
Desert Sky Observer

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NEWSLETTER OF THE ANTELOPE VALLEY ASTRONOMY CLUB, INC
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Up-Coming Events

November 5: Last Quarter Moon

November 6: Super Science Saturday, Joe Walker Middle School

November 12: **Monthly Club Meeting***

November 12: New Moon

November 13: Star Party, [Prime Desert Woodlands](#)

November 19: First Quarter Moon

November 26: Full Moon

* Monthly meetings are held at the S.A.G.E. Planetarium at the Cactus School in Palmdale on the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20th Street East. Meetings start at 7 p.m. and are open to the public. Please note that food and drink are not allowed in the planetarium

President's Report

Terry Babineaux

A storm recently passed through my neighborhood. Earlier that day I had read an article about the ever growing accumulation of evidence returned by the rovers of past water on Mars. While taking down my observatory to prevent it from getting damaged in the storm, I started thinking about water and the ever increasing likelihood that Mars was once a very wet world, perhaps not that different from ours.

We tend not to think of things as simple as water as powerful, collective forces. If it is raining, we worry only about getting wet (if we are vacationing, we worry about not getting wet!). We give little thought to where it comes from or goes to, except when the plumbing breaks. The vast quantities of it lying between continents is easily ignored when traveling by jet aircraft- no more battling waves and storms as had to be done not that long ago.

Yet water, absolutely crucial to the sustenance of life as we know it, warrants more consideration.

The evidence supporting water on Mars is, in my opinion, incontrovertible. But there are still some who question the value of this evidence or even the need to acquire it in the first place. To my way of thinking, these people are kin to the political candidate who rises up after being cornered in a debate, exclaiming "well, the *truth* of the matter is..." Putting spin on or otherwise ignoring evidence in front of our faces only contributes to a collective neuralgia, a state of affairs suitable to only the die-hard coach potato content to extend his reach only as far as the nearest bag of Doritos. If there is the remotest chance that something as common as water may prove the link connecting us to the rest of the universe, I think it is our duty to follow this chain as far as it takes us.

Even if Mars never supported life in the distant past, the evidence returned from the rovers now makes it more likely than ever that we are not alone in the universe. I wouldn't be surprised if as I write, somewhere in some other galaxy another creature is watching the rain on his window sill, perhaps fretting over work deadlines and wondering when the skies will clear so his telescope can once again be pointed skyward.

Dir. of Community Development

Michael Roberson

The year is quickly coming to a close, but we still have a few good events yet to come. It's too bad that October's star party got rained out. That is twice now that we had to cancel the Devil's Punch Bowl star party. One of these days, we'll be able to go there as a club and really enjoy it.

This month, our star party is on the 13th, at the Prime Desert Woodlands. You might want to pack the warm clothes, although we're not yet sure how cold it will get. Please be there before sundown to set up your 'scopes. The good people at Prime Desert will be doing plenty of advertising for us, so there should be plenty of people at the star party.

Be sure to be a part of our annual Christmas party. Please reserve your place as soon as possible. The cost is \$20 per person. You can give the money to Tom Koonce or Terry Babineaux, or mail it to the club post office box. Just make sure that you note that the money is for the Christmas party.

Also, be sure to get your next year's membership dues in. You will want to do this early and beat the rush. Plan ahead now for a great new year in '05!

Keep looking up!

***Did you know?* ?**

A 4th magnitude globular cluster in Aquila has been discovered, but we cannot see it with our amateur telescopes due to interstellar dust.

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A Summer Vacation Tracking Down UFOs

by Diane K. Fisher

Erin Schumacher's summer job for NASA was to look for UFOs. Erin is a 16-year-old high school student from Redondo Beach, California, attending the California Academy of Mathematics and Science in Carson. She was one of ten students selected to work at NASA's Jet Propulsion Laboratory (JPL) in Pasadena as part of the Summer High School Apprenticeship Research Program, or SHARP.

