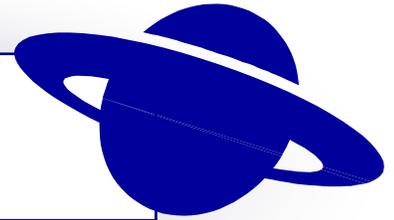


August 2005

The Voyager



East Valley Astronomy Club

Volume 19 Issue 8

From the Desk of the President by Steven Aggas, 2005 EVAC President

EVAC needs your help!!! At the end of September EVAC will once again host the All Arizona Star Party. Hopefully we will have the typically good skies, but additionally we will have a large canopy, drinks, and tables for people to set up any items they would like to sell. I am looking for a few people that can join the AASP planning committee and be able to help set up the canopy on Friday late morning, help with the registration/donation process, help with the door prizes, and disassemble

the canopy Sunday morning. If you have a truck with some available space to haul these items, that would be fantastic. The dates are Friday, September 30th and Saturday, October 1st, with everyone leaving on Sunday, October 2nd. Send me an email if you can help, I'm hoping for four individuals.

As our speaker for the August General Assembly meeting, we will have Dr. Jeff Hester. Dr. Jeff Hester, from ASU, will give a presentation entitled

"Born Among Giants," which discusses the evidence that the Sun formed near one or more massive, luminous stars, and the ways that the presence of nearby massive stars shaped our Solar System.

Join us for an interesting meeting **ON A SPECIAL NIGHT** at the Southeast Regional Library (Gilbert Public Library) on Saturday, August 20th at 7:30PM. The GPL is located at the Southeast corner of Greenfield and Guadalupe Roads.

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The Backyard Astronomer Summer's Top Ten by Bill Dellings

May I have a drum roll please? It's time for Bill's top ten summer deep sky objects. I gave it some thought and came up with what *I think* are the best ten DSO's loitering out there these summer evenings and begging you to collect their photons in your telescope (Over here! Choose me! Choose me!).

In reverse order, #1 being top dog:

10) Albireo (Cygnus). Probably the most popular and beautiful double star

in the sky. The classic example of a yellow and blue binary with a generous separation of 34". Even 10x50 binos will split it. But to see the colors best, use a small telescope and put the pair just slightly out of focus.

9) NGC 6826 (Cygnus). The famous "Blinking Planetary." Stare at the 10.8 magnitude central star and the nebula disappears. Averted vision shows the nebula but not the star. Repeat this process rapidly to get the blink-

ing effect.

8) M51 (Canes Venatici). A fine face on galaxy off the Dipper's handle. Big, bright, easy in an 8x50 finder. An 8" will show its satellite companion galaxy. Larger scopes begin to resolve spiral arms!

7) M13 (Hercules). Perhaps the best globular star cluster for northern observers. Its high declination nearly overhead means scopes see it through a minimum of atmosphere.

(Continued on page 2)

August Events:

- *Local Star Party at Boyce Thompson - July 30*
- *Deep Sky Star Party at Vekol Road - August 6*
- *Public Star Party in Gilbert - August 12*
- *Monthly Meeting at Southeast Regional Library - August 20*

The Backyard Astronomer

(Continued from page 1)

An 8" telescope will resolve its stars to the core.

6) M11 (Scutum) One of the finest open star clusters. Small scopes show it well, but in my 14" it's absolutely stunning set against background Milky Way stars.

5) M57 (Lyra). The "Ring Nebula" is, of course, a summer classic DSO. Likely the best example of a ring shaped planetary nebula.

4) M22 (Sagittarius). If this globular were higher in the sky, it would likely outclass M13. Some still think it does!

3) M7 (Scorpius). One of my favorite open clusters (along with M11, M35, M37, M45, M46 and NGC 7789). As it has a large angular diameter, I think its best seen in giant binoculars. It appears to the naked eye as a small detached piece of Milky Way. The Scorpions "stinger" stars point almost right at it (to the east). Dynamite in my 20x100 bins.

2) M27 (Vulpecula). In my opinion, the "Dumbbell" is king of the planetary nebulae. No other planetary is as big *and* bright. Like a huge cotton ball in the sky. Murder to find. Tip to non GOTO'ers: go 2 degrees due north in declination from Gamma Sagittae to run into this big power puff. Also note in a mag 6.5 star atlas (like Bright Star Atlas) M27 sits at the base of an "M" pattern of stars, Vulpeculae 12, 13, 14 (nearest to this star), 16, and 17.

One more drum roll please.

1) M24 (Sagittarius). Yeah, I know. How could Messier have confused this large Milky Way star cloud with a comet? Whatever. For an overall view of this 120'x40' beauty, try giant bins, like my 20x100's with a 2.5 degree field. It's like a religious experience. Plunging into it with a telescope, you'll get lost in its myriad stars.

(If this were a Top Twelve List, you'd

also see listed here M17, the Swan Nebula and M8, the Lagoon nebula – both located in Sagittarius).

Happy hunting!



It's Your Club

As we look ahead to the changing of the seasons, while not so noticeable from our desert vantage point, our thoughts turn to... what else... the EVAC elections for 2006.

As much as I dislike clichés, I'll employ one (or two) here: it truly is YOUR club, and the club is only as good as YOU make it. So why isn't 2006 the year that you step forward and make an active contribution to the East Valley Astronomy Club through your participation in its governance?

The process remains relatively unchanged from previous years. Nominations are open to any member-in-good-standing. You may nominate yourself simply by announcing your intentions to the President. You may nominate another member, so long as they agree to being nominated. All nominations will be formally announced at the October meeting. The nomination period will remain open until the beginning of the November meeting. Voting (by

simple majority) is conducted at the November meeting and all positions begin on 1 January 2006.

EVAC's governing body is composed of four executive officer positions (President, Vice President, Secretary and Treasurer); four administrative officer positions (Events Coordinator, Properties Director, Newsletter Editor and Webmaster); and five members on a Board of Directors.

