

THE OBSERVER

East Valley Astronomy Club

From the Desk of the President by Steven Aggas

On June 12th 2011, I will host a kick-off meeting entitled Citizen Scientist. The purpose, on behalf of the Riparian Institute, is to begin to build a group of dedicated individuals to become mentors to others in the community surrounding the Gilbert Rotary Centennial Observatory. This is done in order to better utilize the existing telescope and gain meaningful scientific data, possibly worthy of publication.

Monthly meetings are open to EVAC and Riparian members, with the intent of mentoring the General Public who are like-minded.

Astronomical photometry, spectroscopy, and astrometry, as well as occultations, are ways to measure celestial objects. These are the next steps beyond simply observing some-

thing visually through the telescope. The four topics will be the focus of our scientific endeavors.

For those interested and wondering what is involved: **occultations** involve the monitoring of a star when an object is predicted to pass in front of it causing it to blink out momentarily and helps to refine the objects orbit; **photometry** is measuring an object's intensity over time; **spectroscopy** is measuring the object's electromagnetic radiation spectrum; and **astrometry** is measuring the object's position.

These aspects of astronomy, as we begin our scientific journey moving towards 'knowing' something, are what we will define in terms of numbers about the objects studied.

"When you can measure what you are
Continued on page 12

The Backyard Astronomer

Pictorial Star Atlases 1605-1835 by Bill Dellinges

There was a period of about 250 years when star charts reached their pinnacle in the ornate depiction of constellation figures superimposed over the charts' stars. It was a classic, golden era of astronomical cartography. While the earliest star charts date to about 345 BC (Eudoxus' Phaenomena), they were either celestial globes, wood cuttings or mere tables listing positions of stars.

The first book of printed maps was produced by Albrecht Durer in 1515 A.D. A flood of celestial maps would follow. They had two things in common. Interesting illustrations of mythological characters, creatures and objects were superimposed over not so accurate star positions. The writer

researched about 22 sky maps of this genre and will highlight what he believes to be the five most popular or well known (There were considerably more than 22 atlases produced during that time period).

1603 Uranometria (Measurement of the Heavens), Johann Bayer (1572-1625). This was a watershed publication. The German lawyer and amateur astronomer borrowed star positions previously determined by Tycho Brahe and produced the most accurate star maps up to that time.

Bayer contracted Alexander Mair to produce 11"x15" copper plates used for the printing, which were far superior to earlier wood engravings insofar as constellation detail and position of

UPCOMING EVENTS:

- Deep Sky Observing Night - June 4*
- Public Star Party - June 10*
- General Meeting - June 17*
- Local Star Party - June 25*

Check out all of the upcoming club events in the Calendars on page 8

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The Backyard Astronomer

Continued from page 1 the stars. In addition to names of the brightest stars, Bayer introduced the Greek lower case letter assignment to the stars still used today (but not in order of decreasing brightness as is commonly thought). There is one odd thing about Uranometria. In the past, on celestial globes, both the star patterns and constellations were always mirror reversed, as though seen from someone outside the globe (which represented the celestial sphere). On his maps, Bayer occasionally features a constellation reversed, the back facing

the most accurate up to that time and all the constellation figures were drawn as though seen from Earth and not backwards or "external" as on celestial globes. For the first time, the grid was based on an equatorial system (lines of right ascension and declination) rather than previous atlases' ecliptic system, though the latter was still included as faint lines in the background in a nod to tradition. He did not create the famous Flamsteed Numbers seen today on star charts. They were added later by J.J. Lalande in his 1783 field

edition of Flamsteed's atlas. They do not appear on any of Flamsteed's original maps. (See his maps in S&T magazine, July 2006, p.30)

1801 Uranographia (Writing of Heavens), Johann Bode (1747-1826). The German astronomer and Director of the Berlin Observatory produced what was then considered the most comprehensive atlas to date insofar as the most constellations - over 100, and most stars - 17,000 to magnitude 8. This was the first atlas to feature stars fainter than the naked eye could see. With so many stars, Bode drew boundary lines



around the constellations to avoid confusion – another first. Additionally, 2,500 Herschel objects were plotted. The charts were the largest produced so far, 20.6"x28.7". Previous star maps had used a trapezoidal style grid system but Bode used a conic system recommended by fellow astronomer Joseph Lalande to avoid distortion of the constellations. The equatorial grid (rather than the ecliptic) introduced by Flamsteed was maintained. Bode also kept the traditional ecliptic grid in the background, as did Flamsteed. (Many of Bode's maps are featured in Star Tales by Ian Ridpath, Universe Books, 1988).