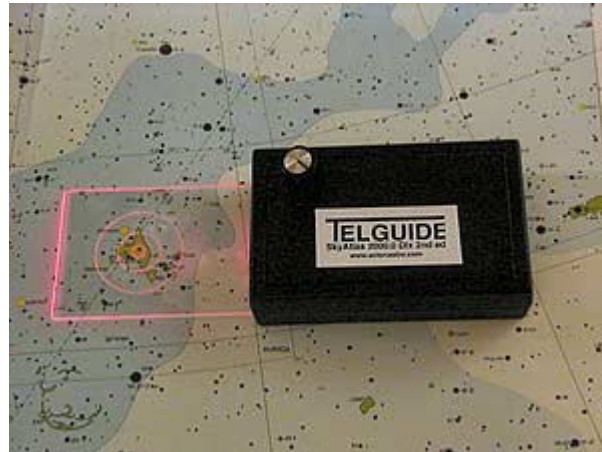
But is studying UFOs a useful kind of NASA research? Well, it is when they are "unidentified flashing objects" that appear in certain images of Earth from space. Erin worked with scientists on the Multi-angle Imaging SpectroRadiometer (MISR) project to track down these mysterious features. MISR is one of five instruments onboard the Earth-orbiting Terra satellite. MISR's nine separate cameras all point downward at different angles, each camera in turn taking a picture of the same piece of Earth as the satellite passes overhead. Viewing the same scene through the atmosphere at different angles gives far more information about the aerosols, pollution, and water vapor in the air than a single view would give. Ground features may also look slightly or dramatically different from one viewing angle to another.

Erin's job was to carefully examine the pictures looking for any flashes of light that might be visible from just one of the nine angles. Such flashes are caused by sunlight bouncing off very reflective surfaces and can be seen if a camera is pointed at just the right angle to catch them. Because the satellite data contain precise locations for each pixel in the images, Erin could figure out exactly where a flashing object on the ground should be. Her job was then to figure out exactly what it was that made the flash- in particular, to see if she could distinguish man-made objects from natural ones.

When Erin began working at JPL, scientists on the MISR project had already identified two large flashes out in the middle of the Mojave Desert in Southern California. These turned out to be from solar power generating stations. Soon, Erin began finding flashes all over the place. She learned how to apply her math knowledge to figuring out how the objects would have to be oriented in order to be seen by a particular MISR camera. One time, she and a team of MISR scientists and students went on a field trip to the exact locations of some flashes, where they found greenhouses, large warehouses with corrugated metal roofs, a glass-enclosed shopping mall, and a solar-paneled barn. For some flashes, they could find nothing at all. Those remain "UFOs" to this day!

Learn more about SHARP at www.nasasharp.com and Earth science applications of MISR at www-misr.jpl.nasa.gov. Kids can do an online MISR crossword at http://spaceplace.nasa.gov/en/kids/misr_xword/misr_xword1.shtml

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



The *Telguide*.

Our own Steve Trotta has invented the Telguide to aid you in your galactic hunts. To purchase a Telguide, [click here](#).

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C-8 with equatorial mount, Byers drive, Losmandy accessory plate for astrophotography, outstanding optics, heavy-duty metal tripod, Telrad, dew shield, Thousand Oaks solar filter, motor drive, hard case, optical polar-alignment tool. \$1300.00, Call Brian Peterson at 661-273-1693 or e-mail (address below).

* * * * *

C102 with a G-4 mount; wood tripod legs; dew shield; motor drive; carrying case for the tube; good 'scope for the planets; help Brian clean out his closet- \$450. 661-273-1693 or e-mail (address below).

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* * WANTED * *

More input from our club members for the DSO: astrophotos, product reviews (whether it's a super-duper hi-tech unbelievable piece of astronomical equipment or just some good thermal underwear for cold star parties), or photos of club events. Please contact me at newsletter@avastronomyclub.org. Your input and knowledge are valuable to the rest of the club.



