. Again, the two major components can be resolved with binoculars, but at 8th magnitude they are considerably fainter than Epsilon and are not visible to the naked eye. The minor components are also very easy with a telescope - the separations here

are around 14 arc seconds; I find that 100x is more than enough to resolve all four stars - much easier than Epsilon Lyrae.

3) THE RING

While in the neighborhood, look in on the 'ring' nebula; use high power on this nebula - it can take it. And being fairly bright, there is no need to resort to a large aperture scope to pull it in. My 6" from my light polluted backyard can pick it up.

4) SCORPIUS TRIPLE

Let's now swing over to Scorpius. At the base of the spine of this constellation we find Zeta Scorpii, a pretty triple star resolvable thru binoculars - the top two stars are real easy, but the third star at the bottom is tougher. Just above this triple star you will see a beautiful open cluster, then a broad band of stars rising upwards and off to the east - this is one of the spiral arms of our very own Milky Way galaxy! Ask Chris McFarlane to show you this section of Scorpius through his 20x100 binoculars - it is guaranteed to knock your socks off!

5) SCORPIUS DOUBLES

Right above Zeta, is Mu Scorpii, a somewhat tough visual double (at least to me !) - no optical aid required. If you then look over to the east and find the stinger of the tail with your naked eye, you will see that this also consists of two stars - much easier than Mu. This is proof that you do not need expensive equipment to get started in the hobby!

6) ANTARES

Now for the first really tough challenge of the tour - Antares. Antares is a double star with a first magnitude primary and a fifth magnitude companion only 3 arc seconds away. Such a faint companion that close to such a bright star makes a split very tough - the companion is just overwhelmed by the glare of the primary star. I have only seen the companion once, through Don Wrigley's 16" under very dark skies. These doubles require good optics and steady skies.

7) INTERESTING SIDE TOUR

While in the vicinity of Antares, check out the globular clusters M4, M80 and NGC 6144. These objects are better left for dark skies away from the city light pollution.

8) MICKEY MOUSE TRIPLE

To the north-west of Antares is Rho Ophiuci, a triple star which I refer to as the Mickey Mouse Triple because of its resemblance to the face of that cartoon character! It requires a telescope or giant binoculars to see these three components, but once located they prove to be an easy split. This whole region of the sky

is just awash with nebulosity, but I have never seen any of it from our local observing site.

9) BETA SCORPII

Compare and contrast this double to Antares. Again this double is of unequal brightness with components of 2.6 mag and 4.9 mag; however the separation this time is 14 arc seconds, placing the secondary far enough away from the primary so as not to be overwhelmed by it - a real easy split, even at 50x. I also looked at Beta at 200x, and got an equally beautiful (though totally different) perspective. Try this one at both low and high powers.

10) HALF OF ORION ASTERISM

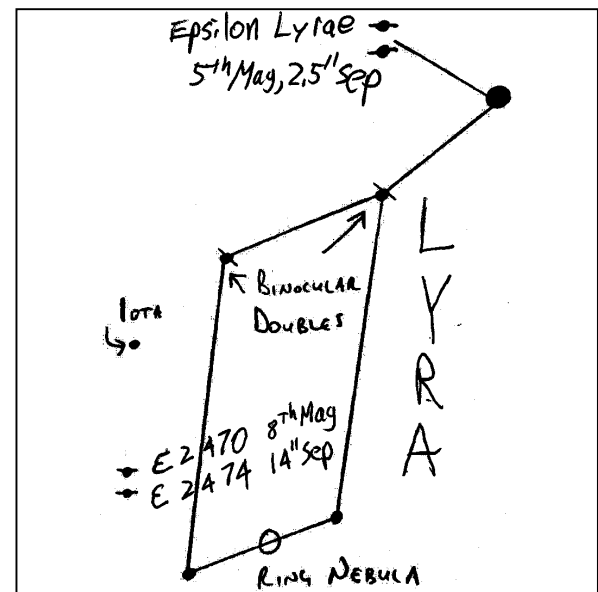
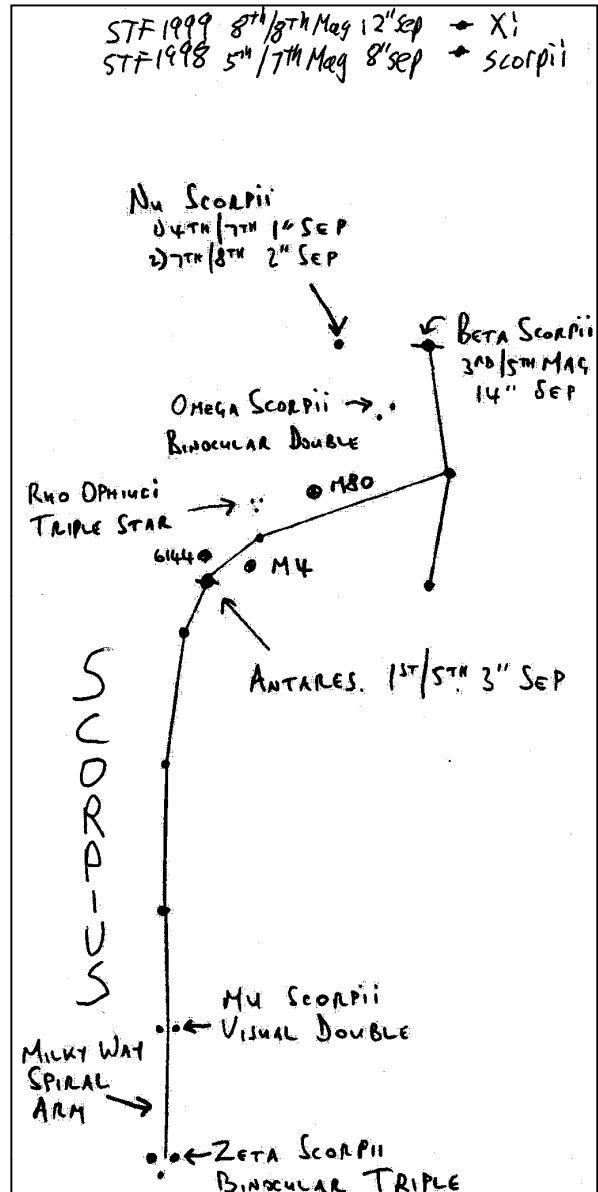
Omega Scorpii is another binocular double - this time just to the south east of Beta Scorpii. When I first became familiar with this part of the sky, I was immediately struck by the asterism (an outline formed by a grouping of stars) formed by Beta, the Omega pair, and Nu Scorpii - it resembled the upper part of Orion. Can you make out this asterism - it is so obvious through binoculars - try it!

