East Valley Astronomy Club

President	Tom Harvey	998-0035
Vice-President	Ted Heckens	827-1524
Treasurer	Bob Kelley	451-7319
Newsletter	Bill Smith/Roy Halverson	831-1520/844-9563

October *Newsletter* *1992*

EDITOR'S NOTES

Congratulations are in order for two members. First to Bob Kelley for raising Arizona's newest astronomer! Yes, Bob's wife had their first baby in the middle of September. So now Bob won't be getting any sleep at night for a new reason. We look forward to seeing him any time he can get away from the diapers! I understand its a boy (someone who can carry Bob's tripod I'm sure).

Second congratulations, go to Michael Janes the proud owner ofhis new 16 inch Newtonian built by Pierre Schwaar. I think the last nine months have been just as hard on Michael as they have for Bob. After all, Michael was on his own and Bob had his wife to help him!

Leon Knott is a name you will be hearing more and more as the months and years go by. Leon, his wife Fannie and family are new to the East Valley. They left Rock Hill, South Carolina not long ago, looking for clear skies and new challenges. New challenges I'm sure they've had, but clear skies are yet to be seen (but hang in there, its got to get better sometime - the Chamber of Commerce has got its reputation to uphold).

Fannie and Leon are delightful people and I'm sure they will feel welcome in their new community and among amateur astronomers across the valley. Leon's talents will be in demand (he has many, as his article in the next column about observing double stars will attest). Leon was the planetarium director at the Museum of York County.

Leon has published articles in both *Sky and Telescope* and *Astronomy* magazines and is looking forward to publishing a book for Cambridge publishers.

Leon and Fannie hosted a small get together at their house with comet hunter Howard Brewington from New Mexico. Be sure to read Michael's article on page 6 for insight into what it takes.

Welcome to both Fannie and Leon.

OBSERVING THE BLUES AND GOLDS

by M. Leon Knott

Beginning amateurs occupy one of the most delightful and marvelous positions in the experience of astronomy. Before them lies an expanse of knowledge, fellowship, work, experience and just plain enjoyment. Beginners are still able to respond to the beauty and grandeur of the universe with wows! heys! and awesomes! They are as yet unaware of the stultifying "expertise" that some attain to, an expertise that merely kills much of the joy and wonder that real amateur astronomy can bring about.

The beginner can look up and marvel, conscious of the immense times, distances and expanses of the heavens above. She can derive pleasure and joy from minimal equipment and knowledge, actually giggling with delight at a new vision or just taking justifiable pride in attaining a new observational skill. A beginner's enthusiasm can prove seriously contagious to the old pro, provoking memories of when those beauties were first observed and enjoyed, of honing new skills in observing and knowledge.

So, if you are a beginner, then please read on. If you are an old timer, well then, why don't you read on as well and take out that old "beginner's" scope and follow along, looking up these objects along with us?

