#### September 2008

email me if you are

interested in serving

# THE OBSERVER

# East Valley Astronomy Club

#### From the Desk of the President by Claude Haynes

It was a dicey evening with the clouds the other weekend at Boyce Thompson. We were spared the rain that was pounding Gilbert and Apache Junction, but had to pick our spots to view anything. It was still a fun night with a good number of observers, some of them We were rewarded new. with a beautiful moonrise over the low hills about 11pm. I know that is an odd sentence in most cases, but after Don Wrigley's great presentation on lunar objects I have a renewed interest in lunar observation. I was able to snag one of the Moon books that David Douglass mentioned, and have had fun learning crater names. Perhaps I'll be motivated enough to try the EVAC lunar program. You too?

Fulvio Melia is now rescheduled for October, and Louis Poli will be speaking in September on the 1987 supernova in the Magellanic Cloud. October isn't all that far away, so be sure to save the 24th and 25th for the All Arizona Star Party. It is always a fun time to gather with friends and enjoy a dark weekend observing.

It is also time to start thinking about officer elections for next year. I and a number of other current officers

### The Backyard Astronomer Stars of the Summer Triangle by Bill Dellinges

The Summer Triangle hangs overhead at the beginning of September. This asterism connects the bright stars of Vega (Lyra), Altair (Aquila), and Deneb (Cygnus). Let's take a closer look at each of these luminaries, for each offers an interesting array of characteristics.

Vega (Lyra): Distance 25 light years; apparent magnitude 0.04; absolute magnitude 0.5 (its apparent magnitude at a distance of 32.6 light years or 10 parsecs); Spectral type A0 V; surface temperature 9,600K(16,000F); luminosity 54 (times the Sun); Diameter 3; Mass 2.5. The star's name is from the Arabic word(s) for "Falling or Swooping Eagle", as Arab astronomers saw Lyra as an eagle looking down on us from its high position in the sky. The Greeks before them saw a musical instrument, the lyre, placed in the sky after its owner, Orpheus, was torn to shreds by an unhappy audience. Vega is the brightest of three stars forming the Summer Triangle and a stunningly blue-white beacon in a telescope. Vega is the fifth brightest star in the night sky, just slightly dimmer than Arcturus. It's practically a twin to Sirius insofar as spectral class yet boasts a higher luminosity and absolute magnitude. A possible solution to this mystery is the combination of two facts: Vega's north pole points directly at us and the star has an unusually high rotational rate of only 12 hours (92% of its breakup speed). The fast rotation causes the star to be oblate showing more surface area to us.



#### **INSIDE THIS ISSUE:**

interested in serving	Galactic Theories of HVCs	3
I have had great fun as pres-	SeptemberGuest Speaker	5
your support and assistance	Classified Ads	6
during my term.	Meeting Maps	7
Happy skies Claude Haynes	Calendar	8
-	All-Arizona Star Party	8
A	Membership Form	9
	NASA's Space Place	11
	If It's Clear	12
	The Perseids 2008	13
	Deep Sky Object of the Month	14
Bill Dellinges	An August Starfest	15



### **Upcoming Events:**

Public Star Party - September 12 General Meeting - September 19 Local Star Party - September 20 Deep Sky Star Party - September 27

#### The Backyard Astronomer

Continued from page 1 Its north pole, being closer to the star's center, would be hotter than its equator. If Vega's north pole is indeed aimed at the Sun, it's interesting to realize the Sun would then be Vega's North Star (though only a magnitude 4.2 star)! Speaking of North Stars, Vega was our North Star about 13,000 years ago and will be again around 13,600 A.D. though not nearly as close (6 degrees) to the celestial pole as Polaris is now (0.73 degrees). Infrared studies in 1983 revealed a ring of dust around Vega and knots discovered in that ring in 2002 suggest the presence of a large planet. Perhaps this is the planet Jodie Foster visited in the movie "Contact" when she traveled to Vega.

*Altair* (Aquila): Distance 17 light years; apparent magnitude 0.77; absolute magnitude 2.2; spectral type A7 V; surface temperature 7,550K(13,131F); luminosity 9; diameter 1.5; mass 1.7.

