



# East Valley Astronomy Club

August

Newsletter

1996

## EVAC MEETING HIGHLIGHTS

Robert Kerwin opened the meeting at 7:35 PM with at least 65 people present and half a dozen new members and/or guests. A review of the upcoming events for the month included the sold out Lowell Observatory Tour on July 20th.

### Perseid Meteor Shower

Paul Dickson reviewed possible options for watching this event Sunday night, August 11 and 12. Monsoon season typically causes cloud problems near the Valley while skies are often better toward the Colorado River. It appears the Sentinel site is currently the favorite unless skies are clear here in Phoenix. Then a site near Tortilla Flats is preferred.

### EVAC Observing Programs

Robert formally kicked off the Club programs with the EVAC Messier Observing packet. It contains tips on observing deep sky objects, the actual observing list, and the simple requirements for getting an award. Look for names of the first to complete this program in a newsletter soon. If you need a copy of the packet, contact Robert Kerwin.

### Newsletter Costs

Bob Kearney reported the cost of printing our newsletter at OfficeMax has risen 50% over the last couple of months and is looking for help/ideas for getting the costs back down. Reducing the number of pages, sending an electronic copy, and finding a cheaper print company were all discussed. If you have any input and/or ideas, please contact Bob soon.

### Images

Tom Polakis brought detailed images of Ganymede by the Galileo probe, freshly downloaded off the Internet. Chris Schur, whose black and white astrophotos are recognized worldwide, also brought some slides. He's now doing observatory quality photos in color! Using

Tech Pan B&W film, he takes 3 separate exposures of an object through green, red, and blue filters (the tricolor method). Because Tech Pan responds best to the red light, the blue and green exposures are much longer. The 3 shots total about 2 hours of shutter time. Then the difficult darkroom work brings them all together and the results are spectacular—true color images with virtually no film grain. You will see a lot of his color work published in the future; guaranteed. Chris also highly recommended the new Fuji 400 Super G Plus film for less complicated color astrophotography.

## FEATURED PRESENTATION

The focus of tonight's talk was the somewhat controversial object at the edge of the Solar System: Pluto. Dr. Marc Buie from Lowell Observatory has researched Pluto extensively and was gracious enough to visit the Club in the heat of the summer for his presentation.

Studying Pluto has been a difficult task because of its small size, large distance, and the few resources dedicated to observing it (no planetary probe and little Hubble time). Even when the Hubble has been directed to it, the resulting images only cover 8 pixels of the CCD camera! Consequently Marc has turned to occultations and "mutual events" between Pluto and its satellite Charon to gather precision light curves.

Latest research indicates Pluto is smaller than our Moon, has a solid surface composed of rock and ices, and a tenuous atmosphere. It appears to be covered by

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an irregular layer of frost that actually migrates around by sublimation winds. While the surface temperature gets close to absolute zero at 40° Kelvin (- 233° C), the atmosphere warms up to 100° K. One day on Pluto lasts 6.5 Earth-days and Charon is totally synchronized with it; not only does Charon keep the same face toward Pluto like our Moon does with us, it also stays over the same geographic spot (or in the same location in the sky)! Unlike other planets in the Solar System, the center of mass for these two objects is above the surface of Pluto. Marc brought a great model on a stick to show this relationship and how Charon orbits in a north-south orbit around Pluto from our current perspective from Earth. Remember in the short time we've known Pluto, it has only traveled a short distance in its orbit around the Sun.

Presently, no spacecraft are funded to visit the pair. A small probe on a "direct shot" trajectory could reach Pluto in only 8-10 years, but would have little time for observation because its high velocity would carry it past the target in only an hour. Incredibly enough, Marc said that only 40 orbits per year of Hubble time are devoted to Solar System research throughout the world! Clearly researchers will be short on data for this object for years to come.

The topic of Pluto's label came up of course—is it a planet or something else? The short answer from Marc went like this; of the four labels we assign objects in the Solar System (planet, satellite, asteroid or comet), planet is clearly the best fit. If you missed the meeting or want to see Pluto surface maps that Marc has constructed, see his web page at URL:

<http://www.lowell.edu/users/buie/pluto/pluto.html>

The presentation ended at 9:40 followed by cookies from Sam Herchak and drinks from Robert Kerwin. The group disbanded sometime after 10:30.

### **EVAC Messier Observing Program**

Welcome to the EVAC Messier observing program! We are certain that you will find this observing program exciting as well as educational. There are many benefits to be derived from an organized program of observing. You will sharpen your observing skills, become more knowledgeable about the sky and see 110 of the finest objects in the sky.

What do I need?

First of all, you will need a telescope. All the objects in the Messier catalog can be seen in a three-inch (80mm) or larger telescope. Obviously, the larger the telescope, the more detail you will see in each object. You will also need clear, moonless nights, preferably away from

the glow of the city. Although some objects such as open clusters are less affected by skyglow than galaxies and nebulae, all objects will look better under dark skies. You will also need a red flashlight, paper and pencil for taking notes and a good star atlas. Tirion's Bright Star Atlas is a nice, convenient atlas that plots all the Messier objects, and at \$12, is a great deal. If you want something a little more detailed, try SkyAtlas 2000 Desk or Field Edition. Moderately priced at \$24, this atlas plots not only the Messier objects, but also thousands of other deep-sky objects.