The executive and Board positions have a two year term limit. The administrative positions do not have term limits. All positions require a one

year commitment.

If you are interested in any officer position, feel free to contact any current officer to learn more about the roles and responsibilities of that office. A complete listing of the 2005 governing body can be found here: <http://www.eastvalleyastronomy.org/govbod05.htm>

The East Valley Astronomy Club needs you to be involved.



The Solar Cycle, Solar Weather, and Their Effects on the Earth

by Henry De Jonge

We will discuss the solar cycle and its relation to “solar weather”, and its effects on the Earth. The solar cycle refers to the periodic surface changes occurring on the sun. It includes such activities like the regular waxing and waning of sunspots on the sun. It is also associated with magnetic field changes inside the sun. This has an effect upon other solar phenomena like the “solar weather” as well. Since the earth in essence, is immersed in the Sun’s outer atmosphere, changes in the sun and its “weather” will influence the earth, [2]. We will discuss the solar cycle, solar weather, and discuss examples of how these solar properties can influence the earth.

The solar cycle was first brought to light by the discovery in the mid 1800’s of an approximate 22-year cycle in the appearance and changes in sunspots on the surface of the sun. The discovery shortly afterwards that terrestrial magnetic compass deviations exactly follow the same cycle was a key to linking this solar cycle with effects upon the earth, [1]. Sunspots are now known to be associated with intense magnetic fields on the sun, [3]. This solar cycle is also linked to the apparent reversal of the sun’s magnetic polarity every 11 years, the same as from one solar sunspot maximum to the next.

There are times when the sunspot cycle seems to “vanish” for years at a time. This is called the Maunder minimum and is associated with unusual weather activity on the earth. The years 1645-1715 were particularly barren of sunspots and during this time Europe experienced years of record low temperatures, often called the Little Ice Age, while the western United States experienced severe drought. In contrast, during the 11th and 12th centuries there was a notable period of increased sunspot activity while the earth was warmer than it is today, [3]. There is also evidence of a correlation between the sunspot cycle and severe African

droughts, which seem to concentrate during periods of sunspot minimum, [1]. Thus there appears to be a connection between the sunspot solar cycles and the earth’s weather.

The “solar weather” is similar to the weather on the earth. It consists of changes in “winds”, particles, and energy. The solar wind is actually comprised of radiation, (including light) particles, (mostly electron and protons) and magnetism, (carried by the charged particles). These particles pour out of the sun at about 400km/s. When the supersonic solar wind meets the magnetic field of the earth; it “squashes” it a bit and slows it down to subsonic speeds. This creates a shock wave, like the bow wave on a boat, while it “stretches” out the magnetic field lines in the rear, like the wake on a boat. The curve of these magnetic field lines about the earth is called the magnetosphere. If it were not for the magnetic field of the earth deflecting the solar wind to such an extent, and protecting us from the high-energy particles and radiation, we would probably not be alive to write about it. It is as if the earth and the sun were “connected” by this solar wind, [2].

The solar wind and its interaction with the earth’s magnetic field, has most likely helped shape the atmosphere and oceans of the earth. On Mars for example, which has little or no magnetic field, it is thought that the direct impact of the solar wind on its upper atmosphere has played a considerable role in causing Mars to lose its former oceans and atmosphere. Venus, which also has no appreciable magnetic field, is also thought to have lost nearly all its water to space, in large part to solar powered wind ablation, [2].

Solar flares are an example of solar weather that can cause particularly strong “gusts” of solar wind. These may change the total visible energy of the sun by less than 1%, but the x-ray radiation may increase

a hundredfold, [1]. As a result powerful magnetic storms can arise in space near the earth. These can in turn cause intense auroras, radio and TV static, power blackouts, navigation problems involving magnetic compasses, and damage to satellites and spacecraft, [2]. Massive sunspots can also pummel the earth with intense magnetic storms and solar flares. In the newspaper USA Today, on April 2, 2001 there appeared a report of such a massive sunspot and flare-up. The resulting geomagnetic storm affected a large part of the earth. Power grids, TV and radio transmissions, and communications satellites were all affected. The more intense and very noticeable auroras were also seen much farther South than normal, [4].

Other components of the solar wind include radiation besides the visible light and infrared radiation we see and feel. Ultra-violet rays from the sun ionize the upper atmosphere, creating the electrical conducting ionosphere.

Particles can also come from the earth and enter the upper layers of our atmosphere. Hydrogen gas for example, can actually escape from the earth and make it into space. When many of these particles enter the magnetosphere they become charged, and flow along the magnetic field lines with the solar wind and out into space. Thus the earth also contributes some of its atmosphere to the solar wind as it passes our planet. This may have an influence on our long-term atmospheric stability, [2].

Over 99.98% of all the energy passing through the earth’s atmosphere comes from the sun, [1]. It should not be surprising that small changes in the sun can influence the earth. We have seen many possible connections between the solar cycles and solar weather, and their effects on earth. Understanding solar varia-

(Continued on page 12)

July Board Of Directors Meeting Minutes

July 15, 2005

Attending:

President Steven Aggas

Secretary Peri Cline

Treasurer Wayne Thomas

Event Coordinator Randy Peterson

Properties Director Dave Williams

Newsletter Editor Peter Argenziano

Webmaster Marty Pieczonka

Directors Joe Goss, John Holmquist and Chuck Crawford

Not Attending:

Vice President Howard Israel

Event Coordinator Gwen Grace

Directors Jim Fitzpatrick and Dave Shafer



The meeting opened with a discussion of the budget. At this point in time EVAC is bordering on being in the red by the end of the year. The most effective way to increase our income is to increase our membership.

Discussion about advertising in the monthly newsletter centered on the fact that the current ads are run 'gratis' with the idea that it is best to support our local astronomy shops. It was noted that Starizona has been very generous in gifts and discounts to the club. The other shops have been less. The club has been approached occasionally by astronomy related businesses requesting "free" advertising in our newsletter. It was voted on and decided that only paid members would be allowed to adver-

tise. Business card sized ads would be allowed in the newsletter and/or on the web site, the choice could be made by the advertiser, but any ad to be run in the newsletter had to be "camera ready".