Altair is from the Arabic phrase for "Flying Eagle or Vulture. Unlike the temporary change of Lyra from lyre to eagle (during the middle ages [Arabic period]) and back to lyre during the Renaissance, Aquila has always been seen as a bird, at least among western and middle eastern cultures. Like Vega, Altair is also a fast rotator. Depending on the tilt of its pole to us, its period may be only 6 to 10 hours, 100 times the solar equatorial rate. The resulting oblateness from this rapid spin causes the star's equatorial diameter to be 14% greater than its polar diameter. An eye catching aspect of Aquila is the two attendant stars either side of Altair. Alschain (mag. 3.7) is 2.7 degrees south and Tarazed (mag. 2.7) 2 degrees north of Altair. This threesome reminds me of Antares and its two nearby friends, Tau and Sigma Scorpii. Over the years I've come to see Altair as this three star group which

confirms in my mind that indeed, I've found Altair. Ditto for Antares. In Greek mythology, Aquila served Zeus as a go-fer and hit man. The bird killed off Ophiuchus when that doctor's expertise could revive the dead, depleting customers for Pluto in Hades. The eagle also brought Zeus the handsome young man Ganymede to serve him wine and water (as Aquarius). Another heart warming story related to Aquila is the punishment dealt to Prometheus for introducing fire to mortals. The displeased Zeus had him chained to rocks where Aquila would come to eat his liver everyday.

Ever see the classic 1956 sci-fi movie "The Forbidden Planet"? The story takes place on a planet in orbit around Altair.

**Deneb** (Cygnus): Distance – 1,400 light years; apparent magnitude 1.26; absolute magnitude -7.1; spectral type A2 Ia; surface temperature 8,400K(14,650F); luminosity 60,000; diameter 60; mass 25. Note: absolute magnitude and luminosity above may be higher due to Deneb's uncertain distance – see below. Deneb is from the Arabic word for "Tail" as the star represents the tail of the swan. The swan's stars are also known as the asterism "Northern Cross" for obvious reasons. In a famous Greek myth Phaethon begged his father Apollo, the Sun God, to drive his chariot across the sky (along with the blazing Sun it carries). Apollo reluctantly agreed but the horses sensed a rookie at the reins and ran amuck causing much damage. Zeus was forced to blast the lad out of the chariot with a lightning bolt and Phaethon plunged into the river Eridanus. His friend Cygnus had witnessed the event and tried unsuccessfully to save his friend by diving into the river after him. As Cygnus swam back and forth, his movements reminded Zeus of a swan and so turned Cygnus into a swan and placed him in the

heavens for his heroics.

It's interesting to note that while Deneb is apparently the faintest of the three Triangle stars, it's intrinsically the brightest. Note how much farther distant Deneb is than Altair or Vega. This is the reason for its being the dimmest of the three. To even the playing field, check the absolute magnitudes of the three. If they are placed 32.6 light years away, Vega, Altair and Deneb would have magnitudes of, respectively, +0.5, +2.2, and -7.1 (another Rigel!). It gets worse. Some estimates of Deneb's distance have it at between 2,100 and 2,600 light years. If this more remote figure is the case, then Deneb's luminosity is 160,000 times that of the Sun and its absolute magnitude becomes -8.1. This white supergiant star is one of the largest, brightest stars in the Galaxy. Size wise, it would just about fill Earth's orbit. If it were our sun, we'd need to be 250 astronomical units away from this blowtorch in order to

survive (more than 6 times Pluto's distance from the Sun). In one night, Deneb puts out as much energy as the Sun does in 100 years. If at Vega's distance of 25 light years, its apparent magnitude would be -7.7. If at Altair's distance of 17 light years, its apparent magnitude would be -9. If at Sirius' distance of 8.6 light years, Deneb would be as bright as the full moon, -12. What is the Sun's apparent magnitude at Deneb's conservative distance of 1,400 light years? An anemic +13.3. But don't feel sorry for the Sun's poor showing here. It's in good company. The vast majority of stars are dwarfs like the sun, many even smaller. The O,B, and A spectral type stars are relatively rare.

Nature tends to make smaller things in greater numbers than large things. Are there more ants on Earth than elephants? Yep.



#### Galactic Theories of HVCs and Observational Evidence by Henry De Jonge IV

This article is the third part on the subject by the author. The series will conclude in the October issue of The Observer.

In this part we will look at one of the two main categories of theories, (Galactic) of the origins of HVCs. We will examine the second main category of theories, (extragalactic) and some conclusions in the final section next month.

In general the origins of HVCs are still not fully understood. They fall generally into one of two categories-Galactic or extragalactic.