AVAC Product Review

by Rich Harper

The 2.8x Klee Barlow

The 2.8x University Optics Klee Barlow is probably one of the more controversial barlows available. Many like it, many don't. It has its advantages, along with a few disadvantages. On the plus side, it is lightweight, has very good optics, requires little focuser travel to achieve proper focus, and works well with most eyepieces. On the negative side, it vignettes with some eyepieces, especially Plossls and Kellners, and it lacks filter threads.

On first inspection, it can be seen that the Klee is constructed completely of machined aluminum. It is lightweight and compact, just 2.45" tall. The lower portion of the barrel, holding the optical assembly, threads into the upper portion and is painted flat black inside. This no doubt contributes to the lack of flaring since anodizing machined aluminum can produce a very shiny, reflective surface. It is otherwise quite conventional mechanically, and is similar in size, though lighter, than the popular 2x "shorty" barlows. The unit is engraved "UNIVERSITY 2.8X KLEE BARLOW Multi-Coated" with the literature stating each element is multi-coated yielding 96% light transmission. The coatings are evenly applied, and of high quality. A small "JAPAN" sticker is affixed to the upper barrel.

I first tried the Klee with my Ranger, observing Saturn and Venus. I was interested in how it performed compared to other eyepieces, and if the three-element, six air-glass surface arrangement made the Klee vulnerable to ghosting. I observed with the Klee, primarily using 12mm and 16mm Konig II eyepieces, and compared those views to 5mm and 6mm University Optics HD Orthos. The 16mm Konig II when Klee'd gives an effective focal length of 5.7mm, and the 12mm when Klee'd yields 4.3mm. I also tested the Klee with a variety of other eyepieces, including Plossl, Kellner, Axiom, Ultrascopic, and Ortho types.

Due to jet stream influences, the seeing has been rather bad lately, and I was not able to pursue higher magnifications. Still, in light of the poor seeing, the Klee performed very well. The Klee introduced no ghosting on Venus, and was sharp and contrasty when used on Saturn. Compared to the Konig/Klee combinations, I found the HD Orthos to be a tiny bit easier to focus, and a tiny bit sharper, but this should not be taken as an indictment of the Klee. Keep in mind, as well, that a 6mm Ortho has a 43 degree field and less than 5mm of eye-relief. In comparison, the 16mm Konig with the Klee has a generous 11mm of eye-relief and a nice, wide 65 degree field. The Klee'd 12mm Konig showed the poor seeing more than that 16mm, but fared no worse than the 5mm HD Ortho in this regard, both producing slightly soft images at 112x and 96x respectively. The 12mm with the Klee seemed to show a bit of vignetting as the field stop looked a little soft. Still, the Konig/Klee combination had a wider field and better eye-relief than the 5mm Ortho. The Klee also seemed to tighten up the astigmatism inherent in the Konig design, though keeping Saturn near the center of the field of view provided the best image.

The first drawback of the Klee is the lack of filter threads. I consider this minor as I seldom use filters on the planets and would be extremely unlikely to barlow an eyepiece fitted with a nebula filter. Still, if you like switching magnifications and using the same filter, you may find this an annoyance. The second drawback is more severe: the Klee vignettes badly with Plossls and Kellners. I've read that this is caused by the Klee creating a divergent light-cone, and that some eyepieces cannot cope with this rather than, as many claim, the Klee having too small an aperture. For example, a 32mm Plossl with a 50 degree field and a 23mm Axiom with a 70 degree field have the same field-stop diameter. If the field-stop were not being fully illuminated, they should both exhibit vignetting. This is not the case as the Axiom showed no vignetting while the 32mm Plossl was vignettted down to a roughly 40 degree apparent field. This being the case, I'm inclined to accept the argument that the Klee's light-cone is divergent to some degree and that some eyepieces cannot cope with this.

Overall, the Klee is not for everybody. While it provides a nice boost when used with Orthos or wide-field designs, if you are a Plossl user you are likely to be disappointed. For general use, the common and popular 2x "shorty" barlows will work better with more eyepieces.