11) A REAL CHALLENGE - A TOUGH 'DOUBLE DOUBLE'

Now for the real challenge of the night - Nu Scorpii. For this you will need excellent optics, high power and a steady night. The first part is easy - the two major components are 4th and 6th magnitudes, and 40 arc seconds apart; a real easy split. Now it gets tough - the bright component is a 4th mag and 7th mag pair only 1 arc second apart; this is the toughest split of the night. Then the secondary star comprises a 7th mag and 8th mag pair 2 arc seconds apart, a lot easier than the primary star but still a challenge. Congratulations if you can get all four components. The first time that I split all four of these components was with Dwight Bogan using his new 6" AstroPhysics APO at 575x.

12) FINAL 'DOUBLE DOUBLE'

Let's end with a fairly easy 'double double' - Xi Scorpii, high above Scorpius' pincers. Xi consists of two double stars. The first double is STF 1999, consisting of 2 8th mag stars with a separation of 12". The other is STF 1998, consisting of 5th and 7th magnitude components with a separation of 8". Both welcome relief after Nu Scorpii, an easy split of all four components at 75x ! (The accompanying diagram is mislabelled - the top double is the unequal one). Almost all the objects listed above are easily observable from a light polluted location. So don't let the Moon or sky glow prevent you from taking this tour. Enjoy !



NASA NEWS

Prepared by Martin Bonadio

NASA launches telescope to seek universe's origin

NASA launched a rocket carrying a new telescope June 24th on a three-year, \$204 million mission to look for the relics of the "Big Bang" that brought the universe into being. The telescope, Far Ultraviolet Spectroscopic Explorer, known as FUSE, will use its ultraviolet instrument to sweep the sky for what scientists refer to as the "fossils" of the Big Bang, the event that gave birth to the universe. It is the most sensitive such instrument NASA has used. The telescope will measure quantities of hydrogen and deuterium, a form of hydrogen, believed to have been created following the Big Bang, which scientists theorize created the universe. The balance of those elements will give insights into the conditions in the first few minutes after the Big Bang, how the elements are dispersed through the galaxies and what the vast gas clouds between stars are made of. By determining how much matter was created in the Big Bang, scientists may answer a long-standing question in astronomy: Will the universe continue to expand forever or will it collapse back on itself in a "Big Crunch?"

NASA Threatening to Kill Two Planetary Missions

It appears that NASA is about to cancel the Mars Surveyor 2001 lander mission and the ST4 Comet Lander mission! The reason: to fix problems in other parts of the agency. Other space science missions are experiencing cost overruns, NASA's budget is decreasing and funding for future space science missions is in doubt, so apparently NASA is going to fix these problems by canceling two missions that are proceeding on schedule and within budget.

"The Mars Surveyor program has been mandated by a national space policy signed by the President. That policy specifically calls for a "sustained program to support a robotic presence on the surface of Mars by the year 2000. . . ." The cancellation of the 2001 lander violates that provision. The project is part of a carefully crafted architecture for exploring Mars. Just this year, NASA authorized a Mars airplane to fly in 2003, and a communications network to begin in 2003 or 2005. How can NASA start new missions to Mars while canceling existing ones? "

ST4, named Champollion, is a bold attempt to rendezvous, land on, and sample a comet using new technologies that will enable future outer planet missions such as the Europa orbiter. What a glorious opportunity; what a tragic sacrifice.