In the Galactic models HVCs are thought to have a "local" origin. One such theory is the "galactic fountain" model, which says that they are infalling debris that was originally thrown out of the Galaxy by supernova or stellar winds. In another Galactic model they are thought to be extensions of the outer spiral arms of the Galaxy, due to warpage of the disk.



Figure 1: This figure shows a tiny part of the FUSE spectrum of a distant quasar. The light from the quasar is used as a background source, and "dips" in the spectrum are caused by absorption of this background light by intervening gas. Since wavelength of light is related to velocity (through the Doppler formula), we show a wavelength scale on the top (in nanometers) and a velocity scale on the bottom (in kilometers per second). The absorption near zero velocity comes from hot ionized oxygen gas close to our sun (and thus with similar velocity to us). The dip near -200 kilometers per second (shown in blue above) is similar hot gas at the velocity of a "high velocity cloud" that is falling into our Galaxy. (Note: 200 km/sec = 720,000 km per hour, or almost half a million miles per hour) This hot, high velocity gas has been detected at over 50 directions looking through our galaxy's halo, indicating that this hot gas is widely distributed around our Galaxy.

The "galactic fountain" or "stream" theory maintains that HVCs would be infalling material that was originally ejected from our galaxy by supernova explosions or other stellar super wind processes. This theory was originated in the late 1980's. When galaxies merge or tidally interact, gas can be driven to the centers of galaxies and as a result become compressed leading to eras of starburst formation and other activity. This in turn would be an excellent source of pressure to drive out gas for the fountain model. Super winds and massive supernova were originally suggested as a model for AGN, so that they definitely have the power to produce such a fountain of material.

The halo of hot gas that surrounds the Milky Way is thought to have originated from this "galactic fountain effect" through such *Volume 22* Issue 9

ejections. The newly discovered corona around our galaxy may also be part of this model. As this material passes back through our galaxy's halo or corona, (gravitationally attracted to the main galaxy) it would heat up by the interaction of the ISM. If this were earlier material from our galaxy or its beginnings then it would be expected to have less heavy metal than the material already present in our galaxy. It seems to me that we could eventually tell some HVCs origins by their metal content as compared to supernova explosions.

These clouds would be created when supernova in groups of massive stars produce expanding bubbles of hot gas, (super winds) with extremely high temperatures. This hot gas is then pushed out above the disk of the galaxy where it cools off and begins to fall back into the galaxy as a sort of rain. Simulations predict that up to 10% of the galaxy's atomic hydrogen could be in the fountain at any one time. It also implies that galaxies with poor or no star formation would have either very small or nonexistence fountains. There is some evidence for this model in other galaxies. It has been recently announced that the clouds lying in line of sight with the Sculptor Group might be some type of fountain material from our galaxy. Obviously more galaxies and groups should be studied to bear out this model.

Some predictions for examination are that if galactic fountains produce the HVCs then we would expect to see that they would have mostly irregular morphology and motions. This would be due to the irregular production of supernova and stellar winds that would have driven the material first out of the galaxy. One would also expect that any relatively recent fountains would have a slightly higher metal content than earlier ones as later generation stars would have produced them. There seems to be much confusion as to the range and extent of metal compositions in HVCs as we have so little exact knowledge now although new evidence comes in regularly. Time may tell.



Figure 2: Here we see HVCs and their velocity distribution around our Galaxy

HVCs are also under consideration as high latitude extensions of the outer arms of our galaxy due to the warp of the disk or actually as separate arms themselves. This theory emerged about 30 years ago. The nearby passing of the MCs (or other Continued on page 4 Page 3

### Galactic Theories of HVCs and Observational Evidence

Continued from page 3

objects of sufficient mass) could have caused this warping or extension to take place.

This theory seems to have little support and is not very popular overall, as a recent paper suggested looking at Complex C, a likely candidate for this theory due to its location, (above the plane of the Milky Way) with respect to our galaxy near an outer arm. Even when numerical calculations were used with the evidence to try and generate a successful model it concluded that another large satellite dwarf galaxy, (still hidden?) would have been required to produce the evidence so far seen. Complex C may just be a "normal" extension of our galaxy, although there may be other methods by which such extensions can be made.

We will discuss the extragalactic theories in depth in the next installment and offer some conclusions.