Congratulations...

... to incoming Executive Board officers Debora Pedroza (President), Mindy Peterson (Vice President), David Abrass (Treasurer), and Terry Pedroza (Director of Community Development). Returning for another year is Larry Ochsner (Secretary). Congratulations on your ascendancy to the Board.



Your new Board (L-R): Mindy Peterson, Vice President; Debora Pedroza, President; Larry Ochsner, Secretary; David Abrass, Treasurer; Terry Pedroza, Director of Community Development. Law enforcement officials were consulted, but we were told that there is nothing they can do- we're stuck with them.

Why are there 24 hours in a day?

by Tom Koonce

The question was asked at our last meeting by our speaker. He said he'd asked the question at his talks for the last 30 years and never had anyone answer it correctly! I couldn't stand it and have done a bit of research. Read on and you'll be ready next time!

The question is a simple one. It seems easy enough and we take it for granted, but where do our units of time measurement come from? Why does everyone on the earth split the day up into 24 segments? You can easily understand why there are 365 days in a year. There are 365 risings and settings of the sun before the same season returns and the constellations are in exactly the same position in the sky. This was established by many cultures in far flung locations throughout history. Pretty easy. This has been realized since before recorded history.

How many days are in a month? Even the name "month" gives you a hint at the answer to this one. It's related to the Moon and its visual lunar phases. There are about $29\frac{1}{2}$ days between new moons. While the orbital period of the Moon is 27.3 days, what was important to ancient cultures was how long it was between the same visual lunar phases. How many months are in a year? If you divide 365 days per year by 29.5 days per lunar cycle, you'll get an answer that is a bit more than 12. This is why some months have 30 days, some 31, and one has 28 days to keep the calendar aligned with the seasons from year to year.

But what about hours? Why 24? Why not 10? Why not 60? Time is not naturally split up into 24 *anythings*, so the division must be totally artificial. The origin appears to lie with the Sumerians, over 4000 years ago. When they counted things, they used their fingers, but they did it a bit differently than we do today.

Take a look at the fingers on your left hand. Using your thumb, point to the first segment on your index finger between your palm and the rest of the finger. You'll notice that each of your fingers has three distinct segments where your fingers bend, for a total of twelve segments on your left hand (night).

You can count another twelve segments for the day on your right hand. Have you ever noticed this? The Sumerians knew that the time from sunrise to sunrise (on average) was divided evenly between night and day- a left hand and a right hand, everything in balance. They called each of these time segments an "hour."

Interestingly, the Sumerians counted by twelves (called 'base 12') instead of by tens (base 10) like we commonly do today. Could this odd 24 unit division of a day be the ancient Sumerians' fault?

The ancient Babylonians inherited this quaint practice, and presumably added their own 'base 60' oriented counting system to divide the hours into 60 minutes, and the minutes into 60 seconds. The Babylonian fascination with the number 60 is interesting in itself. As well as being fond of twelve (3 x 4) the Babylonians actually used a base sixty notation (3 x 4 x 5). There are 360 degrees (3 x 4 x 5 x 6) in a complete revolution and they liked simple geometric series.

This explanation boils down to the Sumerian's 12-segmented hand system being incorporated by the Babylonian's 60-centric system. Perhaps our 12-segmented hands were a reason for liking base 60 in the first place.

In order to track time at night, the Babylonians divided the sky into the 12 signs of the Zodiac, each sign occupying about 30 degrees. The day and night were each 12 hours long, although in many time systems the lengths of these varied between summer and winter. Babylon was near the equator, so they didn't get too confused with this. Each Zodiacal sign 'lived' half in darkness and half in light during the course of a year, so they did not need 24 signs of the Zodiac, which was good since this nicely fit with the number of significant constellations already known by the ancients.