How do I get started?

You've already taken the first step! You have the Messier list in your hands. The next step is to go out and observe! Scan down the list and make note of those objects that are going to be visible on your observing night (we've included a list of the objects broken down by season to help you). Then, armed with the night's observing list, get ready for some great observing!

What are the rules?

The EVAC Messier program is meant to be fun. Therefore, we do not want to burden you with cumbersome rules. However, there are a few basic guidelines we would like everyone to follow:

1. In order to receive your award upon completion of the list you must submit observations for all objects on the list to the Observing Program Coordinator.
2. An "observation" is a verbal description of the object. Sorry, a check mark does not constitute an observation!
3. Write your name on all sheets submitted.
4. All observing notes submitted remain the property of the author and will be returned after verification.

That's it! There is no special format that you must use for your notes. Nor is there any time limit within which you must complete the list. If you have already observed the objects and have notes on them, you can compile and submit those notes. You don't have to re-observe everything.

You mentioned an award. What is the award?

The real award is, of course, the observing skills you will learn and the beautiful objects you will see. However, we can offer something a little more tangible to commemorate your efforts. At the completion of the program you will receive a small plaque suitable for mounting on your telescope or accessory case and a certificate suitable for framing. You will also get your name published in the newsletter, so the entire club can take note of your accomplishment!

What kind of notes should I take?

While the purpose of this program is to encourage good observing, you are not required to submit notes in a certain format or with a certain level of detail. Simply describe the objects as they appear in your telescope in your own words, using your own format. We have included an observers' guide to give you some things to look for in each type of object, although you do not have to record all the information given in the guide. The list itself has space for your notes, but if this is not enough space, feel free to use the back of the list or attach additional pages.

What's next?

The Messier program is just the beginning. In the future EVAC plans to offer other observing programs to challenge your observing skills. Stay tuned!

## **NAKED EYE ASTRONOMY**

M. Aaron McNeely

August 1996: month of Augustus Caesar

31 Days: day 214 to 244 of the year

Julian: 2450296.5 to 2450327.5

Phoenix, Arizona

33°27'N, 112°04'W

"If the first week in August is unusually warm, the winter will be white and long."-Weather Lore

### **Constellations and Starlore**

The Milky Way, arching across the heavens from the NW to the SE horizon, is prominent during August from a dark sky location and resembles steam rising out of the Teapot of Sagittarius. The center of our galaxy, located in Sagittarius, passes above the due south point of the horizon just past 9:00 pm at the beginning of the month. Spring stars Spica and Arcturus lie in the SW, the Big Dipper in the NW has begun its seasonal circuit under the Pole, Scorpius has also begun its seasonal decline into the SW horizon, Vega lies close to the Zenith, and the Great Square of Pegasus is rising in the east. August is noted for the Perseid meteor shower which will occur this year on the evening and morning of August 11-12. Conditions for the shower are good this year due to the proximity of the shower with New Moon.

Last month I claimed that only two constellations can be linked to actual historic figures: Coma Berenices and Ophiuchus. One that I have overlooked is Scutum, originally named Scutum Sobiescianum by the astronomer Hevelius in honor of the Polish monarch Jan Sobieski. Scutum represents the monarch's shield used in battle and lies imbedded in a particularly rich section of the Milky Way north of Sagittarius. Many of the extinct constellations were named to honor monarchs such as George III. One that has survived

half intact to the present is Cor Caroli. There is some confusion concerning the origin of the name. One authority claims that it was applied to the entire constellation of Canes Venatici by Charles Scarborough, the physician of Charles I. The constellation represented the crowned heart of the king and first appeared in 1673. Others claim that the constellation, or just the alpha star of the constellation, honors Charles II. Bode claimed that Halley created the name, but this is not verified anywhere else. Today, the name Cor Caroli has been retained only by the brightest star in Canes Venatici (alpha), and the star itself is a pretty double star for telescopes. The present Canes Venatici was created in 1690 by Hevelius and represent the mythical hunting dogs Chara and Asterion.

In astronomical history: Asaph Hall of the US Naval Observatory discovered Mars' moon Deimos on August 11, and Mars' moon Phobos on the August 17, 1877; J. Flamsteed was born on August 19, 1646.

### **Planets, Moon, Sun**

Mercury experiences a shallow evening apparition in August, its worst of the year, and lies at its highest position above the western horizon on the 9th. Mercury achieves greatest eastern elongation on the 21st.

Jupiter dominates the evening sky and lies nearly due south at twilight's end. The planet continues its retrograde (westward) motion all month and ends August in the same telescopic field as the bright globular cluster M22. Jupiter will become stationary on September 3rd and resume direct (eastward) motion.

Saturn rises later in the evening, past 10:00 pm at the beginning of August, and lies near the "First Point of Aries", the spring equinox position of the celestial sphere. Saturn passed north of the celestial equator last May, and the planet's retrograde motion will bring it back south of the celestial equator on the 30th where it will remain for the rest of 1996.

