Volume 27 Issue 1

January 2013

The Observer

East Valley Astronomy Club

From the Desk of the President

by David Douglass

Happy New Year to all. Hopefully, everyone had a good Holiday Season.

As we start out in 2013, we have a VERY SPECIAL January meeting. We have arranged to have a NASA astronaut as our featured speaker. His name is Michael Barratt, MD MS. He is a two time traveler to the ISS. Once via Russian Soyuz, for a 199 day stay (2009) and the last time on the final trip of the shuttle Discovery in 2011. Dr. Barratt is a fantastic speaker (I have been to one of his presentations), and he has excellent photos and movies to share with us, as well as some really "out of this world" stories.

Due to the anticipated heavy attendance, we do have a seating problem. As previously announced, we will have about 250 chairs, and standing room for another 50. As part of the arrangements with NASA, we are allocating 50 chairs for SAC members, and holding 200 chairs for EVAC members and family. Admittance and seating is by reservation. To obtain a reservation, simply email President@evaconline.org indicating that you are a "dues paid" member and that you request either 1 or 2 seats.

On January 2nd, we will be releasing any unclaimed seats to members who might need more than 2, and then non-dues paid "friends of EVAC", and other interested attendees. So if you are planning on attending, be sure you have your reservation in. If it has been received, and confirmed, you should have received an email acknowledgment from me.

There will be no other business discussed at this meeting. Dr. Barratt will be open for questions after his presentation, and also available for autographs and pictures.

I hope to see you at the meeting. Its January 18th. To claim your reservation, you must be "in the room" by 7:20 PM. Unclaimed reservations will be released to any and all waiting at the door.

The Backyard Astronomer

King of the Constellations (IMHO)

by Bill Dellinges

It could be argued Orion is the grandest of the 88 constellations. It's not the biggest (26th). It doesn't have the most stars (7th - total number of stars to magnitude 5.5). It does however, have the greatest number of stars brighter than magnitude 2.4 (7).

But it's the arrangement, or pattern, of those seven stars that captures one's attention. Two zero and two second magnitude stars form a large rectangle – the shoulders and knees of the Hunter. Three second magnitude stars, equally spaced in a straight line in the middle of this "box" represent his belt. Nowhere else in the night sky does one find such a distinctive pattern of stars. Below the belt, just barely visible to the naked eye, three stars form a sword, the middle one strangely nebulous. It is one of the few constellations that resemble its mythical counterpart.

In one version of Greek mythology, Orion was a giant hunter. When he boasted he could kill all the animals

Continued on page 4

Upcoming Events:

Public Star Party - January 11

Deep Sky Observing Night - January 12

Special Meeting - January 18

Local Star Party - January 19

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

Inside this Issue:

The Backyard Astronomer

Continued from page 1 on Earth, Gaia, Goddess of the Earth, sent a scorpion to kill Orion. Out of respect for the combatants, the Gods placed them as permanent fixtures in sky, but 180 degrees apart to avoid each other: Orion in winter and Scorpius in summer.

Now that the mighty hunter is deceased, let's do an astronomical post mortem on him and examine some of the interesting objects in this glorious winter constellation.

In almost any telescope, the blurry middle star in the Sword is revealed to be an impressive emission nebula. M42 is the best example of this type of object in the northern skies. In a 6" F-6 refractor at 76x and a one degree field, the nebula takes one's breath away. Curving and twisting tendrils of ethereal nebulosity fill the field. The eye is drawn to its bright center where four stars (magnitude 5.1 – 7.5, A through D components) form a tight trapezoid. Appropriately named the Trapezium, these young four stars are primarily responsible for making the nebula visible by ionizing the hydrogen gas with their copious ultraviolet radiation.

The author and the 6" telescope referenced in this article outside his observatory.

The Trapezium stars can be easily split above powers of about 30x. A real challenge is to find the 5th and 6th stars (magnitude 11.1 and 11.5, E and F) that accompany the Trapezium. That quest requires high power and good seeing. On a recent night, the 6" at 203x was unable to find the E and F stars.

Infrared telescopes detect hundreds of other stars buried deep in the nebula, unseen in visible light due to the nebula's dust content. This is truly a stellar nursery. Astronomers estimate there is enough gas and dust in M42 to produce 10,000 suns. Most observers move on after enjoying the vision of M42 in their telescopes, but before you do, switch to a low power wide field eyepiece or binocular that yields at least a 2 degree field of view. This enables you to see the entire Sword, which is quite an impressive sight in itself.