### ROBERT BURNHAM JR. JUNE 16, 1931 - MARCH 20, 1993 Robert Burnham Jr. was employed by Lowell Observatory between 1958 and 1979. He participated in the Lowell Proper Motion Survey, helping to identify 7500 new nearby stars. He is best known to amateur astronomers as the author of the unparalleled, three-volume BURNHAM'S CELESTIAL HANDBOOK, An Observer's Guide to the Universe Beyond the Solar System. MAY THERE ALWAYS BE STARLIGHT ON THE PATH © International Bronze Ltd. Since 1936 sales@internationalbronze.net

Robert Burnam Jr. Memorial Update

As you no doubt remember, EVAC was serving as fiduciary agent for a drive to place a permanent memorial to Robert Burnham Jr on the grounds of Lowell Observatory in Flagstaff, Arizona.

Robert Burnham compiled his three volume Celestial Handbook while working at Lowell Observatory as part of the Stellar Proper Motion Survey.

This grassroots effort began on a Cloudy Nights discussion forum, and with the guidance of Burnham's sister, Viola Courtney, and her daughter Donna Cox, has grown to include numerous members of the astronomy community, including the honorary chairman of our fundraising committee Jack Horkheimer of the Miami Science Museum, better known for his PBS Star Gazer series. Village Voice editor Tony Ortega and Saguaro Astronomy Club VP Jennifer Polakis also played keyed roles in this project.

The collection process has ended and the memorial is being fabricated. An announcement will be made when the memorial has been installed at Lowell Observatory.

The photo above shows the plaque (18" wide and 12" tall), which will be set into a small boulder by Tom Gosch of Mountain Stone-works.

#### September Guest Speaker: Louis Poli

Louis Poli's talk is entitled Supernova SN1987A in the Large Magellanic Cloud.

The brightest supernova explosion in nearly 400 years was observed on 23 Feb 1987.

First observed by Ian Shelton at the Las Campas observatory in Chile, it was easily a naked eye object. During initial observations, the telescope photographic plates had actually overexposed.

It's brightness was in part, due to it's closeness to our space, as it was located in the Large Magellanic Cloud (LMC), a dwarf galaxy closely orbiting the Milky Way, and at the relatively very close distance of 170, 000 LY. One of the most important aspects of this event was its unique history of having been thoroughly observed and known, before it exploded.

This presentation will discuss the conditions that lead up to SN1987A, the unfolding of the event itself, and how the entire periodic chart of the elements are forged in these incredibly powerful ex-

### East Valley Astronomy Club is Your Club

This club, like any other organization, will cease to exist without leadership. We cannot continue to rely on the same group of people to keep alternating positions, just to keep the club operational. After all, that is not a club. The governing body of EVAC has been scaled down to the smallest number of positions in an effort to make it easier to keep the positions filled, but this doesn't seem to be working.

The club is governed, according to our constitution and bylaws, by a body of thirteen positions: four executive, four administrative, and five board members.

Historically, the Board positions have been the easiest to fill, the President and Treasurer slots have been the most difficult. No doubt this has to do with the responsibilities of the offices. I realize that everyone has busy schedules these days with many commitments. I further realize that volunteering to help run a club has a relatively low priority level and rightly so. But, without members stepping forward and volunteering, there can be no club.

So, what do we do if we don't have volunteers? Initially we would have to curtail some club functions or services. Surely no one wants to make such changes. But, if we as a club, have to take such

plosions. These elements compose all matter, and consequently the planets and life. Included



will be a discus-

sion of the exotic instrumentation whose important results for the first time, could be linked to a specific stellar explosion.

Illustrations and before/after pictures will be presented.

drastic measures to ensure our existence, there probably isn't a reason for existence. That is a scenario we would like to avoid if at all possible. Given that our membership numbers around 200, there is a need within the community for such an organization. The governing body represents slightly less than seven percent of the membership. Statistically that means that one in sixteen members should volunteer. Is that a realistic number? Only you can decide.

We welcome your comments. We welcome your suggestions. But mostly, we welcome your nominations!

Nominations shall be opened at the October general meeting and shall be publicized in the club newsletter and on the club website prior to the November general meeting. Nominations will be closed with the start of elections at the November general meeting. Officers and Board Members shall be elected by a simple majority of the General Assembly present at the November general meeting. Voting will be done by secret ballot. Single nominees for office may be affirmed to the position by a majority "yes" vote taken by a show of hands.

Thank you for giving consideration to getting involved in running this great club!