Venus rules the morning sky, rising three hours before the Sun in August, and achieves greatest western elongation on the 20th. In binocular and telescope Venus appears half illuminated, its "quarter" phase. Mars spends the entire month gradually approaching Venus, and the two planets achieve conjunction in early September.

August begins with the waning gibbous Moon lying south of the Water Jar of Aquarius. The Moon passes 3 degrees north of Saturn on the evening of the 2nd and 3rd. At Last Quarter the Moon lies north of the Head of Cetus on the 6th. The waning crescent passes just 1 degree north of Aldebaran on the evening of the 8th, lies north of Orion and approaches Venus on the 9th, and is positioned east of Venus near the Feet of Gemini on the 10th. New Moon occurs on the 14th providing excellent

observing conditions for the Perseid meteor shower on the 12th. The waxing crescent appears near Spica in evening twilight on the 18th, the First Quarter Moon passes north of Antares on the 22nd, the waxing gibbous Moon appears north of Jupiter on the 24th, Full Moon occurs on the 28th, and the waning gibbous Moon lies close to Saturn on the 29th and 30th.

August 1 is the Cross-Quarter day Lammas, the date that denoted the start of autumn in the Celtic calendar. Lammas lies roughly halfway between the June solstice and the September equinox. The sunrise positions in azimuth for August 1st and August 31st are 69 and 80 degrees, and the sunset positions are 291 and 279 degrees respectively. The Sun enters the constellation Leo on the 9th at ecliptic longitude 138 degrees.

**Astro Quiz:** What is the original name for August?

### **Yes, Pluto really is a Planet**

There have been numerous press reports generated in March of 1996 on the eve of the release of new HST images of Pluto. Most of these reports seem to be focusing on the question of whether Pluto is a proper planet or not. That is really too bad. Everyone seems now to be wondering about this question instead of getting excited by our first direct images of the surface of this distant world.

So, let me add my voice to the fray and try to explain why we shouldn't be re-writing our textbooks on this account.

At present, there are four basic categories of objects that inhabit our solar system. Here's a list of definitions for these categories that will set the stage for deciding whether Pluto has been mis-classified.

#### **Comet**

These objects are the sometimes spectacular visitors to the inner solar system but usually spend most of their time in the furthest reaches of the solar system. They are very small bodies, not usually any bigger than 10 km or so. Despite their very small size, they create huge spectacles when they get close enough to the Sun to release water from their surface. This water escapes immediately into space and usually carries some dust or dirt along with it. This material leaves huge tails and streamers in the sky.

#### **Asteroid**

These objects are found and known in great abundance in our solar system and most of them inhabit the "asteroid belt" found between Mars and Jupiter. Some of the known asteroids wander in as far as Venus or Mercury and a new batch has recently been recognized out well beyond the orbit of Pluto. Asteroids are small, irregularly shaped objects, that have inert and airless

surfaces.

#### **Satellite**

This class of object is perhaps the simplest. If the object orbits another larger object, then it is considered a satellite. These bodies can, and do, span a great range of sizes and properties including those shared by all the other categories.

#### **Planet**

A planet is a special term applied to the larger members of our solar system. Rule #1, a planet must orbit the Sun. Rule #2, it must be large enough that its own gravity is strong enough to maintain a spherical shape. There are certain properties we expect to see in a planet such as an atmosphere and dynamic and active surfaces at some stage in their history.

In the end, these definitions are useful only if they provide useful labels that collect objects of similar properties together. Trying to stuff Pluto into the Comet bin would clearly be wrong. Pluto is far too big to behave anything like the tiny chunks of ice we call comets. Could Pluto be considered an asteroid? Well, you might be tempted because Pluto is so small. But consider the fact that Pluto has enough gravity to be spherical and retain a significant atmosphere. It also probably has an active surface and very pronounced seasons. These characteristic sure do make it sound more like the other planets than the asteroids.

So why all the controversy? Well, I think that we are seeing an outgrowth of our increasing knowledge about and awareness of our solar system. Astronomers are continuing to discover new and wondrous things orbiting our sun and our view of the solar system is getting more complex. This is very natural. I think what we're finding is that the traditional groupings of the members of the solar system are now requiring a more complex set of definitions.

For instance, there is an asteroid, known as (2060) Chiron, that looked and acted just like an asteroid should for nearly 10 years after it was discovered. It's only distinguishing feature was that it had a very distant and elliptical orbit compared to other asteroids. In the last 10 years we had a bit of a surprise. All of a sudden, Chiron got much brighter and there have now been images of dust and gas streaming away from its surface, just like a comet. The new behavior is so much like a comet that many people now refer to this object as Comet Chiron, instead of asteroid Chiron. Is it a comet? Well, it has some actions similar to comets but it is much, much bigger than any comet we've ever seen. Also, we know the activity we see is not due to water sublimating from the surface, as is the case for comets.