Above the Sword we find the three stars that form the Belt of Orion. Though only 2nd magnitude stars, their equal brightness and separation can't help but leave an indelible impression on the observer. The stars are named, left to right, Alnitak, Alnilam, and Mintaka. The names are Arabic in origin, as are all the stars of Orion and indeed most of the naked eye stars of the constellations (Due to the study of astronomy moving to the Middle East during Europe's Dark Ages).

Perusing the Belt area with binoculars reveals a surprisingly rich star field hovering behind the main three Belt stars and running west, then north about seven degrees. Use a binocular with at least a six degree field to enjoy this stellar wonderland made possible by a branch of the Milky Way spilling down into this region of Orion.

About one degree southwest of Alnitak is Sigma Orionis, a spectacular quadruple star. The 6" split all four members at 75x. The four stars are nearly in a straight line and reminiscent of Jupiter and three of its moons seen at low power. In the same field, look for Struve 761, a dainty triple star. In the lower right corner of Orion, we find Rigel, denoting Orion's left knee and the constellation's brightest star. It's 50 times the mass and 46 times the diameter of our Sun and about 57,000 times as luminous. This monster star is 773 light years away. If it were at the distance of Sirius (8.6 LY), it would shine in our sky with an apparent magnitude of -10. Rigel is also a challenging double star. It has a 6.8 magnitude companion 9.4" away but Rigel's considerable glare can make it difficult to separate. The 6" at 90x began to separate the pair. At 152x the split was cleaner and more convincing.

In the extreme north of Orion, there are two interesting must-see objects. The Hunter must be all brawn and no brains, as his head is very small! Lambda Orionis, magnitude 3.5, is the brightest of three stars depicting the head. One might dismiss this grouping as unworthy of further attention but that would be a mistake. The 6" at 29x found the area to be a lovely open cluster called Collinder (Cr) 69. In the scope's 2.8 degree field, the cluster's bright three stars (the head) and sixteen fainter stars were beautifully framed. All the stars could still be accommodated in a field as small as 1.5 degrees, but as is the case with open star clusters, they are at their best when given some space (no pun intended) between their stars and the edge of the field. The other object of interest in northern Orion is NGC 2169, another open star cluster located just below a line between Xi and Nu Orionis, two 4th magnitude stars representing Orion's right elbow. This is a much smaller cluster than Cr 69 and best seen at about 75x. Its uniqueness is that the stars form the number "37." Just note that the "37" will be reversed in telescopes using a star diagonal due to the odd number of reflections in the telescope. Wouldn't it be a hoot if Messier had called this object M37?

One last suggestion: dress warmly as you explore this magnificent winter constellation.

January 18: a Very Special EVAC Meeting
Advance Reservations Required

The January 18th, 2013 EVAC meeting will be a special event; there will not be any regular business conducted. The entire meeting will be devoted to our featured speaker, Dr. Michael Barratt, MD MS, NASA Astronaut.

Dr. Barratt has been to the ISS twice. His first trip was in 2009, via a Russian Soyuz, and was for a 199 day stay. His second trip was about the last flight of the Shuttle Discovery in 2011. He has some remarkable stories to share with us, including many photos, and movie clips.

We will have a seating problem. The library meeting room will seat about 250 people. The exact number of seats will be tested in the coming days. There should be room for perhaps another 50 people, in standing room conditions. EVAC has about 150 dues-paid members (2012 and/or 2013 and/or Life). We are allocating 200 seats for EVAC, and 50 seats for SAC (part of the arrangements with NASA). All guidelines stated below are subject to change as needs arise.

When asked at the October meeting, about how many people would come to this meeting, there was a large show of hands. When asked how many might bring another family member, there was also a large show of hands.

Thus, we have scheduled two (2) meetings. The first will be Friday evening (normal EVAC time). The second will be the following morning (Saturday, January 19th). And there will be a third presentation on Saturday afternoon (January 19th), which will be hosted by the Town of Gilbert and open to the public with seating by reservation.