### **Classified Ads**

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# 2008 Meeting Dates

September 19 October 17 November 21 Holiday Party TBD



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 Road; on the southeast corner of Greenfield and Guadalupe Roads.

Meetings begin at 7:30 pm.

#### Visitors are always welcome!



# Southeast Regional Library 775 N. Greenfield Road Gilbert, Az. 85234

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, just south of US60.

Old Country Buffet 1855 S. Stapley Drive Mesa, Az. 85204

Likewise, all are invited to meet for coffee and more astro talk after the meeting at a restaurant to be determined. Our old haunt, Village Inn, has closed. Stay tuned for more info...

> Restaurant to be determined

### SEPTEMBER 2008

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	<b>19</b>	20
21	22	23	24	25	26	27
28	29	30				

**September 12** - Public Star Party at Riparian Preserve in Gilbert

**September 19** - General Meeting at Southeast Regional Library in Gilbert

**September 20** - Local Star Party at Boyce Thompson Arboretum & Semi-annual Friends of the Arboretum Night with Ice Cream Social

**September 27** - Deep Sky Star Party at Vekol Road

# All-Arizona Star Party October 24th - 25th Farnsworth Ranch

The observing field is located midway between Phoenix and Tucson, west of Interstate 10. The sky conditions are

rizona City is the site of the annual All-Arizona Star Party. Sunland Gin Road. Take this road south (a right turn if coming from Phoenix, a left turn if coming from Tucson). Note: this is the closest place for gas and food after leaving the interstate. The paved

reasonably good, perhaps slightly besting those of the Vekol Road site. The site offers the right combination of dark skies, good visibility and temperate nights that will encourage you to stay up well past your bedtime! There are the predictable glows from Phoenix and Tucson, but not much else to complain about. The nearby cotton fields make this another very dusty place, especially when stirred up by 50 to 100 arriving astronomers. Most of the flora is small creosote bushes, so horizons are very low. It is important to note that this site is on private land. This is a primitive



site - so if you need something you'll have to bring it with you! Porta-Potties will be available on site. Attendees are welcome to camp overnight at AASP.

To get to the site of the All-AZ Star Party: Take I-10 to Exit 200,

road continues for 17 miles, then it turns sharply to the west (right). Continue west for 4 miles. The main road turns south (left) just

past the "Silverbell Estates" sign. Continue south for 3 miles past the sign, the road veers off to the west (right). Continue on the road for another 5 miles, where it passes through a gate. Take an immediate left after the gate, and continue for 0.7 miles. Take the next right on a road that leads into an open field. Just follow the signs along the road into the observing field. If you must leave early, please park toward the north end of the field.

Likewise, if you are spending the night, park to the south.

Complete details here: http://evaconline.org/aasp.htm N 32° 27' 45.2" W 111° 43' 53.2"

#### East Valley Astronomy Club - 2008 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	$\Box$ Change of Address			
New Member Dues (du	es are prorated, select accordi	ng to the month you are joining the club):			
<b>\$30.00 Individual</b> Ja	anuary through March	S22.50 Individual April through June			
Solution \$35.00 Family Janua	ıry through March	Section 26.25 Family April through June			
	-h-thursen Contombou	<b>\$37.50 Individual</b> October through December			
□ \$15.00 Individual July through September		<b>\$43.75 Family</b> October through December			
□ \$17.50 Family July	through September	Includes dues for the following year			
Renewal (current members only):		Magazine Subscriptions (include renewal notices):			
□ \$30.00 Individual	<b>\$35.00 Family</b>	Sky & Telescope			
Name Badges:					
<b>\$10.00</b> Each (includin	g postage) Quantity.	Total amount enclosed:			
Name to imprint:		Please make check or money order payable to EVAC			
Payment was remitted s	eparately using PayPal D Pay onl:	ment was remitted separately using my financial institution's ine bill payment feature			
Name:		Phone:			
Iddress:					
Tity State Zin:		Publish email address on website			
		URL:			
How would you like to re Electronic delivery (PD	ceive your monthly newsletter F) Included with membership	? (choose one option):			
Areas of Interest (check a	all that apply):	Please describe your astronomy equipment:			
General Observing	Cosmology				
Lunar Observing	☐ Telescope Making				
□ Planetary Observing	□ Astrophotography				
Deep Sky Observing	$\Box$ Other				
Would you be interested in	attending a beginner's workshop?	Yes INO			
How did you discover East	Valley Astronomy Club?				
PO Box 2202	All members a	re required to have a liability release form (waiver) on file. Ple			
Mesa, AZ 85214- www.eastvallevastro	complete one a	and forward to the Treasurer with your membership application			
	or renewal.				