Perhaps we're now becoming aware of a new sub-class of object. You can easily break up the planets into three bins, (1) terrestrial planets, Mercury, Venus, Earth, and

Mars; (2) Jovian planets, Jupiter, Saturn, Uranus, and Neptune; (3) Ice(?) planets, Pluto. I don't have a catchy name for the third bin but the idea is to encompass those planets that are less rocky and formed in the outer regions of the solar system. Pluto is, at present, the only known member of this third class but there is good reason to believe there are more out there, just much further away and harder to spot. Maybe Chiron could be considered for membership in the Ice planets to keep Pluto company.

Until all this gets settled, know this: Pluto was labeled a planet at the time of its discovery by the International Astronomical Union who has authority over such matters. For Pluto's official status to change, that same international group would have to rule on a change. It certainly beyond the authority of a single person to make these changes for us. The latest batch of naysayers putting Pluto down are not acting with any authority and are really doing us all a disservice in the process. It may make for a flashier news story but it is based on misguided concerns. Why not concentrate on what a neat place Pluto is and think ahead to what we'll all learn by continuing our studies of this unique world in our midst.

Back to my home page -o- Back to my Pluto page

Marc W. Buie, Lowell Observatory

**WELCOME OUR NEW MEMBERS**  
from Sam Herchak, Secretary

Please join me and all the Club Officers in welcoming these members new to EVAC this year:

Jeanett Behlow  
Dwight Bogan  
Betty Campbell  
Kate D 'Aoust  
Russell Dilbeck  
Bill Krupp  
Joseph Siler  
Sonny Schug  
Bob Uhrhammer

John Beraud  
Bill Bowling  
David Currie  
Mike Dassele  
David Fabrizio  
Aaron McNeely  
Tony Ortega  
Matthew Spinelli  
Ron Zmyslinski

### Grand Canyon Star Party

Grand Canyon Public Star Party 1996 (Sat 6/8 thru Sat 6/15) was again a welcome break from the normal routine. It was a great excuse to get some quality hiking in, hang around the rim by day, and meet some old acquaintances from other astronomy organizations. Mainly, it was another opportunity to help familiarize Canyon visitors to the wonders of the universe through the "window" of our dark, high-altitude Arizona skies. Each year I come away with the realization that I got much more out of it than I originally expected to.

I spent Wed night 6/12 thru Sat night 6/15 at the GCPSP. It was probably clear about 3/4 of the total viewing hours. There was a lot of moisture hanging in the air, something I've not seen in previous years. "Prime-time" on Friday night went completely overcast for about an hour while I had a large group at my scope (clouds literally blossomed out of the moist air in a matter of minutes). This was comical because three semi-seasoned observers from Tucson who I'd been showing the sky to on the previous night had gathered up a half-dozen newbies from a canyon hike; they came with a deep-sky agenda in hand. When the sky suddenly shut, I couldn't locate the Owl Nebula, M65 or M66. I was reduced to showing them Algeiba, M109 and Mizar-Alcor thru thin clouds. They (of course) left, and within the hour it was clear again.

Coordination of the event this year suffered as Chuck Wahler, the NPS Ranger and past (excellent) coordinator of the event, was scheduled last-minute at Big Bend NP during 7 of the 8 days. The person that had to pick up the responsibility apparently had it dropped in her lap. She did as well as one could under the circumstances, but we found very few notices in the park for the event. Every park visitor I mentioned it to was unaware it was going on. Nonetheless, we had good crowds most nights for both the evening talks and subsequent telescope viewing.

We didn't have the early-evening sky "entrees" that we've had the past years. No planets or crescent moon were visible at sunset; therefore, following the twilight talks we would lose many visitors who were not prepared to hang around for the half-hour or so while the sky darkened and the deep sky objects emerged into view. Nonetheless, the many that did were treated with the usual fine views of the Whirlpool (M51), Ring Nebula (M57), Dumbbell (M27), M81&82, NGC4565, etc. As the Milky Way climbed higher each night, the remaining die-hards received adequate reward, with nice views of the Wild Duck Cluster (M11), Omega Nebula (M17), M22, and even the Veil Nebula at 50X with a UHC.

Besides seeing the showpiece deep-sky objects over and over each night as I swung my 12.5" Dob skyward, I managed some good views of the comets Hale-Bopp and Kopf. Possibly because of the cruddy transparency, HB did not appear naked-eye until after midnight Sun morning, and even then it was not at all obvious. Through the scope, the brightness of the nuclear region and the size of the coma/fan-tail were unexpectedly large.

Sam Herchak and Anne Beebe were there, as well as their friends from Baltimore, Roy and Dee Diffrient. Roy was satisfied that he got some quality dark sky observing in (finally saw his shadow illuminated by the Milky Way -- sort of a Ground Hog Night, or something). Silvio Jaconelli also made the trek the final weekend.

Sam and I took in a couple hikes and, of course, ran into John Dobson somewhere between Three-Mile Rest and Indian Gardens. At a mere eighty years of age, John now carries a glass jar filled with salt water; he says it's the best thing he's found to combat leg cramps -- "better than swallowing them damned salt pills."