the viewer, as he does with Orion. But the stars are still seen as viewed from Earth. Thus, Betelgeuse on his map is the left arm of Orion. One of Bayer's 51 charts reflects the twelve new southern constellations created by Pieter Keyser and Fredrick De Houtman in 1598. (To see examples of his maps, see S&T magazine Sept. 2003, p. 38)

1729 Atlas Coelestis (Celestial Atlas), John Flamsteed (1646-1719). Primarily a self-taught astronomer, Flamsteed convinced King Charles II that the problem of determining longitude could be solved through astronomical calculations based on star positions and the moon. As a result, Greenwich Royal Observatory was established in 1675 with Flamsteed its first Astronomer Royal. During the next 43 years, he cataloged the positions of 3,000 stars assisted by the newly invented pendulum clock. The star catalog was published posthumously in 1725 as *Historia Coelestis Britannica*, followed by his *Atlas Coelestis* in 1729. The star positions were

1822 A Celestial Atlas, Alexander Jamieson. A non professional astronomer and writer, Jamieson published this atlas containing 30 celestial charts, astronomical exercises and star catalog in a convenient book form that proved to be very popular. It was easy to hold and read compared to earlier atlases that were large and unwieldy.

Continued on page 3

The Backyard Astronomer

Continued from page 2 Stars were relatively sparse as only naked eye stars were included. However, a large number of constellations were featured as their numbers were growing and would have no technical limit until restricted by the IAU in 1922. A fine book to examine Jamieson's charts is Tirion's *Men and Monsters* (1989), where Jamieson's charts are used exclusively.

1833 *The Geography of the Heavens*, Elijah H. Burritt (1794-1838). An American finally produced a popular sky atlas.

Burritt showed early skills for astronomy and mathematics, became a teacher and saw a need for a good astronomy textbook. So he wrote one. It was accompanied by a star atlas with 6 maps, 2 for the pole areas and 4 covering the mid latitudes. The maps only included naked eye stars and the chart illustrations borrowed heavily from Jamieson's work. Burritt drew the constellations and supervised the steel engravings. The atlas was affordable and thus helped to popularize astronomy in America. At one point 300,000 copies

were in circulation with several editions issued from 1833 to 1856. Burritt died from yellow fever at age 44 in Houston, Texas. Accompanying this article is a sample of Burritt's work. While each of the atlases discussed here have their own personality and features, to the untrained eye many of them

might seem similar. In that regard, this Burritt chart "speaks" for them all.

The golden age of pictorial star atlases peaked during the mid 19th century. Astronomy had by this time advanced to such a serious scientific level that star charts with mythological creatures became unnecessary and anachronistic. Professional and amateur astronomers simply required accurate star charts, not artwork. A few pictorial atlases after Burritt still soldiered on, like James Middleton's



1843 *Celestial Atlas* and Camille Flammarion's 1865 *Atlas Celeste*, but the writing on the wall was clear. The age of these ornate, intriguing atlases was over. (Note: One can also examine star maps of the genre by plunging into the internet).

Editor's note:

With the June installment of The Backyard Astronomer, Bill Dellinges has decided to take a break from his regular article contributions to the EVAC newsletter. Since 1994 Bill has been published in the club's newsletter 116 times. He has been a valued monthly contributor for the past seven years.

Please join me in congratulating Bill on this impressive accomplishment, while extending our very sincere appreciation for sharing his knowledge and insight with us all these years.

Bill will occasionally submit an article chronicling some of his astronomical adventures.

Thank You, Bill !



NASA Concludes Attempts To Contact Mars Rover Spirit

NASA is ending attempts to regain contact with the long-lived Mars Exploration Rover Spirit, which last communicated on March 22, 2010.