#### **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 I and my family 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.

Date



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

Please print name here

Please sign name here



### A Google for Satellites: Sensor Web 2.0

If you could see every satellite passing overhead each day, it would look like a chaotic meteor shower in slow motion.

Hundreds of satellites now swarm over the Earth in a spherical shell of high technology. Many of these satellites gaze at the planet's surface, gathering torrents of Map shows locations of wild fires

et's surface, gathering torrents of scientific data using a dizzying array of advanced sensors — an extraordinary record of our dynamic planet.

To help people tap into this resource, NASA researchers such as Daniel Mandl are developing a "Google for satellites," a web portal that would make requesting data from Earth-observing satellites almost as easy as typing a search into Google.

"You just click on it and it takes care of all the details for you across many sensors," Mandl explains.

Currently, most satellites are each controlled separately from the others, each one dauntingly complex to use. But starting with NASA's Earth Observing-1 (EO-1) satellite, part of the agency's New Millennium Program,



sages to satellites instructing them to gather the needed data, and then download and crunch that raw data to produce easy-to-read maps.

For example, during the recent crisis in Myanmar (Burma) caused

by Cyclone Nargis, an experimental gathering of data was triggered through Sensor Web 2.0 using a variety of NASA satellites including EO-1. "One thing we might wish to map is the salinity of flood waters in order to help rescue workers plan their relief efforts," Mandl says. If the floodwater in an area was salty, aid workers would need to bring in bottled water, but if flood water was fresh, water purifiers would suffice. An early and correct decision could save lives.

Thus far, Mandl and his team have expanded Sensor Web 2.0 beyond EO-1 to include three other satellites and an unmanned aircraft. He hopes to double the number of satellites in the network every 18 months, eventually weaving the jumble of satellites circling overhead into a web of sensors with unprecedented power to observe and understand our ever-changing planet.

cy's New Millennium Program, A "Google for satellites" type of web portal will allow users to request real-time Mandl and his team are building data from Earth observing satellites. a prototype that stitches these sat-

ellites together into a seamless, easy-to-use network called "Sensor Web 2.0."

The vision is to simply enter a location anywhere on Earth into the website's search field along with the desired information types — wildfire maps, vegetation types, floodwater salinity, oil spill extent — and software written by the team goes to work.

"Not only will it find the best sensor, but with proper access rights, you could actually trigger a satellite to take an image in the area of interest," Mandl says. Within hours, the software will send mesTo learn more about the EO-1 sensor web initiatives, go to http:// eo1.gsfc.nasa.gov/new/extended/sensorWeb/sensorWeb.html. Kids (and grown-ups) can get an idea of the resolution of EO-1's Hyperion Imager and how it can distinguish among species of trees from space at http://spaceplace.nasa.gov/en/kids/eo1\_1.shtml .

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

#### If It's Clear... by Fulton Wright, Jr. Prescott Astronomy Club

September 2008

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.

September is a good month for finding Uranus (mag 6) and Neptune (mag 8). They are near opposition and so are up all night. You will have least interference from the Moon during the last 10 days of the month. See Sky & Telescope, September 2008, p. 63 for finder charts. 2008, p. 65 for details.

On Friday, September 12, after 8 PM, you can get a good look at the western (left-hand) part of the Moon. Libration tips that part toward us. The following day is also good.

On Sunday, September 14, at 6:17 PM (19 minutes before sunset) the full Moon rises, spoiling any chance of deep sky observing for the whole night. You can also see Io move from in front of Jupiter at 8:08 PM and Io's shadow on Jupiter until 9:21 PM.

On Tuesday, September 16, you can see Ganymede's shadow on

Monday, On September 1. about 7:15 PM, you may be able to see 4 solar objects system together. With binoculars look barely above the west horizon. Venus is the bright one (mag -4). To the left is Mercury (mag 0). Up and to the left is Mars (mag 2). Down and to the left is the very thin crescent Moon. This will be a difficult observation because



Double shadow transit on Jupiter

the objects are so low and the sky is still pretty bright. The three planets stay close for the next 3 weeks.