cont'd page 4

MARK YOUR CALENDAR

EVAC BUSINESS MEETINGS

Oct. 14th - SCC Room PS 170

Nov. 11th Dec. 9th

DEEP SKY STAR PARTIES

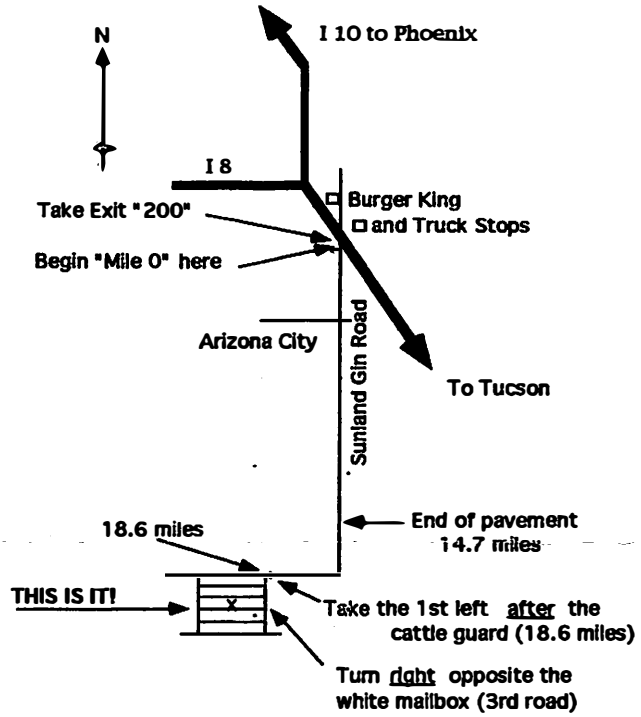
Oct. 23-24th Nov. 21st

Southern site-see map inside.

LOCAL STAR PARTIES

Oct. 17th -Carefree Site

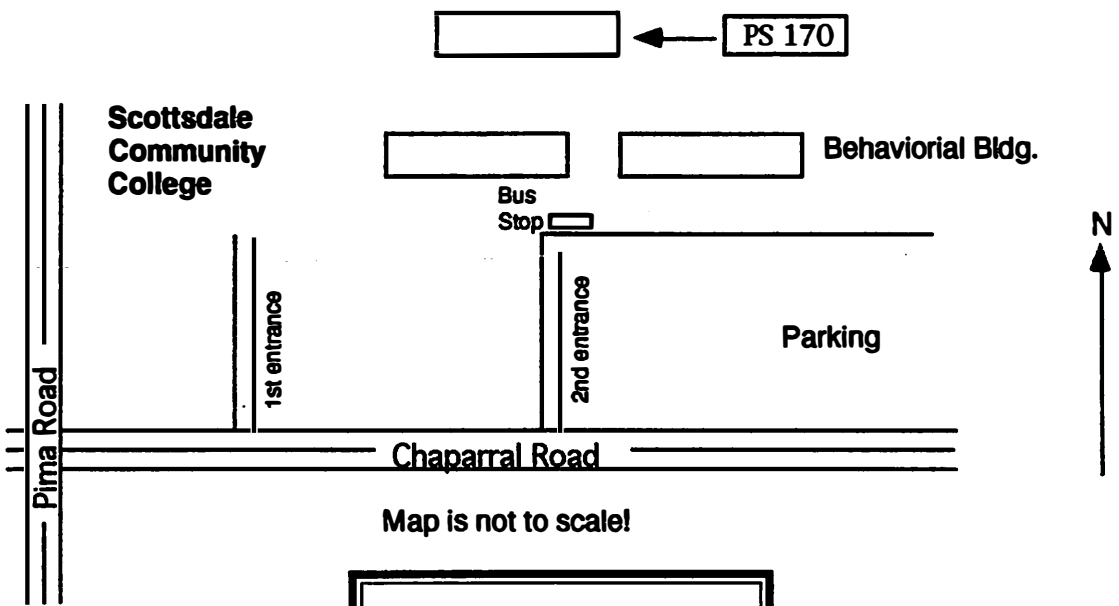
Call Joe Murray 482-2918 for instructions.



Believe it or not, they named the street opposite the white mailbox:
MOON CHILD!!

- DEEP SKY -

SEPT. 26th - OCT. 23-24 All Arizona Star Party



Map is not to scale!

Next business meeting 10/14/92

Room PS 170

ETIQUETTE FOR EVAC OBSERVATION SESSIONS

by Bob Kelley

These rules are intended to help maintain access and use of the East Valley Astronomy Club observingsite for as many members and their guests as possible, while preserving the conditions that permiteveryone to pursue the study and enjoyment of astronomy to the fullest satisfaction.

If you are new to EVAC, or it has been a while since you have been to an observing session, please take a few minutes to review these basic guidelines. Please don't hesitate to ask questions if anything is unclear. Call Bob Kelley at 451-7319.

If you invite guests to star parties which are not public star parties, please read #1 carefully.