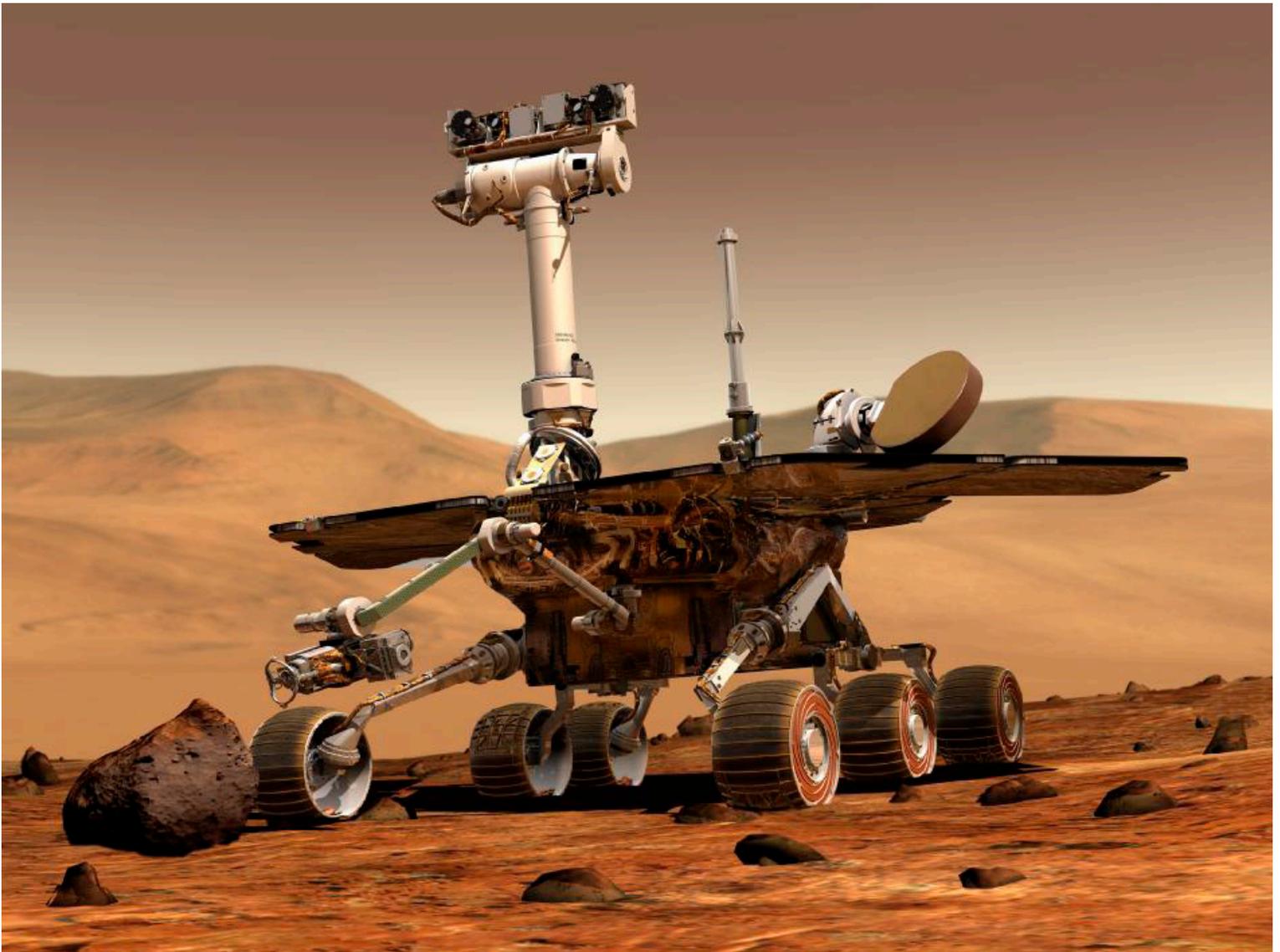
A transmission that ended on Wednesday, May 25, will be the last in a series of attempts. Extensive communications activities during the past 10 months also have explored the possibility that Spirit might reawaken as the solar energy available to it increased after a stressful Martian winter without much sunlight. With inadequate energy to run its survival heaters, the rover likely experienced colder internal temperatures last year than in any of its prior six years on Mars. Many critical components and connections would have been susceptible to damage from the cold.

Engineers' assessments in recent months have shown a very low probability for recovering communications with Spirit. Communications assets that have been used by the Spirit mission in the past, including NASA's Deep Space Network

of antennas on Earth, plus two NASA Mars orbiters that can relay communications, now are needed to prepare for NASA's Mars Science Laboratory mission. MSL is scheduled to launch later this year.