On Monday, September 1, You can see some events with Jupiter's moons. At 8:19 PM Europa moves from in front of the planet. (Its shadow is still on the planet.) About 9:45 Ganymede and Io pass close to each other. At 10:30 PM Europa's shadow finally leaves the planet.

On Saturday, September 6, it is first quarter phase of the Moon, so you will probably be happier observing it than deep sky objects.

On Thursday, September 11, at 11:22 PM, you might see the asteroid 9 Metis (mag 10) occult a 6th magnitude star. This is the best asteroid occultation of the year. See Sky and Telescope, September 11:16 PM Io's shadow leaves Jupiter.

(While all this is happening, the great red spot is rotating across the face of the planet.)

On Tuesday, September 23, from 7:33 PM to 9:44 PM, you might be able to see Ganymede and Callisto in front of Jupiter. This is not an easy observation. The satellites are nearly the same brightness as the planet except when they are near the slightly darkened limb.

On Sunday, September 28, it is new Moon and you can hunt for faint fuzzies all night.

10:55 PM. On Sunday, September 21, the

from

till

Jupiter

7:39 PM

Moon is at last quarter phase and doesn't rise till 11:01 PM.

You can also watch a complete passage of Io in front of Jupiter.

7:46 PM Io moves in front of Jupiter.

9:03 PM Io's shadow falls on Jupiter.

10:01 PM Io moves from in front of Jupiter.

# The Perseids 2008 by Randy Peterson

Frank Pino was gracious enough to host participants from EVAC to watch the Perseid's in his backyard in Queen Creek. The Perseid's are one of the best meteor showers each year. Having a dark observing location is important, as trying to watch the meteor shower from the city is an exercise in futility. The light pollution and less-than-perfectly-clear air conspire to eliminate all but the very brightest meteors. The Milky Way is readily visible from

which is one of the reasons we waited until 1:30 to start. The other reason to wait until after midnight is due to the Earth's orientation during it's rotation – after midnight it begins to face towards the "forward" direction in our orbit around the Sun.

We observed starting about 1:40 am, but the meteors were rather sporadic for awhile, and we did not record them at first. We



A multicolored Perseid meteor striking the sky just to the right from Milky Way. Image courtesy of Mila Zinkova.

Frank's home, which is a good way to measure an acceptable observing location.

No optical equipment is necessary to observe a meteor shower. A lounge chair is the primary piece of equipment to facilitate comfortable observing. I must confess to applying mosquito repellent, which is always in my arsenal during the summer months. Other niceties was coffee (furnished by Frank!), a red flashlight, and warm clothing! It actually felt quite cool in Queen Creek as it got closer to sunrise.

Besides Frank, Julie and Wayne Thomas were in attendance. Mark Hannah was able to stop by for a few hours, and of course me. Not a big turnout, but a Tuesday morning from 1:30 am till 4:30 pm is likely not the best time for a working person to forgo sleep to see a handful of meteors. Still, we had room for a number of additional attendees.

The Moon was setting as we gathered together the morning of August 12. Having no Moon in the sky enhances the viewing, *Volume 22 Issue 9* 

started counting meteors starting at 2:30 am MST. We tallied the count every half-hour. Following are our counts:

2:30 – 3:00 am 17 3:00 – 3:30 am 19 3:30 – 4:00 am 18 4:00 – 4:30 am 19

The consistency surprised me, averaging around 36 meteor trail sightings per hour. The predicted maximum was from 4:00 am till around 7:00 am. Of course, sunrise prevented us from observing later than about 4:30 am, as astronomical twilight started at about 4:17 am. But I expected the number of meteors seen to increase as we passed the 4:00 hour. One factor that undoubtedly contributed to a lower count was the cloud cover which was present during most of the morning. It appeared that we had a break in the clouds above our heads while we observed, but I suspect that there was a light layer of cirrus that hampered our efforts.

Still, we had a good time, good comraderie, and good coffee!



# An August Starfest by Peter Argenziano

Beep, beep, beep... As I reach over to turn off the alarm in the pre-dawn darkness on August 1<sup>st.</sup> I contemplate another few hours of sleep. After all, the clock indicates it is 3:45 am. But, I am encouraged to rise and shine because I am going to take my 25" Obsession telescope out for a couple of nights worth of observing. It's not often we desert dwellers can plan such an activity at the beginning of August.

How, you may ask, will I manage this feat? By driving to the western edge of the monsoonal activity in southern California's Cuyamaca Mountains, about an hour east of San Diego. It's there that I'll be attending the innaugural Julian Starfest.