1) **Members are responsible for their guests. Please provide a copy of this article before departure.** ***Members must accompany the people they invite and help them understand and follow the rules.*** **Deep sky star parties are not generally for guests because of the serious observing and astrophotography taking place.**

   Invited guests are to be as responsible for their behavior and practices as members. Everyone should have a good time if everyone knows the procedures. Please accompany all guests.

2) **Use dim red lights after sundown. It takes 15-20 minutes to allow your eyes to adapt to the dark. Even a brief encounter with white lights will ruin it. Also, those attempting astrophotography can have a 20-60 minute guided photo spoiled by extraneous lights.**

   Shield or turn off car door or trunk lights (pull fuses if necessary). Use red flashlights at all times. If you must use lights, please ask first, to avoid spoiling someone

3) **Park based on your observing plan. Park facing towards the exit to avoid using your backup lights.**

   If planning to leave early, park away from observers and point your car towards your exit path.

4) **Departure times are normally on the hour. Astrophotographers please note!**

   Use parking lights only — no headlights please. If necessary, have someone help lead your vehicle out with a flashlight.

5) **Those arriving after dark need to drive slowly and turn off headlights.**

   Drive 5-10 miles per hour and use parking lights because someone may be in the middle of a 60 minute astrophoto and it will be instantly ruined by bright headlights.

6) **Remember, the peace and quiet of the skies should be maintained by keeping loud noises to a minumum.**

   Radios, tape players and horns can disturb others. Please use carefully.

7) **Being the last to leave can be frustrating or even dangerous.**

   Unexpected occurrences can happen, such as, dead batteries or vandals. The last two observers should make every effort to leave together.

cont'd from page one **OBSERVING THE BLUES AND GOLDS - M. Leon Knott**

Objects?? Yep...we are going to be looking at some of Nature's most beautiful offerings in the sky above. We'll not deal with the majesty of Orion's nebula, with the mystery of NGC 891 (the ghostly, blue, edge-on galaxy in Andromeda) or even the splendor of the Pinwheel Galaxy-M33 in Triangulum. The objects we're going to deal with can be seen (for the most part) with binoculars or 60mm refractors. For those more difficult objects in this class, you can ask the owner of a larger telescope to let you complete your list at the next star party. I mean, after all, star parties are for stargazing, right?

And what is this class of objects requiring such a lengthy introduction? Aha! I thought you'd never ask! We're going to discuss and look at a series of blue and gold double stars. We will begin with very wide pairs, easily seen in binoculars, pairs with great color differential. Then we will progressively look at more difficult pairs (but still with one blue and one red or gold star). The last two in our list will require a scope of several inches aperture, but among the members of EVAC, that should be no trick at all.

Let's begin with the star Dabih, also known as Beta Capricorni. You will find this wide double on chart 16 of the Tirion charts and on the 20 hour chart of Tom Lorenzin's 1000+. Practically speaking, Beta lies on the western side of the "V" of nominal Capricornus. It will be the second bright "star" down from the right side of the "V." Use your star chart, that's what it's for. Lorenzin, in 1000+, tells us that Beta has a 3' separation with a position angle of 267 degrees. The primary also has a companion; however, the separation is small and the brightness low. In binoculars, Beta is a widely separated blue and gold pair (some claim to see it naked eye!) You will find Beta a very beautiful and easy double with minimal optical aid; just the thing to start us out on our search of blues and golds.

Our next pair is even more vividly colorful. In fact, our next pair isn't a "pair" at all, but a small collection of three stars, one blue, one green and one gold (or orange). This treat is especially beautiful in binoculars of almost any size and really makes a small refractor or reflector come alive. On page 9 of the Tirion and on the 20 hour page of 1000+ you till locate 30, 31 and Omicron 1 Cygni. Although probably only an optical group, it is one heck of an optical group (true binaries consist of two stars revolving around a common center of mass: visual or optical doubles appear to be binary but aren't in reality). Of the three stars in this visual group, the orange (gold) star, Omicron 1 is the brighter while 30 or 31 Cygni lie close in the same field of view; separations are 308" and 107" respectively. This group is easily located, sitting upon the trailing edge of the northern-most wing of Cynus. Even 50mm binoculars will readily separate and show the vivid colors of these three stars. For a real treat, locate them in you 60mm refractor or 4.5 inch reflector at moderate powers. Note the contrast between not only the members of this group, but check out the white "background" stars as well.