Two Upcoming Northwest Star Parties

By Steve Bell

Two Northwest Star Parties are scheduled for August and September.

The first is the Idaho Star Party, hosted by the Boise Astronomical Society. It will be held at Bruneau Dunes State Park from August 12 through the 15th (Thursday through Sunday). This park has shower and restroom facilities, full RV hook-ups available and sits at about 3000 feet above sea level. The skies are very good and the club has an observatory with a 25-inch Newtonian located there. I have attended this event multiple times and have thoroughly enjoyed it. Even though it's warm there in August, it is still a lot cooler than Phoenix. I plan to attend this year.

For information on the Idaho Star Party, check the BAS web site at www.isidaho.com/bas or contact me, steveb0513@aol.com.

The other star party is the Oregon Star Party, held September 9 - 12, at Indian Trail Spring in Ochoco National Forest. I have never attended this event, but I have been in this area. I can not speak to the event, but can say it is a long way from any major metro area. The country is beautiful and the skies should be really dark. The event is hosted by the Rose City Astronomers (Portland, OR) and is being sponsored by Celestron, Meade and Astronomy Magazine. This is a "large event".

email: ospinc@teleport.com

web site: www.teleport.com/~ospinc

US Mail: The Oregon Star Party

16016 SE Division, PMB 307

Portland, OR 97236

Phone: (503) 357-6163

I have flyers for both these events and will make them available at the July EVAC meeting.



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
 ___ \$10 July—Dec
 ___ \$29.95 *Sky & Telescope*
 ___ \$29 *Astronomy Magazine*
 ___ \$ 7 EVAC Nametag
 ___ Total

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

Circle: New Member Renewal

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;
 Archaeoastronomy; Other: _____

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.

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"

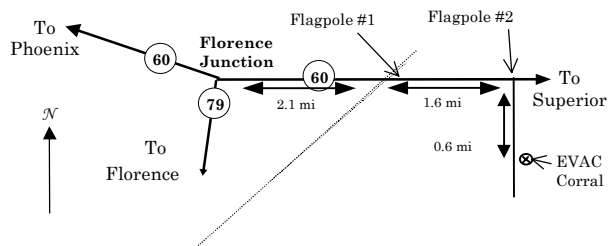
EVAC Star Parties

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. (Report gunfire or illegal activity: 800/352-3796; Land use permit number: 26-104528.)

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

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

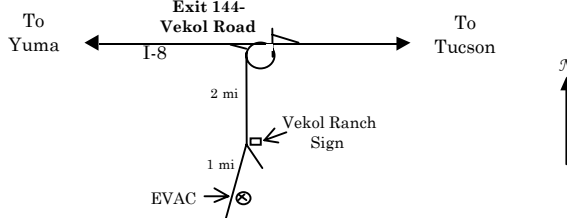


Deep Sky Star Party: Vekol Road Site

General Information: The Vekol Road site is the official site for the East Valley Astronomy Club's Deep Sky Star Party, typically held on the Saturday closest to New Moon. Vekol Road offers dark skies despite prominent skyglow from Phoenix to the north. The site is within 1½ hours drive time from most east Valley locations.

Location: N 32° 47' 55" W 112° 15' 15"

How to Get There: Take I-10 south and exit onto Maricopa Road. Continue through the town of Maricopa to SR 84, about 25 miles from I-10. Turn right on SR 84, after about 5 miles the road merges with I-8. Continue west and exit I-8 at Vekol Road—Exit 144. Turn left and cross the highway overpass. Before looping back onto I-8 take the dirt road to the left. Go south for 2 miles. At the Vekol Ranch sign bear right and continue south for another mile until reaching a large, open area on the left.



East Valley Astronomy Club—1999

Scottsdale, Arizona

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

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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—arizkat@psn.net

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

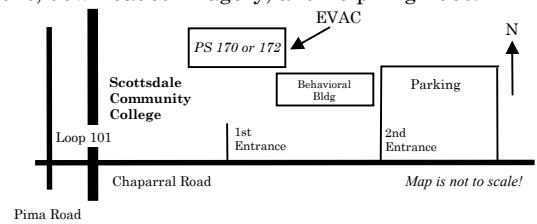
Newsletter: Mailed out the week before the monthly Club meeting. Send contributions to Tom Mozdzen, 1532 West Sherri Drive, Gilbert, AZ 85233. Email—tjmozdzen@worldnet.att.net. Contributions may be edited.

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—arizkat@psn.net

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



Tom Mozdzen, Editor

1532 West Sherri Drive • Gilbert, AZ 85233

Contents:

- Upcoming Events
- June's minutes
- Solar observing
- Sam's Hero
- RTM conference recap
- GCSP recap
- Double Star observing
- NASA Briefs
- For Sale

Dont Forget: EVAC Meeting on Wednesday, July 14 Guest Speaker: Bill Peters on Meteorites