"We're now transitioning assets to support the November launch of our next generation Mars rover, Curiosity," said Dave Lavery, program executive for solar system exploration. "However, while we no longer believe there is a realistic probability of hearing from Spirit, the Deep Space Network may occasionally listen for any faint signals when the schedule permits."

Spirit landed on Mars on January 3, 2004, for a mission designed to last three months. After accomplishing its prime-mission goals, Spirit worked to accomplish additional objectives. Its twin, Opportunity, continues active exploration of Mars.



An artist's concept portrays a NASA Mars Exploration Rover on the surface of Mars. Two rovers have been built for 2003 launches and January 2004 arrival at two sites on Mars. Each rover has the mobility and toolkit to function as a robotic geologist.

Image credit: NASA/JPL/Cornell University

June Guest Speaker: Claude Haynes

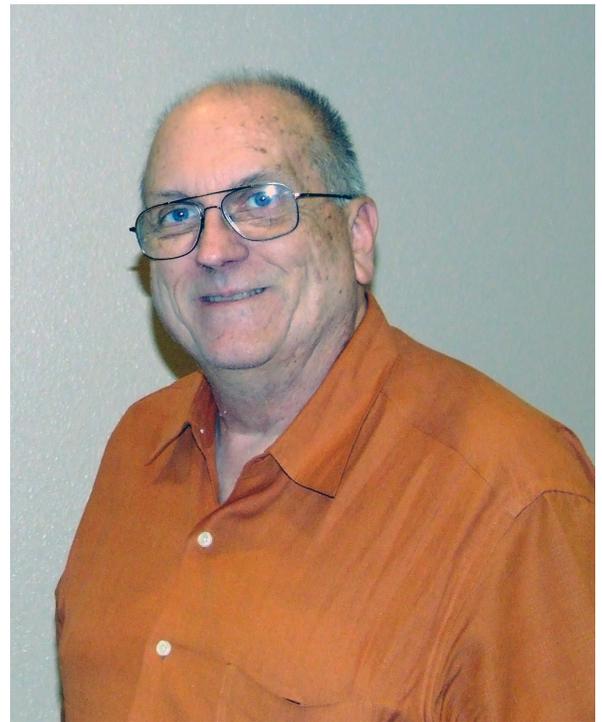
Claude Haynes is a past president of the East Valley Astronomy Club and is active in public astronomy outreach.

He arranges for the SkyWatch public lectures the second Friday of each month at the Gilbert Library (held in conjunction with the EVAC public star party), and participates in many school star parties during the year.

His favorite viewers are his two granddaughters who enjoy looking through "Poppa's scope".

Claude is employed as a database and systems manager at Pearson Education.

Mr. Haynes' presentation is entitled *Claude's Excellent Adventure: Arecibo Observatory*.



The radio telescope at Arecibo Observatory in Arecibo, Puerto Rico, the largest single radio telescope antenna in the world. It is a dish antenna 305 meters (1000 feet) in diameter, built into a natural bowl in the landscape. The radio waves reflect off the dish and are focused on receiving antennas on the feed platform, suspended 150 m above the dish by three cables from concrete towers. The dish is made of 38,778 perforated aluminum panels, supported by a mesh of cables. Since the dish itself is not moveable, the antenna is aimed at different points in the sky by moving the feed antenna along a 93 m track attached to the bottom of the feed platform. To give less error with this moving feed, the shape of the dish surface is spherical, not parabolic as most dish antennas are. The antenna covers the frequency range of ~300 MHz to 10 GHz and has a gain of about 10 million, or 70 dBi, at 2.8 GHz. May of 2008 marked a live demonstration of their first four-continent, real-time, electronic Very Long Baseline Interferometry (e-VLBI) observations. Image courtesy of NOAA.