This event, the brainchild of three local astronomers in association with the Julian Merchants Association and the Julian Chamber of Commerce, was held August 1, 2, and 3 at Menghini Winery. Now there's a unique twist - a star party at a winery.

The event featured a large, if not completely level, observing field situated between the winery and an apple orchard. I rated the site as being darker than Vekol Road but not as dark as Hovatter. My Sky Quality Meter rated it at 21.15 mag/arc-second<sup>2</sup>. There was also a

public-viewing scope corral at the front of the field, along with a vendor display area. Guest speakers, including our own Tom Polakis, gave presentations inside a big tent. And there were optional tours of Palomar Observatory on Saturday and Sunday.

It's always more fun to observe with friends, and I was joined on this trip by Randy Peterson. Also representing the Valley at the Starfest: Jennifer and Tom Polakis, Pat and Joe Goss, and Chris Hanrahan.

Randy and I had loaded my trailer on Thursday evening, so by 4:15 am on Friday I was on the road. After picking up Randy,

we made it through Phoenix, and any rush-hour traffic, by 5:30. California, here we come!

With little I-10 traffic and a couple of pit stops, we arrived at our destination around 11:00 am. We were only the sixth vehicle onto the observing field, so we chose a level spot along the western edge of the orchard that provided a good view to the south. We saved a space next to us for our friends.

Although we were at about 4,125' elevation, the temperature was still in the low 90s - hot, but not as bad as the triple digits we left behind. Needless to say, we took our time unloading and setting up. My mid-afternoon we had both our camp and telescopes set up. We grabbed our chairs and retreated to the shade beneath our canopy. Later, we walked around the field, talking to other early arrivers as well as the event organizers.

To my surprise the vendors weren't setting up on Friday; this area would mainly be operated on Saturday. There were exceptions: the TeleVue rep set up a row of refractors which he manned until the wee hours each night. On Saturday night (around 2:30 am) Chris and I enjoyed the panoramic views served up by a TV-102 paired with a 17mm Nagler. Sweet. Looking to escape the afternoon heat (likely excuse) I meandered over to the winery and went inside, conveniently ignoring the 'closed' sign in the window. After striking up a conversation with the owners, I was soon sampling the fruits of their labors. Of particular note were the Sauvignon Blanc and the Riesling.

As darkness approached the attendees readied themselves and their equipment. We were treated to a clear sky for most of the night. Unfortunately, after such an early start I was ready to crawl into my sleeping bag around 1:30 am. I'm sure the wine had nothing to do with it.

Saturday saw a steady progression of arrivals throughout the day. The vendor area was in full swing. Menghini set up a wine bar. Stone Brewing set up a beer garden. The local Lions Club set up a barbecue. The speaker's tent swung into action. All in all, a very enjoyable day.

Twilight saw lots of public visitors. The entire town was invited and people ventured out from southern California to look through telescopes or just set up a tent amongst them.

A little early cloudiness cleared up giving way to skies that re-

mained decent at least until I crashed around 4:00am. This was indeed a rare treat to get in a couple of nights worth of summertime observing. And, it was especially nice to get this opportunity just prior to selling my big Obsession to the Grand Traverse Astronomical Society.

As star parties go, this one was very well done - especially considering that it was their first time. The organizers are to be (and were) commended.

The Julian Starfest, as with any event, could stand to be improved. I got the feeling that the planners were unsure if they

wanted an expo atmosphere (like RTMC) or a star party (like TSP). By combining the two, many attendees weren't observers. Therefore they were ignorant of nighttime etiquette. There were a few white flashlights and car dome lights each night. One guy got into his car no fewer than 15 times on Saturday, bathing the area in white light each time.

It seemed that many of the observers lacked any experience attending a star party. There were occasional white lights and unshielded laptops. But, more surprising than the lighting faux pas were the almost complete absence of any shouts of "Enough with the light", or words to that effect. I think they would do well to stress proper etiquette next year.

Another opportunity for improvement would be better coordination of the schedule for the vendor area and associated amenities. These activities should occur each day of the event.

While there were three 25" dobs on the field, I attracted some attention. I was interviewed by reporters from two newspapers and a TV station. Here's a link to the broadcast on San Diego's channel 10: http://www.10news.com/video/17102921/index.html

The 2009 Julian Starfest is already scheduled for August 14 - 16.



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Zeep Looking Up!

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