A report by Peter Argenziano about the efforts to change the status of EVAC to a tax-exempt non-profit organization is ongoing, and the paperwork should be completed by November 1, 2005. At this time little or no progress has been made, but efforts to make the change are in the works.

A lengthy discussion was held about the light fixtures near the new Riparian Rotary Observatory. Discussions were held about the idea of the club contributing to light shields around the current lights that are on private property. It was noted that it might be pretty much of a non issue as the property owner has been very cooperative about turning off the lights on nights when observing was taking place. It was also suggested that the Town of Gilbert might be willing to propose legislation relating to future lighting to preserve the dark skies around the observatory. It was also suggested that the Riparian Institute might be the better body to spearhead the campaign for the dark skies. By the end of the discussion the following was decided:

1. Dave Williams will contact the Town of Gilbert about future legislation and compliance with current legislation.
2. Steven Aggas will contact the Riparian about any action they might want to consider to maintain the dark skies.
3. Further discussion was tabled with the understanding that EVAC was not financially in a position to undertake any independent action.

Open Discussion Topics:

The liability release/waiver forms have begun to arrive. It was suggested that they could be scanned and maintained in electronic format. Hard copy maintenance was not re-

quired. These forms are a one time item, and are in effect as long as the membership is maintained.

Discussion was held about the financial difficulties EVAC faces. The general idea of increasing the dues was discussed. It was noted that an individual membership and the family membership bear the same cost. To balance out the income and the outgo for the year it was suggested that the membership renewals be yearly based on when the person joined the club. Currently membership is from January to December. The possibility of a membership chairman was discussed to help remove the load in January and February from the Treasurer.

The All Arizona Star Party will be held in October on the same weekend as the Lowell Annual Star Party. Organization for the AASP is beginning, with the need for a couple of people who could help setup and break down of the canopy, registration and water station. A request for help with a truck and volunteers will be made at the general meeting.

The annual Christmas party was mentioned with the idea of holding it in lieu of the December meeting in Gilbert if food and beverages would be allowed. Other locations were discussed with the general consensus being that the greatest number of people will attend the party at the Gilbert location.

A review of the Astronomy Day picnic was held with the suggestion that the attendance was poor at best. The location was nice, but not easily found by large numbers of the public. A suggestion that the next one should be held at the Riparian Institute because of ties to the observatory which is scheduled to be open by then would be very reasonable. A joint effort by both groups would be mutually advantageous. More public relations would hopefully attract a larger crowd.

August Guest Speaker: Dr. Jeff Hester



Dr. Hester completed both his undergraduate and graduate education at Rice University in Houston, Texas, where he also served as a postdoctoral researcher. He has served on the Science Staff at California Institute of Technology, Jet Propulsion Laboratory; and as a Research Fellow with Hubble Space Telescope Wide Field / Planetary Camera IDT. Dr. Hester is currently a Professor in the Physics and Astronomy department at Arizona State University and is a member of the ASU School of Earth and Space Exploration Steering Committee. Dr. Hester is widely published and has given numerous presentations, talks and seminars. His research interests include the interaction of massive stars with their environments; star formation, especially in environments that have been modified by massive stars, and the ties between star formation and the early Solar System; supernova remnants, pulsar winds and pulsar wind nebulae, especially the Crab Nebula; the physical structure of highly stratified ionization and shock fronts in the ISM; the structure and evolution of the interstellar medium; and space-based astronomical instrumentation.

Take a Stand Against Light Pollution by Keith Krueger

There is probably not an amateur astronomer in the world that is not familiar with light pollution. Amateur astronomers that know how to fight light pollution are far more rare. Here in Arizona it is easier than in most other parts of the country to fight light pollution because of the work that members of IDA have done in getting light pollution laws passed. These laws are of little use however, if they are not enforced. Like most laws of this nature that are on the books, lighting laws tend to not be enforced, or are enforced sporadically, unless people speak up and complain about violations. The first step is to become familiar with the lighting code in the area where you live. You can usually get a copy of your city's or county's lighting code by calling the code enforcement division of the city or county where you live. Code enforcement is usually part of the building or planning departments. The number to call if you live in Pinal County is: 520-866-6455. Press "2" from the first menu and then "3" from the second menu. The Maricopa County Planning and Development number is 602-506-3301.

Pinal County has a pretty good code which requires that all lights be fully shielded, except incandescent lights that are less than 150 watts. The definition of fully shielded states that all light rays from the fixture are "projected below a horizontal plane running through the lowest point on the fixture where light is emitted". That means that if you are looking at a fixture edge on, you should

not see the light source. For those of us who live in Pinal County, now is a critical time to get involved in this issue given the amount of growth projected in our area. The best approach is to focus on two or three of the worst offenders that are closest to your house and then work outward from there. It usually takes several months to get compliance, but persistence DOES pay off.

Another thing that everyone can do to fight light pollution is to join IDA. It is only \$30 per year and is good insurance for the thousands of dollars you have invested in astronomical equipment. You can join right from their website which is: www.darksky.org. Now would be a good time to do it, while you are thinking about it.

While you are there, you might also want to order some information about light pollution to hand out to the public at star parties. I have been amazed at the number of people who are not astronomers who are concerned about the light pollution issue but don't know what they can do about it. Most people have not heard of IDA. A very high percentage of people that attend star parties would be very likely to join IDA if they knew about it. You are in a better position to fight light pollution than you may have realized. If you are thankful that previous generations of Americans had the foresight to preserve the Grand Canyon, perhaps you could return the favor by helping to pre-

serve the view of the universe for the generations that are to follow us.

Maricopa County Planning
and Development Online

<http://www.maricopa.gov/planning/>

An outstanding resource is the Light Pollution Awareness website, home of the LiteLynx List. This site provides light pollution awareness and education in a useful, thoughtful and well-organized manner.