The next pair can be split in a good pair of binoculars but really come into their own in 11 X 80's or a small telescope, including finder scopes. Many amateurs are of the opinion that this pair, called Albireo or Beta Cygni, is the most beautiful in the heavens. They just may be right...The incredible color contrast, the pleasing separation and their apparent place "in front" of the Milky Way give Albireo a feeling of three-dimensionality. Among the doubles on our list, Albireo is the most easily located, appearing as the "nose" of the swan or the "base" of the Northern Cross asterism. It also appears on the 20 hour page of 1000+ and on Tirion page 9. To obtain fullest enjoyment of this pair, mount your binoculars upon a tripod; they appear close enough to demand a steady instrument for proper viewing. When no one else is looking on try this experiment...Slightly defocus Albireo and watch while slowly tapping the tube of the telescope or binocular with a finger. Get ready for some awesome color "computer" graphics! Observing guides and amateur astronomy books routinely use exclamation points -!!!- when describing this pair. We thoroughly approve of such usage. WOW!

While all of the stars on our list can be seen at this time of year, it would prove advantageous to observe our next two pairs a bit later in the evening. Let's begin with a beautiful "copy" of Albireo; in fact Almach, or Gamma Andromedae is considered by many an equal to the more famous Albireo. You be the judge...

Located on both the 0 and 4 hour charts of 1000+ and on chart 4 of the Tirion atlas, Almach is one

of the brighter and more easily seen stars of the constellation of Andromeda. The separation of this pair requires something a bit larger than 11 X 80 binoculars (to this observer at any rate). In slightly larger instruments however, this beautiful blue and gold pair can just about knock you down. For a simple observation of contrasting star colors, check out nearby Beta Andromedae or Mirach. Look closely at this read star and you just might see nearby NGC 404, a bright elliptical appearing galaxy (requires a fairly good sized scope).

Finally, our last pair will require a larger scope (8 inches or so), so its well worth seeing. You may want to ask the owner of such a scope at the next star party to locate and let you observe the gorgeous blue and gold double, 1 Arietas. Separation is a close 2.7 seconds of arc, and brightness differentials make the use of a larger instrument imperative. If you manage to observe it in a smaller scope, please be sure to let me know.

Locate 1 Arietas on page 4 of the Tirion or on the 4 hour chart of 1000+. If you are using a larger scope, don't be surprised to see a couple of galaxies in the field of view. A "check mark" of six galaxies semi-surrounds 1 Arietas and only one (NGC 697) is noted in Tirion. You may wish to consult Uranometria for more information on these dim galaxies.

So...what do we do have? A tour of incredible blue and gold doubles (and I've mentioned only a few of those easily visible at this time of year). Why not check them out and report your observations of these impressive objects? You never know; you just might end up a fan of double stars of all kinds. And that ain't a bad way to go at all!

ECLIPSE ECLIPSE ECLIPSE ECLIPSE ECLIPSE ECLIPSE

The Texas Astronomical Society of Dallas along with the Houston Astronomical Society are happy to announce their sponsorship of a trip of a lifetime to the Total Solar Eclipse of November 3, 1994 at Tacna, Peru. Tacna is located at plus 71 degrees west longitude, and minus eighteen degrees south latitude. Totality at this location will be a full three minutes. We will be staying at the Hotel de Turistas located in downtown eight and one half miles off the eclipse centerline. Since Tacna is eighteen degrees BELOW the equator, observing and astrophotography will be the order of the day. The Large and Small Magellanic Clouds will be well placed for observing, and by early morning, the entire southern Milky Way will be visible, from Eta Carina and the Southern Cross to Alpha and Beta Centauri. Optional side trips to the Plains of Nazca, Lake Titicaca, and the famed Machu Picchu are planned.