○ **NEW MOON ON JUNE 1 AT 14:02**

◐ **FIRST QUARTER MOON ON JUNE 8 AT 19:10**

● **FULL MOON ON JUNE 15 AT 13:14**

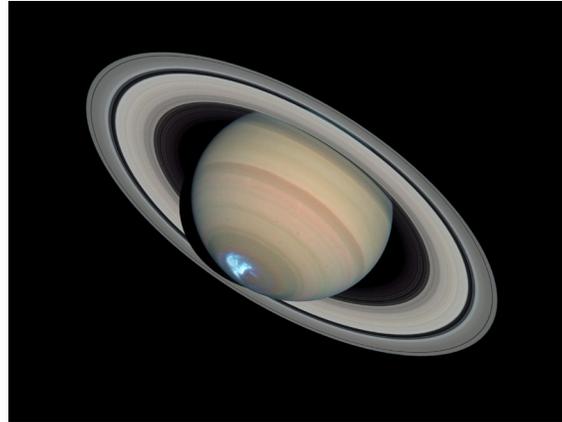
◑ **LAST QUARTER MOON ON JUNE 23 AT 04:48**

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Upcoming Meetings

June 17
 July 15
 August 19
 September 16
 October 21
 November 18

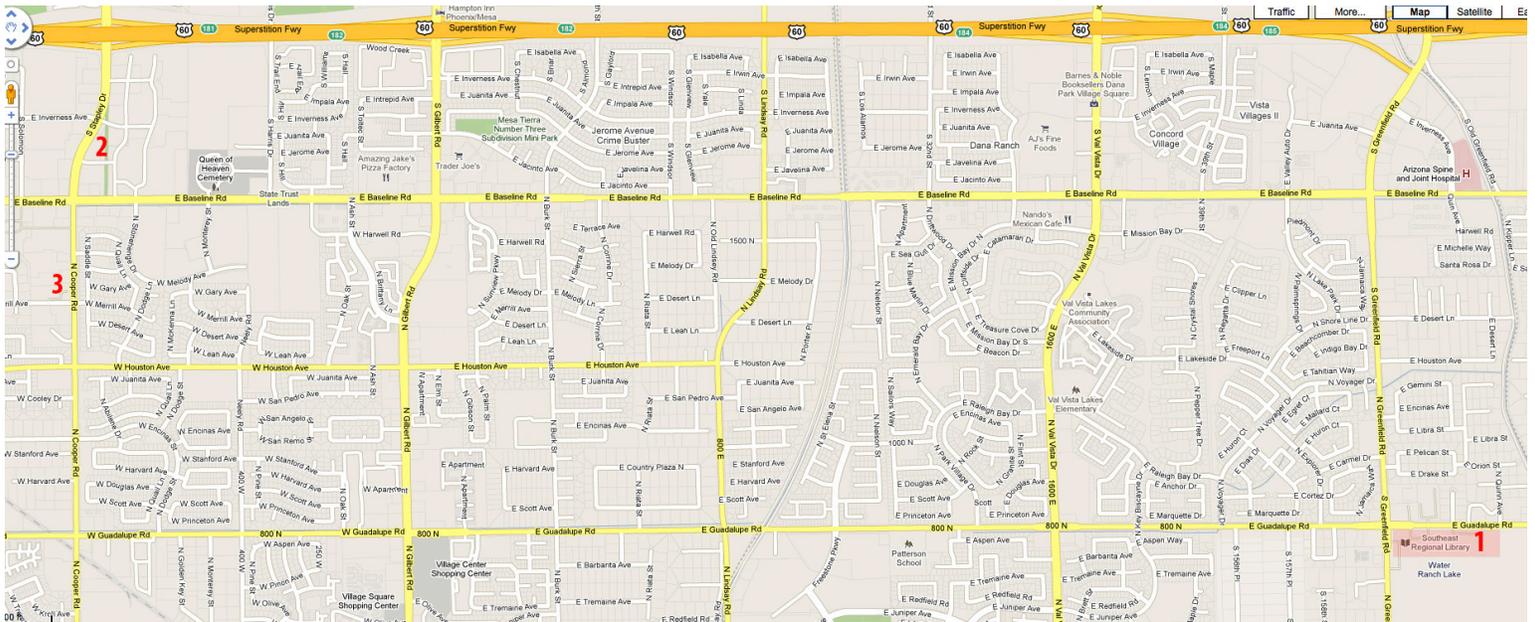
The monthly general meeting is your chance to find out what other club members are up to, learn about upcoming club events and listen to presentations by professional and well-known amateur astronomers.

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.

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.

Likewise, all are invited to meet for coffee and more astro talk after the meeting at Denny's on Cooper (Stapley), between Baseline and Guadalupe Roads.

Visitors are always welcome!