<http://members.aol.com/ctcadman/index.htm>

International Dark Sky Association
3225 N. First Avenue
Tucson, AZ 85719-2103
(520) 293-3198
Fax: (520) 293-3192
Email: ida@darksky.org
www.darksky.org

Classified Advertisements

Meade ETX-70

with Meade 9mm and 25mm eyepieces, Autostar, and flex focus. \$150.00

Damion Pauksta (602) 240-5421
damionbow@aol.com

NexStar 11 GPS

Carbon fiber model purchased from Astro-nomics late 2003, unused due to illness. In-cluded with all standard accessories are Feathertouch focuser, 2" AP visual back, JMI Wheely Bars with extra-large wheels and complete Celestron 'gift' set of eyepieces and filters in case. Cost well over \$3600 -- will sell for \$2000 firm. Prefer local sale.

Norm Rubenstein (623) 322-6464

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Construction will be-
gin soon on the Ri-
parian-Rotary Obser-
vatory in Gilbert.
Check out the web-
site for more info!

www.RotaryObs.org

Meade Pictor 416XT CCD

All components, filters, manuals, adaptors, autoguider and CCD camera are still in their original factory sealed condition and plas-tic wrap. Why? Well, the Pictor and it's software are intended for use with a Windows computer and I never got around to buying a Windows laptop -- sounds silly -- but that's the fact. The Pictor 416XT uses the Kodak KAF-0400 CCD chip with the extended blue response. As a CCD camera, it's considered among the best available under \$5000! The autoguider and camera will connect directly to the control panel jacks of Meade LX50, LX90 (APM) and LX200 telescopes (and probably others with similar electronic relay autoguider ports). See a current ad for this unit at: http://telescopes.net/ccd_cameras.html

The Pictor 416XT normally sells for about \$2000 (I paid \$2035 with tax), but I'll sell it for \$1299 (brand new!!).

John Matthews (602) 952-9808

john-cathy@cox.net

16" f4.5 Meade Starfinder with Equatorial Mount

Optics remounted into a new tube, built by Pierre Schwarr with a JMI focuser. Includes 7, 12.5, 17, 20, and 32mm eyepieces plus 2.8 Klee Barlow, laser collimator and an Olympus OM1 camera.

Many extras! Call or e-mail me for a list. I have \$5200 invested in this telescope package, but will sell for \$2000

Dave Rainey 602-980-0582

drainey7@cox.net

Wanted

2" TV Everbright or equivalent quality diagonal with compression clamp. Must be in excellent condition.

Contact Silvio 480-926-8529 silvioj@msn.com

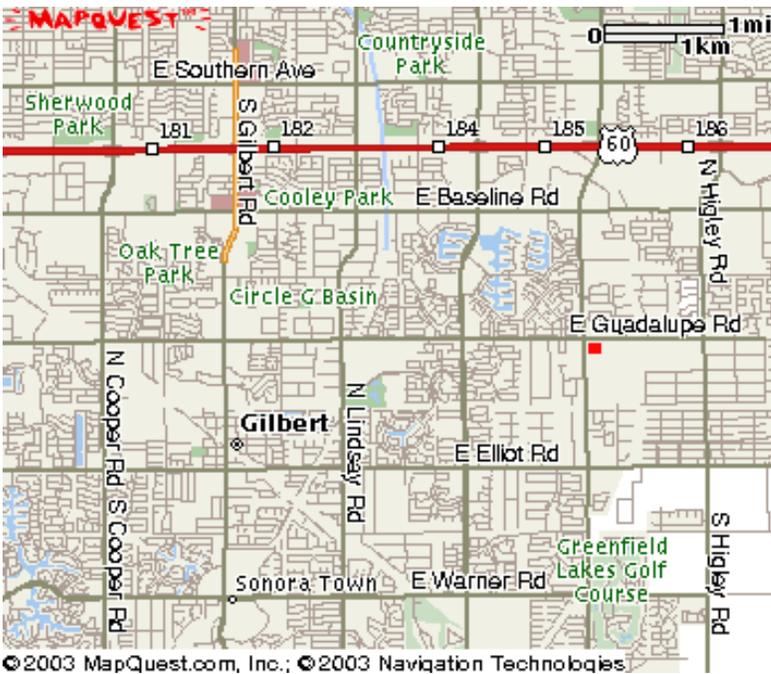
Only non-commercial advertisements for astronomical equipment will be accepted from current EVAC members. Ads will be published as space permits and may be edited. Ads should consist of a brief text description and must include a current member name and phone number. You may include your email address if you wish. Ads will be run until canceled or until they have appeared in three issues of the newsletter (whichever occurs first). Ads should be emailed to: news@eastvalleyastronomy.org