Our trip will be approximately six days in length from Monday through Saturday, and will cost around $2,000 per person. This cost includes round trip airfare from Dallas to Tacna, Peru, hotel, and all transfers and tips. There are only 30 spaces available on the trip, so reservations will be accepted on a first-come-first served basis only. To reserve a place on this wonderful trip, send $150.00 deposit per person refundable to: Vista Travel, Suite 411, 9801 Westheimer, Houston, TX 77042. ATTN: TAS Eclipse. Make checks payable to Vista Travel. Call John Wagoner at 214/422-1886. Locally contact Michael Janes at 945-5431.

Vista Travel can be reached at 1/800-231-1035.

HUNTING FOR COMETS
One Observer's Success Story
by Michael Janes

September's Labor Day weekend reached a high point for some valley amateur astronomers on Sunday. Leon Knott, who recently moved to the valley and a new member with SAC, hosted a small get together in Mesa. Among the people there was a friend of Leon's visiting for the weekend from New Mexico, Howard Brewington.

Howard and his wife live in Cloudcroft, New Mexico at an elevation of 7,400 feet. There, out in front of their house, is Howard's observatory that houses a 16 inch f/4.5 reflector on an Alt./AZ. mounting. The primary mirror was figured by Howard and the telescope design was done by Leon. Piggy backed on the 16 is an 8 inch f/4.3 reflector. The design of the observatory does not allow for good viewing to the North. However it does provide good views of both the West and Eastern horizons.

Back in the winter of 1987 Howard was actively photographing comet Bradfield. By the end of its apparition He was "bit by the comet hunting bug." The first half of 1988 was spent conducting a photographic search with an 8 inch f/1.5 schmidt camera. This type of search was not effective considering the time involved to take the photographs in relation to the amount of sky covered, not to mention the expense. So in the summer of 1988 Howard converted to a visual search method.

Don Machholz of California searches for comets by dividing the sky into about 40 quadrants and examines each for an interloper. David Levy will sweep up and down, slowly across the sky. Unlike the methods used by these accomplished observers Howard takes a different approach. When asked about his search methods Howard replied "I have only four quadrants, two in the evening and two in the morning. I just make sweeps in azimuth 60 degrees long and I just wait for the object to come into the eyepiece." This motion in azimuth is coupled with the rotation of the Earth allowing for a shift of one field in altitude after the 60 degree sweep. The skies over Cloudcroft, New Mexico seem to be similar to our own here in Arizona this year. "When the skies are good, I spend any where from 20 to 25 hours a month at the eyepiece. But this year I've been lucky for 10 hours."

In November of 1989 after 93 sessions, 14 months, and 230 search hours Comet 1989a1, Aarseth-Brewington, was discovered. This, his first comet, rose to 3rd magnitude by December and was reviewed by David Levy in his Star Trails column in the April 1990 Sky & Telescope. Many photographs are also included in that issue. The searches continued for over a year until January 7, 1991. This comet turned out to be Comet Metcalf that had been lost after its discovery in the winter of 1906-07. Periodic Comet Metcalf-Brewington, 1991a, has a period of 8 years though its last orbit took it toward Jupiter that increased its distance by 1 AU so that any future returns are unlikely. Comet 1991a exhibited an outburst of 10 magnitudes over a period of 30 hours. Two nights before Christmas of that same year Comet 1991g1 was co-discovered by Mauro Zanotta of Italy just 12 hours prior to Brewington's observation. August 29th, 1992 brought Howard's fourth discovery and his first morning comet. At 11.5 magnitude it was outward bound at a distance of 2 AU. This comet is now to faint for most amateur scopes.

Although there have been a handful of good comets in recent years we are due for a GREAT comet. According to Howard Brewington, "I plan to find the next great comet. It'll be the biggest disappointment of my life if I don't." When asked if there was one comet observation that stands out from the rest Howard replied "Well the best comet I've seen in my life was mine."