None of these solve the problem of getting the whole world to use 24 hours. Did Babylonian timekeeping spread naturally across the world in the same way Arabic and Hindu mathematical notation did? Did the Babylonians conquer rival countries, which went on to conquer others, and so on? Sorry for the inconclusive ending... what do you think?

Note: Hours did not have a fixed length until the Greeks decided they needed such a system for theoretical calculations. Hipparchus proposed dividing the day equally into 24 hours which came to be known as equinoctial hours (because they are based on 12 hours of daylight and 12 hours of darkness on the days of the Equinoxes). Ordinary people continued to use seasonally varying hours for a long time. Only with the advent of mechanical clocks in Europe in the 14th Century, did the system we use today become common place.

Astrophoto of the Month:



NGC891- Photographed by Terry Babineaux, Lake Elizabeth

Submit your "Astrophoto of the Month" to the following address by the 20th of each month:
newsletter@avastronomyclub.org

Observing Contest

conceived by the warped mind of Tom Koonce

Can you determine how long daylight lasts by observing the Sun for about 10 minutes around sunset? The contest is for you to calculate how long you think daylight last at this time of year (and send me your math that shows how you worked this out). Here are some useful facts:

- The Sun is about $\frac{1}{2}$ of a degree across
- It is 180 degrees from the Eastern Horizon to the Western Horizon

Try this method: Before sunset, face West with a watch or clock with a second hand. Write down the exact time (hr:min:sec) that the disk of the Sun first touches the horizon. Write down the exact time that the disk of the Sun is half covered by the horizon, then the exact time that you can no longer see any part of the disk. Warning: Don't stare at the Sun at sunset for a long time because this will hurt and you should know better and if you burn the eyes out of your head and go blind forever then it'll be your fault. ☺

Points will be awarded for being first to send me your calculations and explanation. More points will be awarded for being honest. Points will be awarded for repeating the measurements and calculations over at least three Sunsets. What factors affected your calculations? Why did you get the answer you did? What if you did this again in 6 months, what do you think would happen? The prize will be the very nice prize that no one won in our last contest.

E-mail al@avastronomyclub.org

A.V.A.C. Membership Information

Membership in the Antelope Valley Astronomy Club is open to any individual.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

Membership entitles you to...

- Desert Sky Observer—monthly newsletter.
- The Reflector—the quarterly publication of the Astronomical League.
- The A.V.A.C. Membership Manual.
- To borrow club telescopes, binoculars, camera, books, videos and other items.

The Desert Sky Observer is available as a separate publication to individuals at a cost of \$10.00 per year. Subscription to the Desert Sky Observer does not entitle the subscriber to membership in the Antelope Valley Astronomy Club and its associated privileges.

Astronomy Links on the Web

<http://www.astro-tom.com/> (Tom Koonce's website)
<http://www.actonastro.com/> (Steve Trotta's website)
<http://www.astropaws.com> (Terry Babineaux's astrophotos)
<http://www.noexitrecords.com/zerobox/astro.htm> (Tom Varden's website)
<http://www.astromart.com/> (time to go shopping)
<http://saturn.jpl.nasa.gov/multimedia/images/latest/index.cfm> (the latest Saturn pics from Cassini)
<http://chandra.harvard.edu/index.html> (The latest from the Chandra X-ray Observatory)
www.avastronomyclub.org/ (us desert astronomy folks)

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A.V.A.C. Board Members

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Vice-President: Doug Drake (661) 724-0849 vice-president@avastronomyclub.org
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Webmaster of Club Site:

Steve Trotta (661) 269-5428 webmaster@avastronomyclub.org

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QNET: 1529 E. Palmdale Blvd., Suite 200. (661) 538-2028. As an Internet provider, they are kind enough to provide us with a free website.

High Desert Broadcasting: General Manager, Vicky Connors (661) 947-3107; They assist us in advertising our Club.

Woodland Hills Camera: 5348 Topanga Canyon Blvd., Woodland Hills. 888-427-8766.
www.telescopes.net

Thank you to our sponsors for their generous support!