*Support
your local
telescope
dealer!*



5201 N. Oracle Rd. Tucson, Az 85704 520-292-5010

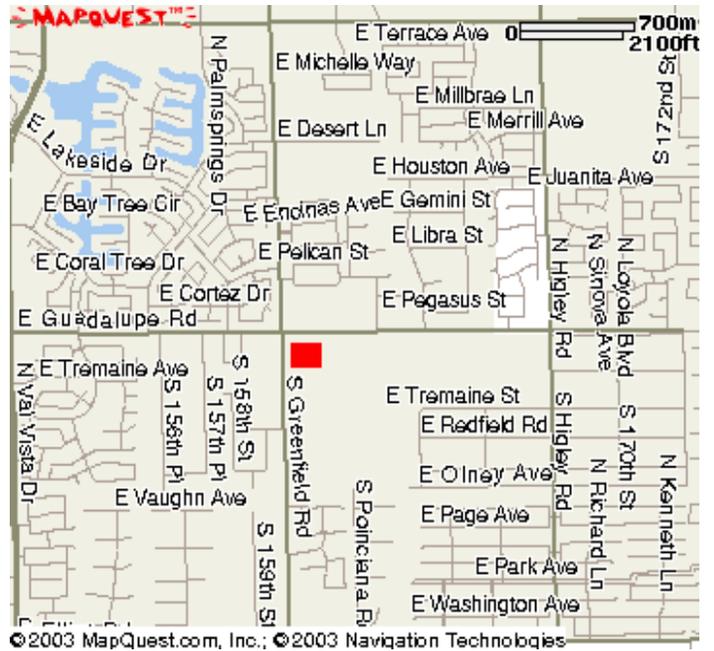
www.starizona.com



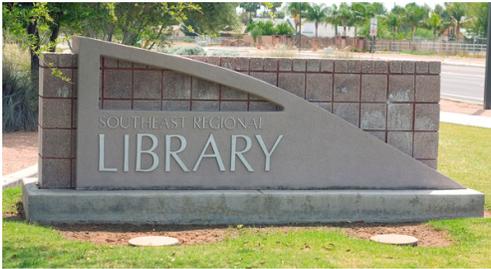
The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

Our meetings are held on the third Friday of each month, at the Southeast Regional Library in Gilbert. The library is located at 775 N. Greenfield Rd., on the southeast corner of Greenfield and Guadalupe Roads. Meetings begin at 7:30pm.

Visitors are always welcome!



Southeast Regional Library
775 N. Greenfield Road
Gilbert, AZ 85234



2005 Meeting Dates

August 20

September 16

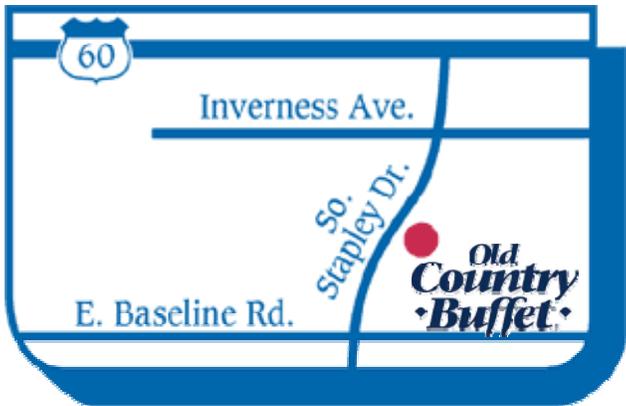
October 21

November 18

December 16

All are welcome to attend the pre-meeting dinner at 5:30 PM. We meet at **Old Country Buffet**, located at 1855 S. Stapley Drive in Mesa. The restaurant is in the plaza on the northeast corner of Stapley and Baseline Roads, (near the Walmart Supercenter) just south of US 60.

Old Country Buffet 1855 S. Stapley Drive in Mesa



▶ August 2005

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Schedule of Events

- July 30 - Local Star Party at Boyce Thompson Arboretum
- August 6 - Deep Sky Star Party at Vekol Road
- August 12 - Public Star Party at Riparian Preserve in Gilbert
- August 20 - August General Meeting at Southeast Regional Library in Gilbert (NOTE: special night)

Minutes of July General Meeting

Meeting date: Friday, July 15, 2005

Meeting location: Southeast Regional Library in Gilbert

The meeting was opened at 7:30 by President Steven Aggas. The officers and board members introduced themselves. Attending were Steven Aggas, Howard Israel, Peri Cline, Wayne Thomas, Randy Peterson, Dave Williams, Peter Argenziano, Marty Pieczonka, Joe Goss, John Holmquist and Dave Shafer.

A request was made for help transporting items to the All Arizona Star party. A volunteer with a truck was needed; someone who could go early on Friday and stay until Sunday mid-day and help transport the materials back to Phoenix. Interested volunteers were asked to contact Steven Aggas.

A reminder was made that as memberships are renewed, to please include the membership form, payment for dues and a signed liability waiver. The waiver form can be found in the newsletter and on the website.

The treasurer's report was given, membership continues to grow, it now stands at 220 members.

The new Planetarium show at the Arizona Science Center, "Deep Impact" includes the photographic work of Joe Orman, Rick Scott, Tom Polakis, and Chris Schur.

Copies of the lecture by John Dobson (on DVD) are available for loan from the club library. Three copies were donated to the club by John Matthews. If you would like to borrow one, please contact Dave Williams.

The 2006 Astronomy calendars have arrived and can be purchased for \$8. See Randy Peterson for details.

The August general meeting will be held on a special night due to a scheduling conflict at the library. We will meet on Saturday, August 20th at 7:30pm at the Gilbert Southeast Regional Library.

The speaker for the evening was AJ Crayon who provided instruction on drawing what is seen in the eyepiece of our telescopes.

East Valley Astronomy Club -- Membership Form

Please complete this form and return it to the club Treasurer at the next meeting or mail it to EVAC, PO Box 2202, Mesa, Az, 85214-2202. Please include a check or money order made payable to EVAC for the appropriate amount.

IMPORTANT: All memberships expire on December 31 of each year.

Select one of the following:

- New Member Renewal Change of Address

New Member Dues (select according to the month you are joining the club):

- \$20.00** January through March **\$15.00** April through June
 \$10.00 July through September **\$25.00** October through December
Includes dues for the following year

Renewal (current members only):

- \$20.00** January - December

Magazine Subscriptions (include renewal notices):

- \$29.00** Astronomy **\$33.00** Sky & Telescope

Name Badges:

- \$10.00** Each (including postage) Quantity: _____

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

- Payment was remitted separately using PayPal Payment was remitted separately using my financial institution's online bill payment feature

Name:

Phone:

Address:

Email:

City, State, Zip:

Publish email address on website
URL:

How would you like to receive your monthly newsletter? (choose one option):

- Electronic delivery (PDF) US Mail

Areas of Interest (check all that apply):

- General Observing Cosmology
 Lunar Observing Telescope Making
 Planetary Observing Astrophotography
 Deep Sky Observing Other

Please describe your astronomy equipment:

Would you be interested in attending a beginner's workshop? Yes No

How did you discover East Valley Astronomy Club?

PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org

Liability Release Form

In consideration of attending any publicized Star Party hosted by the East Valley Astronomy Club (hereinafter referred to as "EVAC") I hereby affirm that my family and I agree to hold EVAC harmless from any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), which may directly or indirectly be connected to EVAC and/or my presence on the premises of any EVAC Star Party and related areas.

I further agree to indemnify any party indicated above should such party suffer any claims, liabilities, losses, demands, causes of action, suits and expenses (including attorney fees), caused directly or indirectly by my negligent or intentional acts, or failure to act, or if such acts or failures to act are directly or indirectly caused by any person in my family or associates while participating in an EVAC Star Party.

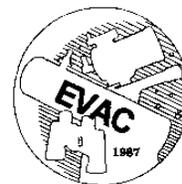
My signature upon this form also indicates agreement and acceptance on behalf of all minor children (under 18 years of age) under my care in attendance.

EVAC only recognizes those who are members or invitees and who also have a signed Liability Release Form on file as participants at an EVAC Star Party.

Please print name here

Date

Please sign name here



PO Box 2202
Mesa, AZ 85214-2202
www.eastvalleyastronomy.org

Newest Weather Sentry Takes Up Watch

by Patrick L. Barry

. Today, we've become accustomed to seeing images of the Earth's swirling atmosphere from space every night on the evening news.

Before 1960, no one had ever seen such images.

The first-ever weather satellite was launched that year, kicking off a long line of weather satellites that have kept a continuous watch on our planet's fickle atmosphere—45 years and counting! The high-quality, extended weather forecasts that these satellites make possible have become an indispensable part of our modern society, helping commercial aircraft, recreational boaters, and even military operations avoid unnecessary risk from hazardous weather.

But satellites don't last forever. Parts wear out, radiation takes its toll, and atmospheric drag slowly pulls the satellite out of orbit. Many weather satellites have a design life of only 2 years, though often they can last 5 or 10 years, or more. A steady schedule of new satellite launches is needed to keep the weather report on the news each night.

In May 2005, NASA successfully launched the latest in this long line of weather satellites. Dubbed NOAA-N at launch and renamed NOAA-18 once it reached orbit, this satellite will take over for the older satellite NOAA-16, which was launched in September 2000.

"NOAA always keeps at least two satellites in low-Earth orbit, circling the poles 14 times each day," explains Wilfred E. Mazur, Polar Satellite Acquisition Manager, NOAA/NESDIS. "As Earth rotates, these satellites end up covering Earth's entire surface each day. In fact, with two satellites in orbit, NOAA covers each spot on the Earth four times

each day, twice during the day and twice at night," Mazur says.

By orbiting close to Earth (NOAA-18 is only 870 km above the ground), these "low-Earth orbit" satellites provide a detailed view of the weather. The other type of weather satellite, "geosynchronous," orbits much farther out at 35,786 km. At that altitude, geosynchronous satellites can keep a constant watch on whole continents, but without the kind of detail that NOAA-18 can provide.

In particular, low-Earth orbiting satellites have the ability to use microwave radiometers to measure temperature and moisture in the atmosphere—two key measurements used for weather prediction that, for technical reasons, cannot be sensed by distant geosynchronous satellites.

With NOAA-18 successfully placed in orbit, the 45-year legacy of high-tech weather forecasts that we're accustomed to will go on.

Find out more about NOAA-18 and the history of polar-orbiting weather satellites at <http://goespoes.gsfc.nasa.gov/poes>. For kids and anyone else curious about the concept, the difference between polar and geosynchronous orbits is explained at http://spaceplace.nasa.gov/en/kids/goes/goes_poes_orbits.shtml.

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NOAA-18, the newest in a long line of weather and environmental satellites, launched May 20, 2005.

If it's Clear...

by *Fulton Wright, Jr.*
Prescott Astronomy Club

August 2005

Shamelessly stolen information from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find info. When gauging distances, remember that the Moon is 1/2 a degree or 30 arc minutes in diameter. All times are Mountain Standard Time unless otherwise noted.

On Thursday, August 4, it is new Moon so you have dark skies for all night observing if you like.

On Monday, August 8, about 8:00 PM, you can catch the thin, crescent Moon near Venus. With your unaided eye or binoculars look 10 degrees above the west horizon. Two nights later, the Moon is near Jupiter. One night after that, it is near the star Spica.

On Friday, August 12, after midnight (the start of the 12th) you might see some Perseid meteors. Sorry about the hour, but meteors tend to be better after midnight. With your unaided eye look mostly overhead for meteors seeming to come from the

constellation Perseus. You might see one a minute under conditions of dark skies and low horizons. There is a slight chance of some extra activity around 2:00 AM. The display should be good the next night, also.

On Friday, August 19, at 7:39 PM, the full Moon rises.

Forget the faint fuzzes tonight and check out the rays and other albedo features on the Moon. For a few days around this date it will be an especially good time to look at the northern edge of the Moon which is tilted toward us by libration.

On Thursday, September 1 (I can include this because it is August 31 Universal Time), about 7:30 PM you can see two planets about 1 degree apart. With your unaided eye or binoculars look 10 degrees above the west-southwest horizon for bright Venus (mag -4) and dimmer Jupiter (mag -2). 5 degrees off to the left is a much dimmer star, Spica (mag 1). In the days leading up to this you can watch the pair of planets approach each other.

EVAC News

East Valley Astronomy Club was founded in 1987 and was organized into a non-profit Arizona corporation eight years later.

We are now in the process of taking another step in our evolution - applying for tax-exempt status under section 501(a) of the Internal Revenue Code. Specifically, we are seeking exemption as a 501(c)(3) charitable organization operated for purposes that are beneficial to the public interest in the advancement of education or science.

Besides being relieved of federal income tax liability, the club will also be able to accept contributions and offer donors a tax deduction for their gift.

Watch the space for further developments...