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

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



3 Denny's
 1368 N. Cooper
 Gilbert, Az. 85233



JUNE 2011

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
19	20	21	22	23	24	25
26	27	28	29	30		

June 4 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

June 10 - Public Star Party & SkyWatch at Riparian Preserve

June 17 - General Meeting at SE Library

June 18-25 - Grand Canyon Star Party

June 25 - Local Star Party at Boyce Thompson

JULY 2011

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	19	20	21	22	23
24	25	26	27	28	29	30
31						

July 2 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

July 8 - Public Star Party & SkyWatch at Riparian Preserve

July 15 - General Meeting at SE Library

July 23 - Local Star Party at Boyce Thompson Arboretum

July 30 - Deep Sky Observing Night. Head out to your favorite dark sky site and observe!

East Valley Astronomy Club -- 2011 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 (dues are prorated, select according to the month you are joining the club):

- | | |
|---|---|
| <input type="checkbox"/> \$30.00 Individual January through March | <input type="checkbox"/> \$22.50 Individual April through June |
| <input type="checkbox"/> \$35.00 Family January through March | <input type="checkbox"/> \$26.25 Family April through June |
| <input type="checkbox"/> \$15.00 Individual July through September | <input type="checkbox"/> \$37.50 Individual October through December |
| <input type="checkbox"/> \$17.50 Family July through September | <input type="checkbox"/> \$43.75 Family October through December |
- Includes dues for the following year*

Renewal (current members only):

- \$30.00 Individual**
 \$35.00 Family

Name Badges:

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

Name to imprint: _____

Total amount enclosed:

Please make check or money order payable to EVAC

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 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) *Included with membership*
 US Mail **Please add \$10 to the total payment**

Areas of Interest (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> General Observing | <input type="checkbox"/> Cosmology |
| <input type="checkbox"/> Lunar Observing | <input type="checkbox"/> Telescope Making |
| <input type="checkbox"/> Planetary Observing | <input type="checkbox"/> Astrophotography |
| <input type="checkbox"/> Deep Sky Observing | <input type="checkbox"/> 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.evaonline.org

All members are required to have a liability release form (waiver) on file. Please complete one 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.

Please print name here

Date

Please sign name here

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

Milky Way Safari

by Dauna Coulter & Dr. Tony Phillips

Safari, anyone? Citizen scientists are invited to join a hunt through the galaxy. As a volunteer for Zooniverse's Milky Way Project, you'll track down exotic creatures like mysterious gas bubbles, twisted green knots of dust and gas, and the notorious "red fuzzies."

"The project began about four months ago," says astrophysicist Robert Simpson of Oxford University. "Already, more than 18,000 people are scouting the Milky Way for these quarry."

The volunteers have been scrutinizing infrared images of the Milky Way's inner regions gathered by NASA's Spitzer Space Telescope. Spitzer's high resolution in infrared helps it pierce the cloaking haze of interstellar gas and dust, revealing strange and beautiful structures invisible to conventional telescopes. The Milky Way Project is helping astronomers catalogue these intriguing features, map our galaxy, and plan future research.

"Participants use drawing tools to flag the objects," explains Simpson. "So far they've made over a million drawings and classified over 300,000 images."

Scientists are especially interested in bubble-like objects believed to represent areas of active star formation. "Every bubble signifies hundreds to thousands of young, hot stars. Our volunteers have circled almost 300,000 bubble candidates, and counting," he says.

Humans are better at this than computers. Computer searches turn up only the objects precisely defined in a program, missing the ones that don't fit a specified mold. A computer would, for example, overlook partial bubbles and those that are skewed into unusual shapes.

"People are more flexible. They tend to pick out patterns

computers don't pick up and find things that just look interesting. They're less precise, but very complementary to computer searches, making it less likely we'll miss structures that deserve a closer look. And just the sheer numbers of eyes on the prize mean more comprehensive coverage."

Along the way the project scientists distill the volunteers' data to eliminate repetitive finds (such as different people

spotting the same bubbles) and other distortions.