The regular Tucson crowd was there, including Dean Ketelsen (the organizer) and his wife Vicki, Derald Nye, Erich Karkoschka, Bob and Valerie Goff, Paul Lorenz, Rob Nyberg, etc. Barry Hirrel, Rob Negro and John Dobson made the pilgrimage again along other San Francisco Sidewalk Astronomers. They completed a 10" sidewalk scope during the first few days and donated it to the local school. I got a couple good views of Jupiter thru it, and it seemed to perform nicely. Some of the evening talks were done by Barry, Dean, Derald, and of course, John. Their efforts help to make this event a success year after year, since they draw the crowds in the first place and then direct them to the telescope fields afterwards. During the daytime, Dean Ketelsen and Bob Goff set up at the rim with a large binocular and an SCT in order to share a view into the canyon and publicize the evening events to the crowds that gather.

In conjunction with the South Rim public star party, Deloy and Karen Pierce from the Salt Lake City area -- and regulars of the GCPSP -- coordinated a North Rim version this year. They overcame initial Park-related logistical issues to pull off a very successful program, as well.

Just as photos of the Grand Canyon never do it justice, neither does an article like this to it's annual Public Star Party. Next year's GCPSP is tentatively set for June 7th -14th and you might want to start making plans. You'll likely have a highly memorable time, and most certainly take part in opening up the vistas of our night sky to a grateful public.

Bernie Sanden

### **North Rim Star Party**

Having never been to the North Rim of the Grand Canyon, I thought it an especially good idea to pop in on the star party there June 8-15. Wow! What a neat place. It's a much smaller operation than the South Rim, getting only about 10% of the park's total visitors. There's one main lodge with a fine restaurant overlooking the canyon. No rooms are in this building, but rather you may select from over 200 cabins and 40 motel style rooms, all a short walk from the lodge. A snack bar, post office, and gift shop next to the lodge is about all there is to the complex. There is a campground and grocery store about a half mile north of the facility too. I was impressed with the coziness of this place and the smaller number of people there compared to what, no doubt, was transpiring 10 miles due south

of us at Grand Canyon Village. Each day, Deloy Pierce, an amateur from Salt Lake City, offered the public views of the sun and a slide show/lecture in the early evening. He and his wife would set up telescopes afterwards for stargazing on the lodge's veranda. I helped out with tripod-mounted 10x70 binoculars and a 5" refractor. I recall two 13" dobs, a 4" Genesis refractor, and a LX200 10" SCT (which really grew a crowd as it magically whizzed around the sky). I met two Canadians who told me they were using a 16" reflector at Imperial Point (el. 8800'), a few miles north so as to avoid lights which were a problem for us at the lodge. The staff turned off some lights for us, but for safety reasons enough were left on to be bothersome. We kept our backs to the lights and observed to the east, south, and overhead. This was probably the best spot to draw a crowd for a public star party. Perhaps a darker location could be had at the campground (?) but then you likely would not get the lodge crowd. By the way, the veranda site made it difficult for us with heavy scopes to set up there as it meant a walk of about 100 feet or so from our cars, along a sidewalk, and down a narrow staircase! Some gazers just left their gear set up there with tarps over them - there was no theft problem. Guests either were oblivious to the equipment or simply respected our efforts. Even with our light problem, we had a blast. It's always a pleasure to introduce the wonders of the night sky to folks, especially the kids. The starry sky was magnificent and the surroundings heavenly. We did not want to leave. In fact, we stayed an extra night...for the pines were calling us!

Bill Dellinges  
6130 E 16th Ave  
Apache Jct., Az 85219-9336

### **Asteroid Polakis**

In the latest batch of the "Minor Planet Circulars", issued 3 May 1996, the asteroid (4078) = 1983 AC was officially named for Tom Polakis, who is familiar to Sci.astro.amateur. readers. The citation, from MPC 27126, reads as follows:

(4078) Polakis = 1983 AC

Discovered 1983 Jan. 9 by B. A. Skiff at the Anderson Mesa Station of Lowell Observatory.

Named in honor of Thomas A. Polakis (b. 1961), mechanical engineer and friend of the discoverer. As an observer of the sky, he exemplifies all that is best in an amateur astronomer.

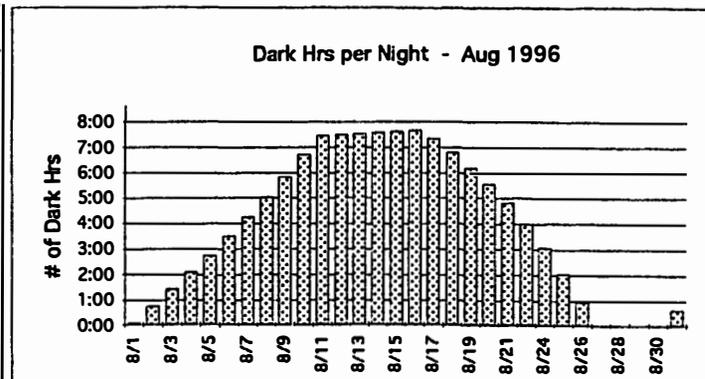
Tom's asteroid is presently about mag. 16 and on a far-southern retrograde loop in Capricorn and will make a pass through Microscopium (not your usual zodiacal constellation!) later this year. Tom has prepared some nice graphics showing the orbit, which you can view (and send him your congratulations) at his Web site:

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
<b>28</b> *10:07 PM → *10:40 PM Occ *4 AM - S. delta Aquarid Meteors	<b>29</b> *12:57, 12:59, 2:09 AM Gal Moons *5 AM - alpha Capricornid Meteors	<b>30</b> ○	<b>31</b> *8:00 PM Mercury/Regulus Conj.	<b>1</b> *9:09, 11:52 PM → *ALL MONTH NOTES *8:00 PM Mercury/Regulus Conj.	<b>2</b> *12:16 AM Gal Moons	<b>3</b>
<b>4</b>	<b>5</b> *9:10, 9:55, 11:25 PM →  Sunset 7:24 PM	<b>6</b> ● *12:11 AM Gal Moons *9:21, 10:03, 10:05 PM Gal Moons  Sunrise 5:44AM	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b> Local 5 Party *Mars-Venus-Moon Conjunction.
<b>11</b> *4:16 AM Occ *PERSEID METEORS!	<b>12</b> *8:59, 10:57, 11:50 PM → *PERSEID METEORS!	<b>13</b> *1:12 AM Gal Moons *8:06, 11:16 PM →	<b>14</b> ● EVAC Meeting *12:27 AM Gal Moons	<b>15</b> *8:36, 9:32, 11:24 PM Gal Moons	<b>16</b> *Mercury-Moon Conj.	<b>17</b> Deep Sky 5 Party
<b>18</b>	<b>19</b> *8:55, 9:47 PM → *Jupiter-M22  Sunset 7:09 PM	<b>20</b> *12:46, 1:00 AM Gal Moons *Venus at Greatest Western Elong.  Sunrise 5:54AM	<b>21</b> ● *8:14, 9:28, 10:30 PM Gal Moons *10:04 PM Occ *Mercury at Greatest Eastern Elong.	<b>22</b> *9:09, 11:12, 11:55 PM Gal Moons	<b>23</b>	<b>24</b>
<b>25</b>	<b>26</b>	<b>27</b>	<b>28</b> ○ *9:03, 10:10, 11:18 PM →	<b>29</b> *12:25 AM Gal Moons	<b>30</b> *7:30 PM SAC Mtg	<b>31</b> 

Date	Start	Title	Description
8/1/96	12:00 AM	ALL MONTH NOTES	<p><b>CALENDAR NOTES:</b> See 1996 EVAC Occultation Predictions in the February newsletter for details on lunar "Occ" events. "Gal Moons" refers to at least 3 events of Jupiter's satellites. See Sky&amp;Telescope (S&amp;T) and Astronomy (Astro) magazines for more info. There are no meetings of the Phoenix Astronomical Society (PAS) until September.</p> <p><b>PLANETS:</b> Again, max lunar librations all occur when the applicable limb is not sunlit. MERCURY is a difficult evening object. VENUS rises about 2:30 AM and dominates the eastern sky at a brilliant white -4.4 magnitude. MARS is low, small, and difficult in the morning sky, rising shortly after Venus. JUPITER is bright in the south at dusk. Sets as Venus rises about 2:30 AM. Be sure to watch Jupe slide by the bright globular cluster M22; they are within 1 degree of each other all month. SATURN rises around 9:30 PM and is the pale yellow 1st magnitude "star" in the southeast. The classic look of this planet is returning as we leave the plane of the rings. URANUS, NEPTUNE, and PLUTO are all well placed for observation shortly after dark. See pg 64 of the July Astro or pg 70 of the April S&amp;T for findercharts.</p> <p><b>OBJECTS OF INTEREST:</b> Comets Hale-Bopp and Kopff (pg 70 and 66 of the July Astro). The Perseidll Jupiter and M22.</p>
8/10/96	4:00 AM	Mars-Venus-Moon Conjunction	Loose conjunction of this trio. Bright Venus 4 degrees west of Moon; dim Mars 7 degrees north.
8/11/96	11:00 PM	PERSEID METEORS!	The Perseids are normally the strongest meteor shower of the year with up to 100/hour! Moon isn't a factor this year, but Monsoon might be. Best direction from Phoenix to escape monsoon weather is normally west. Call a Club officer Sunday for latest plan. Expected peak is 5:00 AM on Monday, but many meteors will be visible several days before and after this time.
8/16/96	11:00 AM	Mercury-Moon Conj.	Observe Mercury in the daytime today, with Moon as a guide post. Moon is 35 degrees high in east at 11:00 AM and Mercury is less than 1 degree to the northwest. By nightfall, the conjunction has spread to 3 degrees separation and the pair is low on the western horizon.
8/19/96	9:00 PM	Jupiter-M22	Closest approach of this month long conjunction. Jupiter is only 35 arcminutes from this large globular cluster.
8/30/96	7:30 PM	7:30 PM SAC Mtg	Saguaro Astronomy Club meeting, Grand Canyon University, Fleming Bldg, Rm 105. Camelback and 33rd Ave.