The Solar Cycle, Solar Weather, and Their Effects on the Earth

(Continued from page 3)

tions and solar influence on biology, climate, and modern technology, will have increasing importance for many areas of science and society. There is still much to learn about the relationship between solar phenomena and conditions on earth. We are still living products of the stars and in particular our sun!

REFERENCES

[1] Hartman, William. Astronomy: The Cosmic Journey. Belmont, CA; Wadsworth Publishing Company, Inc. 1978

[2] Space Weather Home Page, <http://science.nasa.gov/ssl/pad/sppb/edu/magnetosphere/>

[3] Kaufmann, William & Freedman, Roger. Universe. NY, NY; W.H. Freeman & Company, 1999

[4] USA Today. "Massive sunspot lights up Nevada" April 2, 2001

New Moon on August 4th
at 8:05 PM

First Quarter Moon on August
12th at 7:39 PM

Full Moon on August 19th
at 10:52 AM

Last Quarter Moon on August
26th at 8:18 AM

Why Buy a Reflector?

Article Courtesy of Ad-Libs Advertising, Inc. (dba Astronomics and/or Christophers, Ltd.)

In a word – value. A Newtonian reflector offers more performance for your observing dollar than any other telescope type.

The reflector's large light-gathering area and relatively short focal length can provide bright images of deep space objects that are too faint for any small aperture refractor to see. And the reflector's large aperture can resolve details within those objects with a precision no small scope can match – if the seeing is good.

The penalty you pay for this performance is typically one of large size and weight – although not necessarily one of high cost, as reflectors traditionally cost the fewest dollars per inch of aperture of any telescope type.

The reason? A reflector has only one mirror to grind and polish to a precise curve (with an accuracy of +/- five one-millionths of an inch or better). A refractor, on the other hand, has two to four lenses, with a total of four to eight precisely curved surfaces to shape. And those lenses might have to be costly exotic glass formulations in order to provide satisfactory images. Similarly, a catadioptric scope has three or four curved optical elements to shape to a high degree of accuracy.

All that extra mirror and lens grinding and costly optical glass types in reflectors and catadioptrics doesn't come cheap. That makes the one-curved-mirror and one-flat-mirror optics of a reflector the least expensive to make, and hence the lowest in cost per inch of aperture.

For the same amount of money, therefore, you get more aperture with a reflector than with any other scope type. And, all other things being equal, the bigger the aperture, the better the performance. An 8" reflector typically costs 50% less than a quality 4" refractor, and little more than 3.5" catadioptric, but will have four times the light grasp of either.

For purely visual deep space observing, Dobsonian reflectors are very cost effective. With huge mirrors (up to 24" in diameter) to gather light,



and inexpensive wood mounts, these new Newtonians have brought about the age of the "light bucket" in amateur astronomy. The deep space observer on a budget has never had it so good.

The astrophotographer will also find that a large aperture equatorial mount reflector is excellent for recording deep space objects in detail, as well as visual observing. (Photography is not possible with an altazimuth Dobsonian reflector.)

The drawbacks of a reflector? There are five – diffraction, coma, size, weight, and added maintenance.

Light diffracted, or scattered, by a reflector's diagonal mirror can reduce image contrast in lunar and planetary observing, masking subtle surface details compared with an unobstructed refractor image. In addition, diffraction spikes on star images, due to the spider vanes that hold the diagonal mirror, can mask faint binary star components and smear globular cluster detail.

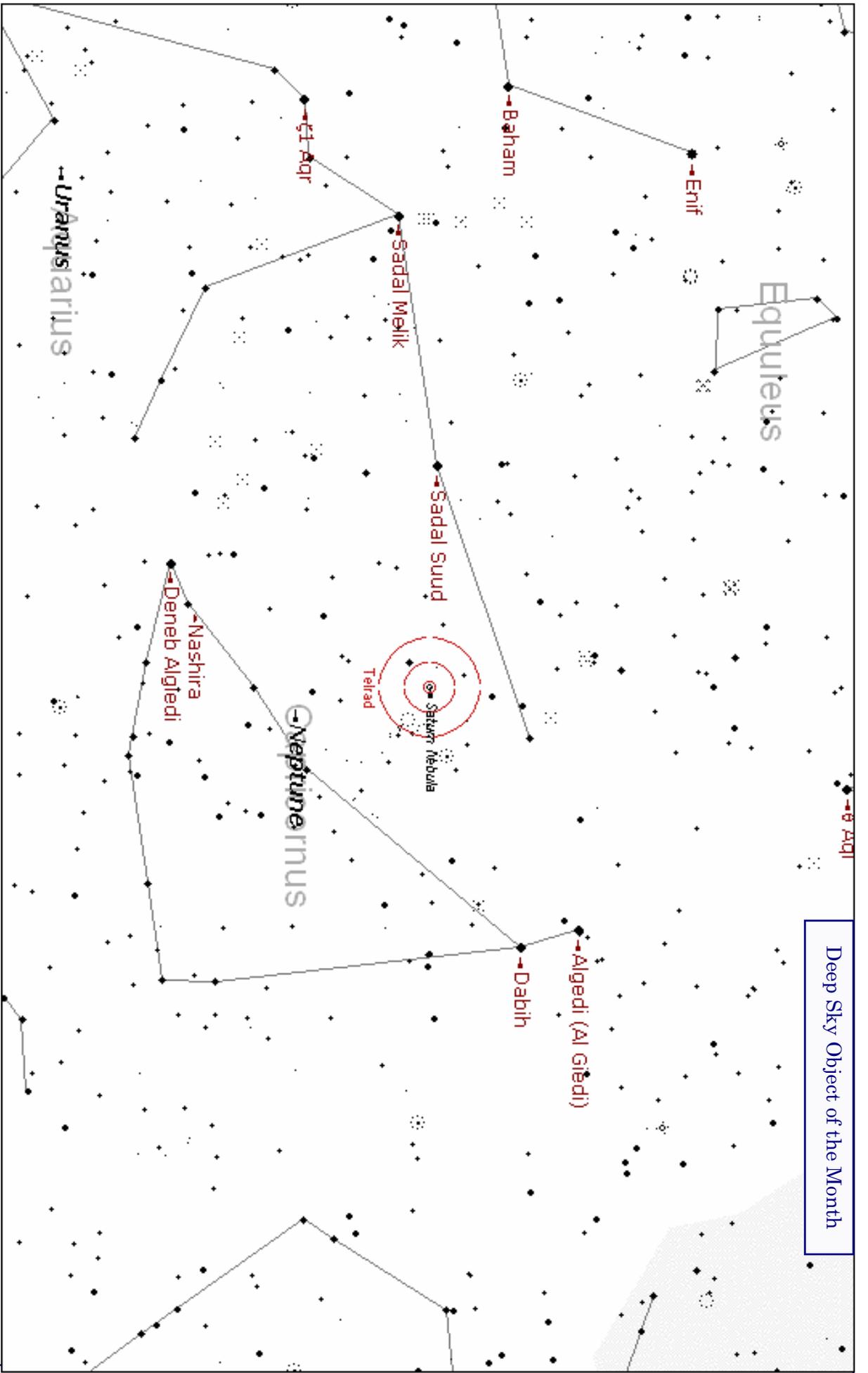
Because of the parabolic shape of their primary mirrors, all reflectors have coma – an optical defect in which stars appear triangular or wedge-shaped at the edge of the field. The faster the focal ratio, the smaller the coma-free field. This can be annoying in photos, where the entire