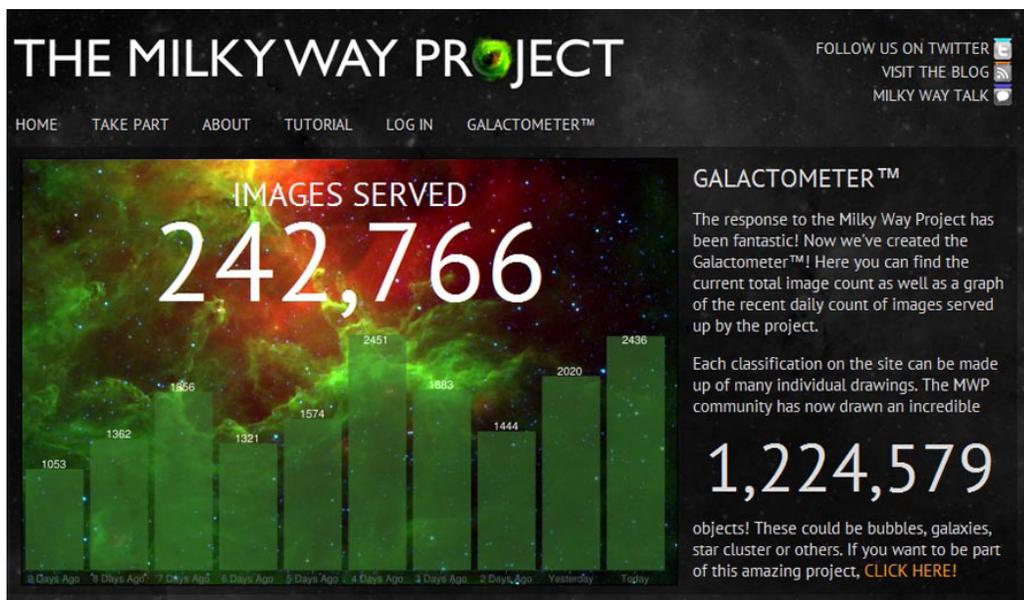
The project's main site (<http://www.milkywayproject.org>) includes links to a blog and a site called Milky Way Talk. Here "hunters" can post comments, chat about images they've found, tag the ones they consider especially intriguing, vote

for their favorite images (see the winners at <http://talk.milkywayproject.org/collections/CMWS00002u>), and more.

Zooniverse invites public participation in science missions both to garner interest in science and to help scientists achieve their goals. More than 400,000 volunteers are involved in their projects at the moment. If you want to help with the Milky Way Project, visit the site, take the tutorial, and ... happy hunting!

You can get a preview some of the bubbles at Spitzer's own web site, <http://www.spitzer.caltech.edu/>. Kids will enjoy looking for bubbles in space pictures while playing the Spitzer concentration game at <http://spaceplace.nasa.gov/spitzer-concentration/>.

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



Volunteers study infrared images of our galaxy from the Spitzer Space Telescope, identifying interesting features using the special tools of the Milky Way Project, part of the Citizen Science Alliance Zooniverse web site

If It's Clear...

by *Fulton Wright, Jr.*

Prescott Astronomy Club

JUNE 2011

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is 1/2 degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

For those of you who are following comet C/2009 P1 (Ger-radd) from last month, your task should be easier this month. It should be getting higher and brighter. Astronomy Magazine, June 2011, p. 42 has this month's finder chart.

For the month of June, watch Saturn move toward Porima (in Virgo) getting about 1/4 degree away the week of June 5, then slowly pulling away.

Seen Pluto? This month is a good time to do it. Astronomy Magazine, June 2011, p. 43 has a finder chart which covers the prime time toward the end of the month.

On Wednesday, June 1, it is new Moon and you have all night to hunt for faint fuzzies.

On Saturday, June 4, around 10 PM, you can see all Saturn's bright moons clustered on the celestial west side of the planet. Moving in toward the planet look for Rhea (magnitude 9.8), Titan (magnitude 8.4), Tethys (magnitude 10.3), Dione (magnitude 10.5), and Enceladus (magnitude 11.8). For a real challenge look between Dione and the ring tip for Mimas (magnitude 13.0). Astronomy Magazine, June 2011, p. 42 has a diagram for tonight. To generate your own map of the satellite positions for any night, go to the following web site: <http://www.skyandtelescope.com/observing/objects/planets/3308506.html#> Note that you must enter the Universal Time (UT) which is 7 hours later than Mountain Standard

Time (MST), and usually early in the morning of the next day.

On Wednesday, June 8, the Moon is at first quarter phase and sets at 12:35 AM (June 9). For the next 3 days or so libration tips the north part of the Moon toward us, so concentrate your observing up there.