Dues-paid EVAC members (2012 and/or 2013 and/or Life) can request advanced reservations for this event. However, we must initially limit the number of reservations to 2 seats per member for the Friday evening presentation. Reservations will be granted on a first come-first severed basis. Advanced reservations for Saturday morning will also be first come-first served, but will have a limit of 5 seats per request.

On January 2nd, an assessment will be made of the number of reservations for both events, including the 50 seats allocated to SAC for Friday evening. At that time, any available seating or standing room only space will be made available to dues-paid EVAC members (2012 and/or 2013 and/or Life) and SAC members for unrestricted numbers of seats, until the allocation is full. On January 10th, any remaining seating or standing room will be made available to any EVAC members. Reservations will continue to be made during the entire process on a first come-first severed basis, based upon email date stamps.

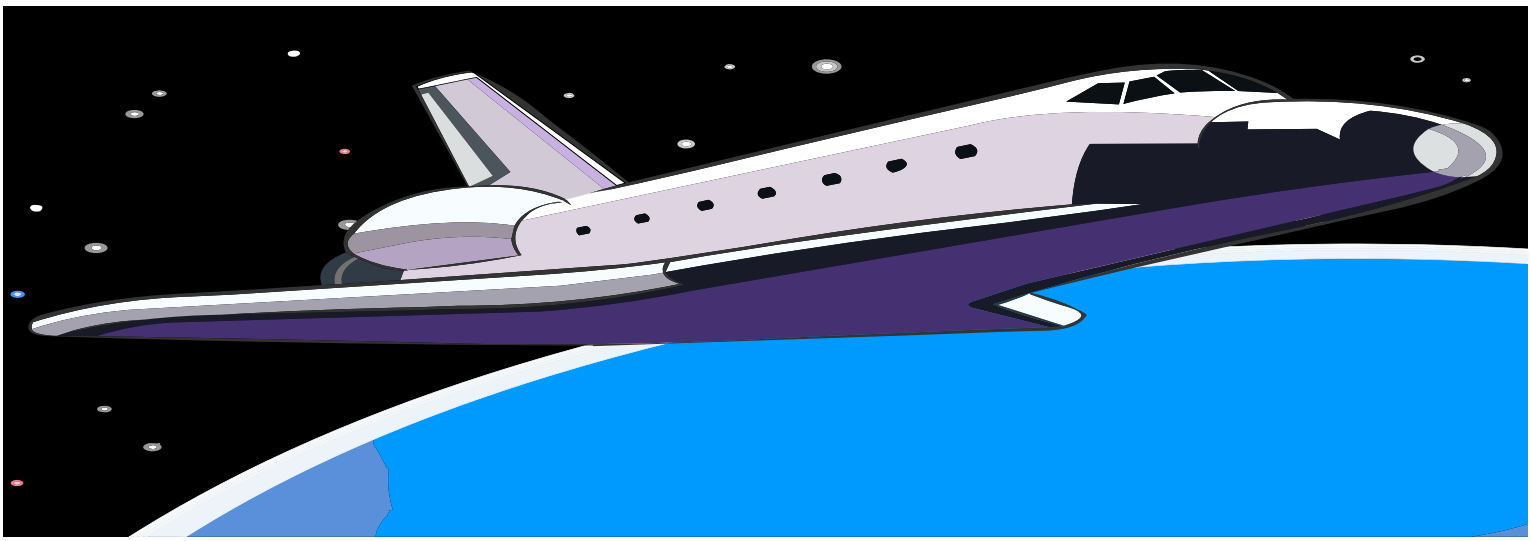
EVAC members must have their dues paid (as posted by the EVAC Treasurer on the evaconline.org website) at the time of the reservation. There will be no formal EVAC meetings between now and the presentation. Thus, dues must be paid by US Mail, or by PayPal online at the evaconline.org website. You can verify your dues-paid status, by looking at the following link: http://evaconline.org/member-directory.asp

Please note that the website list shows about 311 current or former members of EVAC. There are 49 names that expired at the end of 2011. 112 names expired prior to that, a separate matter that we will be looking into. You can find your dues-paid status in the far right column.

To request seating, send an email to President@evaconline.org showing the members name, and requested number of seats (or standing room). You will receive an email acknowledgement when the reservation is confirmed. ***You must check-in by 7:20 PM on Friday evening, or 9:20 AM on Saturday morning to guarantee your admission. After those times, remaining space will be released to those seeking admission without reservations.***

When information is available on the booking (reservation) process for the Town of Gilbert presentation, that information will be sent via email to the EVAC list server, and a link will also be posted to the information on the evaconline.org website.