Dark of the Moon Table -- AUGUST 1996

DAY OF WEEK	START OF DARK	END OF DARK	TOTAL DARK	DAY OF WEEK	START OF DARK	END OF DARK	TOTAL DARK
THURS NITE	8/1 9:02 PM EOT	8/1 9:06 PM MR	0:04	FRI NITE	8/16 8:42 PM EOT	8/17 4:23 AM SOT	7:41
FRI NITE	8/2 9:00 PM EOT	8/2 9:46 PM MR	0:46	SAT NITE	8/17 9:02 PM MS	8/18 4:24 AM SOT	7:22
SAT NITE	8/3 8:59 PM EOT	8/3 10:25 PM MR	1:26	SUN NITE	8/18 9:37 PM MS	8/19 4:25 AM SOT	6:48
SUN NITE	8/4 8:58 PM EOT	8/4 11:04 PM MR	2:06	MON NITE	8/19 10:14 PM MS	8/20 4:26 AM SOT	6:12
MON NITE	8/5 8:57 PM EOT	8/5 11:43 PM MR	2:46	TUES NITE	8/20 10:54 PM MS	8/21 4:27 AM SOT	5:33
TUES NITE	8/6 8:55 PM EOT	8/7 12:25 AM MR	3:30	WED NITE	8/21 11:39 PM MS	8/22 4:28 AM SOT	4:49
WED NITE	8/7 8:54 PM EOT	8/8 1:09 AM MR	4:15	FRI MORN	8/23 12:29 AM MS	8/23 4:29 AM SOT	4:00
THURS NITE	8/8 8:53 PM EOT	8/9 1:55 AM MR	5:02	SAT MORN	8/24 1:26 AM MS	8/24 4:30 AM SOT	3:04
FRI NITE	8/9 8:52 PM EOT	8/10 2:43 AM MR	5:51	SUN MORN	8/25 2:28 AM MS	8/25 4:31 AM SOT	2:03
SAT NITE	8/10 8:50 PM EOT	8/11 3:34 AM MR	6:44	MON MORN	8/26 3:35 AM MS	8/26 4:32 AM SOT	0:57
SUN NITE	8/11 8:49 PM EOT	8/12 4:18 AM SOT	7:29	TUES MORN	none	n/a	--
MON NITE	8/12 8:48 PM EOT	8/13 4:19 AM SOT	7:31	WED MORN	none	n/a	--
TUES NITE	8/13 8:46 PM EOT	8/14 4:20 AM SOT	7:34	THURS MORN	none	n/a	--
WED NITE	8/14 8:45 PM EOT	8/15 4:21 AM SOT	7:36	FRI MORN	none	n/a	--
THURS NITE	8/15 8:43 PM EOT	8/16 4:22 AM SOT	7:39	SAT MORN	8/31 8:20 PM EOT	8/31 8:59 PM MR	0:39



EOT = End of Astronomical Twilight

MR = Moonrise

SOT = Start of Twilight

MS = Moonset

NOTE: Applies to Phoenix area (Mtn Std Time)

Bernie Sanden 7/96

<http://www.indirect.com/www/polakis/ast4078/ast4078.html>

As great a guy as Tom is, he will not, however, make it onto the Minor Planet Center's list of asteroids named for rock stars:

<http://cfa-www.harvard.edu/cfa/ps/special/RockAndRoll.html> \*(all one line, no spaces)

In case you want orbital elements, current osculating elements including ephemeris error estimates for 30,000 asteroids including (4078) can be found at Ted Bowell's Web site:

<http://www.lowell.edu/elgb/astorb.html>

Have fun with it, Tom, and keep up the good work!

\Brian Skiff (bas@lowell.edu)

### The Perseids are Coming!

by Paul Dickson

If you're talking about meteors, then the shower to talk about is the Perseids. This year, the moon will factor very little into observing the shower with the shower occurring just 2 days before the new moon. The only two things likely to affect observing this meteor shower are the weather and having to work that Monday morning. Since the latter is controllable (somewhat), that leaves the former.

So where should you go to observe this meteor shower? The simple answer: wherever its clear. Since the radiant (the location in the sky where the meteors appear to come from) is in the northeast, the best place would be either East or North of Phoenix. If you could ignore the weather, both Dugas Meadow or Tortilla Flat would be good sites. But July through September is the time of Arizona's monsoon weather. With the likelihood of thunderstorms at higher elevations a near certainty, a better site would be west and south of Phoenix, as far west and south as you can get. This means that Sentinel would be a better alternative.

Sentinel would have some minor problems for observing the Perseids. First, it's hot. And second, Phoenix is to the northeast of the site. The latter problem is really minor since you wouldn't really see much looking directly at the radiant.