field is available for leisurely inspection. It is usually unobjectionable visually, however, since objects of interest are normally kept in the center of the field, where eyes and eyepieces are sharpest and coma is less of a factor.

Since an 8" reflector can weigh up to 50% more than an 8" catadioptric, and its 48" long optical tube is not the easiest thing in the world to manage in an apartment elevator, a large reflector usually requires the elbow room afforded by a suburban environment. Also, since city light pollution almost invariably compromises deep space performance by washing out faint nebulas and galaxies, dark sky observing sites are always recommended with medium to large aperture reflectors. Large aperture reflectors (12"-16" and larger) almost invariably require a minivan or SUV for transport to the dark sky sites they need to avoid being overwhelmed by the effects of city and suburban light pollution. They often also need some friends to help you with the setup of the bulky components. Owning and using a large reflector is more of a lifestyle than it is a hobby.

In addition, unlike refractors or catadioptric telescopes, a reflector requires frequent collimation or alignment of its optics, and its exposed mirrors mean that periodic cleaning will also be required. However, this maintenance typically averages only a few additional minutes of work per observing session.

These drawbacks aside, for serious visual observing of faint galaxies and nebulas, as well as for more-than-acceptable lunar and planetary observing, you'd be hard-pressed to equal, much less surpass, the excellent price-to-performance ratio of a Newtonian reflector. Reflectors have been a best-seller for over 300 years – and sheer value for the money is why.



Deep Sky Object of the Month

NGC 7009 (Saturn Nebula) Planetary Nebula in Aquarius

Magnitude: 8.3 Size: 28" Distance: 3,200 ly

RA 21h 04m 10.8s Dec -11° 21' 48" Magnitude of central star: 12.8

EVAC and Liability Waivers

If you have been following the club's activities lately, you no doubt have questions regarding the implementation of the liability waiver form. Liability is a term used to describe situations in which a person is legally obligated for damages to property or reputation and is therefore responsible to pay compensation for any damage incurred. In this context, damage is usually defined as physical harm that is caused to something, especially harm that inhibits proper operation or that affects aesthetics or appearances.

A liability waiver form allows for the *informed consent* by a participant. It can be an effective way for an organization, like an astronomy club, to ensure that it has performed due diligence in communicating the potential risks to which participants may be exposed by participating in an event. The waiver allows for a clear understanding that the organization does not assume any responsibility for the risks, dangers and hazards associated with the event. By signing a waiver the participant assumes the

risks and responsibilities relevant to the event. A liability waiver may also serve as an effective method of providing the notice and warning that may be necessary under some interpretation of law. Additionally, the waiver could discourage some claims or lawsuits from even being filed.



For our usage the liability waiver is intended to serve as a kind of contract. In effect, the contract provides that EVAC will recognize you as a participant in a club-sanctioned event if you waive some or all of your possible claims for damages. As with any contract, the waiver may be open to varying legal

interpretation. But the underlying concept is that the club wants to provide safe events for the membership while at the same time limiting its responsibility to those things within its direct control. The events to which the waiver applies are primarily star parties, but can include other club events. Star party attendees are expected to familiarize themselves with established rules pertaining to star party etiquette.

The often polemical society in which we all live mandates that the club establish such a provision to embody its intents with regards to sponsored events. Of course, everyone hopes that all of this is merely a legal formality that is never called into action.

Coming in September... our guest speaker will be our very own Jon Christensen. Jon will show us some of his recent astrophotos and tell us all about their creation.

Star Party Disclaimer

The East Valley Astronomy Club (EVAC) is not responsible for the property or liability of any star party participant, nor will the club be held liable for their actions or possessions. EVAC is not responsible for any vehicular damage, theft, or mechanical difficulties that may occur while attending a star party. EVAC strongly recommends adherence to the doctrine of 'safety in numbers' when it comes to remote observing sites. In the interest of safety it is recommended that you don't go to remote sites alone and that someone knows where you have gone each time you go out observing.

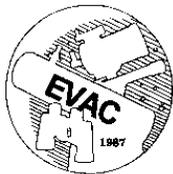
The Voyager is published monthly by the East Valley Astronomy Club and made available electronically (PDF) the first week of the month. Printed copies are available at the monthly meeting.

Please send your contributions, tips, suggestions and comments to the Editor (Peter Argenziano) at: news@eastvalleyastronomy.org

Contributions may be edited.

www.eastvalleyastronomy.org

Keep Looking Up!



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