On Wednesday, June 15, at 7:55 PM (11 minutes after sunset) the full Moon rises spoiling any chance of hunting for faint fuzzies for the whole night. The planetary east (celestial west) part of the Moon is tipped toward us by libration, so the next few days will be good for observing there.

On Tuesday, June 21, it is the summer solstice. You have probably noticed that we have been having long days and short nights.

On the night of Wednesday, June 22, at 12:02 AM (June 23) the last quarter phase Moon rises, ending the hunt for faint fuzzies for the rest of the night. Do check out the southern part of the Moon which is tipped toward us by libration.

On Friday, June 24, about 10 PM, you can see all Saturn's bright moons but Titan grouped on the celestial east of the planet. Titan is far off to the west. See the June 4 entry above for more details.

On Thursday, June 30, it is new Moon and you have all night to hunt for faint fuzzies. About 8:30 PM look for Mercury 5 degrees above the west-northwest horizon with dimmer Pollux and Castor at the same altitude to the right.

From the Desk of the President

Continued from page 1 speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge of it is of a meager and unsatisfactory kind: it may be the beginning of knowledge, but you have scarcely, ...in your thoughts, advanced to the stage of science."

William Thomson, Lord Kelvin of Largs (1824-1907)

Will you become involved? Will you get involved with advancing at least one aspect of doing 'science' with the Gilbert Rotary Centennial Observatory? Please join us as we build our group of Citizen Scientists! Contact me at President@EVACOnline.org for more information.

The main speaker at the June General Assembly meeting will be one of our very own members; Claude Haynes discussing the Arecibo Observatory! Please join us at our next meeting to hear about the largest radio telescope!



Public Outreach Events Recap

by Lynn Young, EVAC Events Coordinator

When you attend an EVAC meeting you have probably heard me get up and ask for volunteers to help out with the public events that are scheduled for schools and other organizations, not including the public and local star parties. These events allow us to share our interest of astronomy and introduce newcomers to the sights of the night sky. And hopefully, it sparks an interest in science in some of the young minds.

I want to thank those members of EVAC (and SAC) who unselfishly donated their time and effort to attend these events. They worked hard these five months with some weeks having four events in the week. Below are a few statistics for these events from January 1st to May 12th of 2011.

31 scheduled events – averages 3.8 telescopes per event
300+ hours volunteered
22 volunteers – averages 6.7 events each
4,091 observers – averages 132 observers per event

The following individuals generously volunteered to help

out at the public outreach events for this time period (and I apologize in advance if I left anyone out). The bolded names indicate those individuals (and number of events) who volunteered for more than the average number of events.

Michael Collins, Bill Dellinges, Steve Dodder, David Douglass, Mary Douglass, Chris Hallgren, Greg Harvey, David Hatch (20), Claude Haynes (10), Ray Heinle, Istawa el-Amin (Ace), Randy Peterson (12), Marty Pieczonka, Frank Pino (8), Gerry Ratley, Brooks Scofield (12), David Shiel (21), Wayne Thomas (9), Don Wrigley, Todd Yampol, Lana Young, and Lynn Young (27).

So the next time you see them, please take a moment and thank these individuals for being goodwill ambassadors for astronomy. And if you want to join this group, there is still plenty of time left this year to volunteer.

Mark your calendars...

2011 Grand Canyon Star Party

June 18 - 25



As one of the many benefits to becoming an East Valley Astronomy Club member, we have an 8 inch Dobsonian reflector with eyepieces available for monthly check-out to current EVAC members. Have any questions, or interested?

**Call or see David Hatch, EVAC Properties Manager
C 480.433.4217**



The Observer is the official publication of the East Valley Astronomy Club. It is published monthly and made available electronically as an Adobe PDF document the first week of the month. Printed copies are available at the monthly meeting. Mailed copies are available to members for a slight surcharge to offset printing and mailing expenses.

Please send your contributions, tips, suggestions and comments to the Editor at: news@evaonline.org Contributions may be edited. The views and opinions expressed in this newsletter do not necessarily represent those of the East Valley Astronomy Club, the publisher or editor.

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www.evaonline.org

East Valley Astronomy Club
PO Box 2202
Mesa, Az. 85214-2202

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Newsletter Editor: Peter Argenziano

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SkyWatch Coordinator: Claude Haynes

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