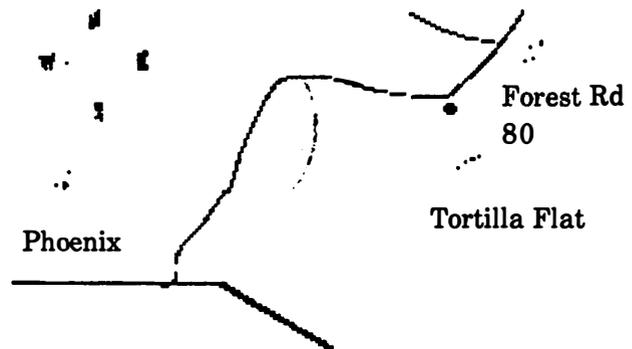
When is the meteor shower? The Perseids have had two observed maxima since 1990. The first will occur late Sunday afternoon on August 11. Since at sunset, the sky directly overhead is looking back along the Earth's orbital path, there is little chance of seeing any Perseids. Only as the time gets closer to dawn and the sky turns toward the direction the Earth is moving, will the Perseids become more prominent.

The second maximum is expected around 3 AM on August 12. Predictions for this maximum range from 3 AM to 10 AM. I'm hoping for 3 AM. Much later and the

meteors will be lost in daylight.

In the last four years I have gone out to observe the Perseids twice (the other years other plans or the moon interfered too much to go). Both times were at Tortilla Flat. The first time, the Arizona weather had miraculously dried out and we saw a doubling in the number of meteors each hour until moon-rise. The second time I gambled with the thunderstorms and lost. Numerous meteors were seen through "sucker-holes," but the sky never had more than small holes for 15 minutes periods. Those of us at the site spent much of the time looking back down on Canyon Lake, watching the lightning and timing the interval of the thunder as the storm continued on to Mesa.

So unless the eastern horizon is very clear when you leave your house late Sunday afternoon, your best bet would be to go to Sentinel. From downtown Phoenix, Dugas Meadow and Tortilla Flat are virtually equal distant, while Sentinel is about 25 miles further.

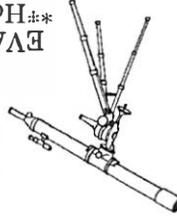


Ed. Note: As the newsletter goes to press, Paul will be at the Tortilla Flats site. To get there, take US 60 east to exit 196 (Idaho Rd/ Highway 88). Go approximately 4.5 miles beyond Tortilla Flats to Forest Rd 80. Take a left, the site is about 1/2 mile from Highway 88. Please arrive before the end of astronomical twilight. For information to the other sites contact one of the club officers.

#### UPCOMING EVENTS

- **Local Star Party, August 10, Sunset - 7:19 pm**  
New Florence Junction site
- **EVAC Club Meeting, August 14, 7:30 pm**  
SCC, Physical Science Bldg., Room 172
- **Deep Sky Star Party, Aug. 17, Sunset - 7:12 pm**  
Vekol Road site
- **Local Star Party, Sept. 7, Sunset - 6:44 pm**  
New Florence Junction site
- **EVAC Club Meeting, Sept. 11, 7:30 pm**  
SCC, Physical Science Bldg., Room 172

EVAC member since 1/17/92!  
\*\*Hope to see you at the meeting Aug. 14th\*\*



**EAST VALLEY ASTRONOMY CLUB**  
Robert G. Kearney, Jr., Editor  
2120 W. 8th Ave.  
Mesa, AZ 85202

### EAST VALLEY ASTRONOMY CLUB

President: Robert Kerwin 837-3971	Vice-President: Tom Polakis 967-1658	Treasurer: Sheri Cahn 246-4633	Secretary: Sam Herchak 924-5981	Properties: Steve O'Dwyer 926-2028
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**MEMBERSHIP&SUBSCRIPTIONS:** \$20.00 annually. Reduced rates available to members for *Sky&Telescope* and *Astronomy*. Contact Sheri Cahn, 3721 W. Hayward Ave., Phoenix, AZ 85051, (602)-246-4633.

**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.

**NEWSLETTER:** Published and mailed out the week before the monthly Club meeting. Send your thoughts and stories for publication to: Robert G. Kearney, Jr., 2120 W. 8th Ave., Mesa, AZ 85202, (602)-844-1732. Email to: [JRKearney@aol.com](mailto:JRKearney@aol.com).

**CHANGE OF ADDRESS:** Notify Bill Smith, 1663 S. Sycamore, Mesa, AZ 85202, (602)-831-1520. Email to: [bsmithaz@aol.com](mailto:bsmithaz@aol.com).

**EVAC LIBRARY:** The library contains a good assortment of books, downloaded imagery, and helpful guides and is usually brought to the Club meetings. Contact Steve O'Dwyer for complete details, (602)-926-2028.

**BOOK DISCOUNTS:** Great savings for members through Kalmbach and Sky Publishing Companies. Contact Sam Herchak, 145 S. Norfolk Cir, Mesa, AZ 85206-1123, (602)-924-5981.

**EVAC PARTY LINE:** Let other members know in advance if you plan to attend a scheduled EVAC observing session. Contact Robert Kerwin, (602)-837-3971. Email to: [p24493@gegpo7.geg.mot.com](mailto:p24493@gegpo7.geg.mot.com).