The Deep Sky Notebook

by Robert Kerwin

Lacerta

The constellation Lacerta, the lizard, lies directly east of Cygnus. Lacerta contains no bright stars; the brightest star is fourth-magnitude Alpha Lacertae. Lacerta is also a small constellation, covering only 201 square degrees and ranking 68th among the 88 constellations. These facts conspire to make Lacerta a relatively overlooked constellation among amateurs. However, this area contains several objects of interest to deep sky observers.

Let's start off with **NGC 7245**, an open cluster. This cluster is located slightly less than three degrees south of Epsilon Cephei. In medium-sized telescopes, NGC 7245 appears as a clump of about 40 stars against a faint haze of unresolved stars. The cluster is slightly more than five arc-minutes across. Moving southeast three degrees, we encounter **NGC 7296**, another open cluster. This cluster is smaller, fainter and contains fewer stars than NGC 7245. In my 8-inch telescope, it appears as a tight knot of stars in a beautiful field. There is a bright star on the west side of the cluster.

Our next object is a double star, **Argelander 44**. The easiest way to find Arg 44 is to first locate Alpha Lacertae (two degrees south of NGC 7296). Now move about 30 arc-minutes directly east and switch to a higher magnification eyepiece. Arg 44 consists of two eighth-magnitude stars separated by 7.2 arc-second in position-angle (P.A.) 169°. About three degrees west of Arg 44 is the cluster **NGC 7243**. Through medium-size instruments, at least 50 stars can be seen in a 20 arc-minute area. The stars are not evenly spread, but appear to be clumped, with a dark rift through the center. Look for a double star on the eastern edge of the cluster. Approximately four degrees southwest of NGC 7243 lies **NGC 7209**, an open cluster. This cluster is generally considered the best cluster in Lacerta. You should be able to see about 50 stars in a 20 arc-minute area. This cluster has no central concentration and there is a bright star to the east.

In the southern part of Lacerta, about 11 degrees directly south of Alpha, lies the multiple star system **8 Lacertae**. The main components of the system are magnitudes 6.0 and 6.5, separated by 22 arc-seconds in P.A. 186°. 48 arc-seconds from the brighter star in P.A. 169° is a magnitude 10.5 star. The fourth component is magnitude 9.5, lying 81 arc-seconds away in P.A. 145°. The whole system appears as an L-shaped formation; a fine sight in any telescope. Our final object in another multiple star, **Herschel 1823**. This system consists of five stars. The primary is magnitude 6.5. 19 arc-seconds away in P.A. 262° lies a 12th magnitude star. The third component (magnitude 7.5) is 82 arc-seconds away in P.A. 338°. This component actually splits into two stars, magnitudes 7.5 and 9.0, separated by 5 arc-seconds in P.A. 136°. The fifth star of the system is magnitude 7.5 and is 119 arc-seconds away in P.A. 263°.

On the next clear, moonless night why not explore some of the fascinating sights in this lesser-known area of the sky? In addition, be sure to spend some time scanning this region with binoculars or low-power telescope.

Next month, we will be leaving the rich fields of the northern Milky Way and heading south to explore some of the galaxies in the constellation Sculptor.

Lacerta

Tirion chart: 9
U2000 charts: 57-58,87-88, 122-123

Name	Type	Mag	Size	R.A.	Dec.
NGC 7245	oc	9.2	7'	22h 13m	+54.1
NGC 7296	oc	9.7p	4'	22h 26m	+52.0
Arg 44	ds	8/8	7"	22h 34m	+50.2
NGC 7243	oc	6.4	21'	22h 13m	+49.6
NGC 7209	oc	7.7	25'	22h 03m	+46.3
8 Lac	mult	see text		22h 36m	+39.6
h1823	mult	see text		22h 52m	+41.3

EVAC/Bill Smith
1663 S. Sycamore
Mesa, AZ 85202