Any questions about this event should be emailed to: President@evaconline.org



NASA Puts Orion Backup Parachutes to the Test

NASA completed the latest in a series of parachute tests for its Orion spacecraft in December at the U.S. Army Yuma Proving Ground in southwestern Arizona, marking another step toward a first flight test in 2014. The test verified Orion can land safely even if one of its two drogue parachutes does not open during descent.

Orion will take humans farther into space than ever before, but one of the most challenging things the multipurpose vehicle will do is bring its crew home safely. Because it will return from greater distances, Orion will reenter the Earth's atmosphere at speeds of more than 20,000 mph. After re-entry, the parachutes are all that will lower the capsule carrying astronauts back to Earth.

"The mockup vehicle landed safely in the desert and everything went as planned," said Chris Johnson, a NASA project manager for Orion's parachute assembly system. "We designed the parachute system so nothing will go wrong, but plan and test as though something will so we can make sure Orion is the safest vehicle ever to take humans to space."

Orion uses five parachutes. Three are main parachutes measuring 116 feet wide and two are drogue parachutes measuring 23 feet wide. The 21,000-pound capsule needs only two main parachutes and one drogue. The extra two provide a backup in case one of the primary parachutes fails.

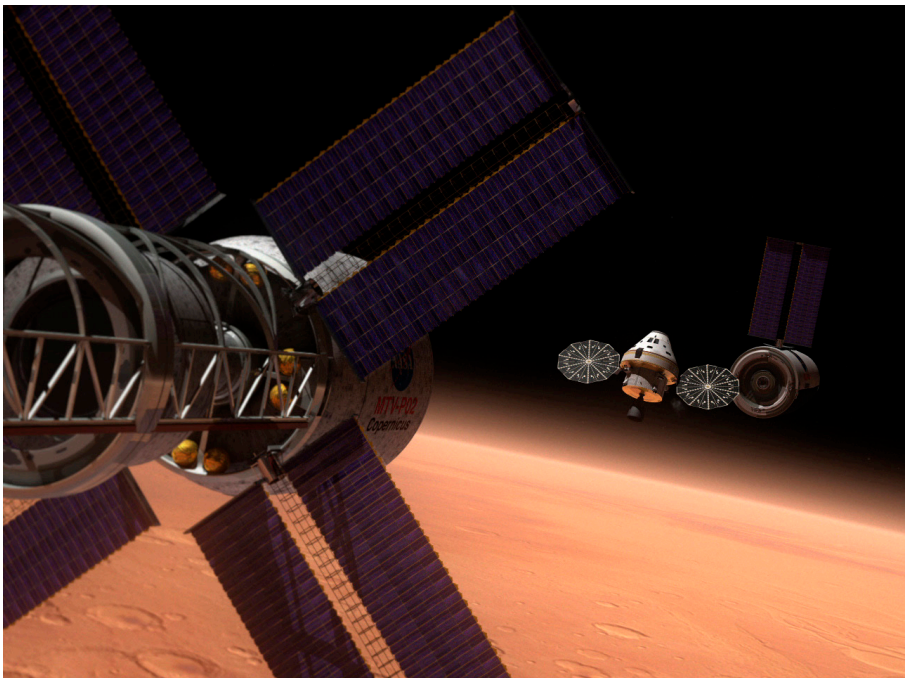
To verify Orion could land safely with only one drogue parachute, engineers dropped a spacecraft mockup from a plane 25,000 feet above the Arizona desert and simulated a failure of one of the drogues. About 30 seconds into the mockup's fall, the second drogue parachute opened and slowed the mockup down enough for the three main parachutes to take over the descent.

The next Orion parachute test is scheduled for February and will simulate a failure of one of the three main parachutes.

In 2014, an uncrewed Orion spacecraft will launch from Cape Canaveral Air Force Station in Florida on Exploration Flight Test-1. The spacecraft will travel 3,600 miles above Earth's surface. This is 15 times farther than the International Space Station's orbit and farther than any spacecraft designed to carry humans has gone in more than 40 years. The main flight objective is to test Orion's heat shield performance at speeds generated during a return from deep space.

For information about Orion, visit: http://www.nasa.gov/orion

The Multi-Purpose Crew Vehicle being assembled and tested at Lockheed Martin's Vertical Testing Facility in Colorado. Photo credit: Lockheed Martin



Artist's rendering of the Multi-Purpose Crew Vehicle on a deep space mission. Image credit: NASA

January Guest Speaker: Dr. Michael Barratt (M.D., M.S., NASA Astronaut)

Dr. Michael Barratt was born in Vancouver, Washington but considers Camas, Washington to be his home town. He and his wife have five children. Personal and recreational interests include writing, sailing, boat restoration and maintenance, family and church activities.

Dr. Barratt earned a B.S. in Zoology from the University of Washington in 1981; M.D. from Northwestern University in 1985. He completed 3-year residency in Internal Medicine at Northwestern University in 1988 followed by a Chief Residency year at Veterans Administration Lakeside Hospital in Chicago in 1989. Dr. Barratt then completed residency and Master's program in Aerospace Medicine at Wright State University in 1991. He is Board certified in Internal and Aerospace Medicine.

Organizations: Aerospace Medical Association and the American Association for the Advancement of Science.

Special Honors: W. Randolph Lovelace Award (1998), Society of NASA Flight Surgeons; Rotary National Award for Space Achievement Foundation Nominee (1998); Melbourne W. Boynton Award (1995), American Astronautical Society; USAF Flight Surgeons Julian Ward Award (1992); Wright State University Outstanding Graduate Student, Aerospace Medicine (1991); Alpha Omega Alpha Medical Honor Society, Northwestern University Medical School, Chicago, IL (1988); Phi Beta Kappa, University of Washington, Seattle, WA (1981).

Experience: Dr. Barratt came to NASA JSC in May 1991 employed as a project physician with KRUG Life Sciences, working on medical systems for Space Station Freedom. In July 1992, he was assigned as NASA Flight Surgeon, working in Space Shuttle Medical Operations. In January 1994, he was assigned to the joint U.S./Russian Shuttle - Mir Program, working and training extensively in the Cosmonaut Training Center, Star City, Russia, in support of the Mir-18/STS-71 and subsequent missions.

From July 1995 to July 1998, he served as Medical Operations Lead for the International Space Station (ISS). A frequent traveler to Russia, he worked with counterparts at the Gagarin Cosmonaut Training Center and Institute of Biomedical Problems as well as other international partner centers. Dr. Barratt served as lead crew surgeon for the first expedition crew to ISS from July 1998 until he was selected as an astronaut candidate.

Dr. Barratt serves as Associate Editor for Space Medicine for the journal, Aviation, Space and Environmental Medicine and is senior editor of the textbook, Principles of Clinical Medicine for Space Flight.

NASA Experience: Selected as a mission specialist by NASA in July 2000, Dr. Barratt reported for training in August 2000. Following the completion of 2 years of training and evaluation, he was assigned technical duties in the Astronaut Office Station Operations Branch.

Assigned to long duration flight training in 2005, Dr. Barratt launched on Soyuz TMA-14 on March 26, 2009, to the ISS and served as a member of Expeditions 19 and 20. This time period included the transition from three to six permanent ISS crewmembers, two EVAs, two visiting space shuttles and the arrival of the first Japanese H-II Transfer Vehicle (HTV). Completing 199 days in space, Dr. Barratt landed on October 11, 2009.

STS-133 (February 24 to March 9, 2011), was the 39th and final mission for Space Shuttle Discovery. During the 13-day flight, the Discovery crew delivered the Permanent Multipurpose Module (PMM) and the fourth Express Logistics Carrier (ELC) to the ISS. The mission's two spacewalks assisted in outfitting the truss of the station and completed a variety of other tasks designed to upgrade station systems. The mission was accomplished in 202 Earth orbits, traveling 5.3 million miles in 307 hours and 3 minutes.

Currently, Dr. Barratt manages the Human Research Program at NASA Johnson Space Center. This program guides applied research oriented toward mitigating the most prominent health and performance risks associated with human spaceflight.

◑ Last Quarter Moon on January 4 at 20:58

○ New Moon on January 11 at 12:44

◐ First Quarter Moon on January 18 at 16:45

● Full Moon on January 26 at 21:38

Upcoming Meetings

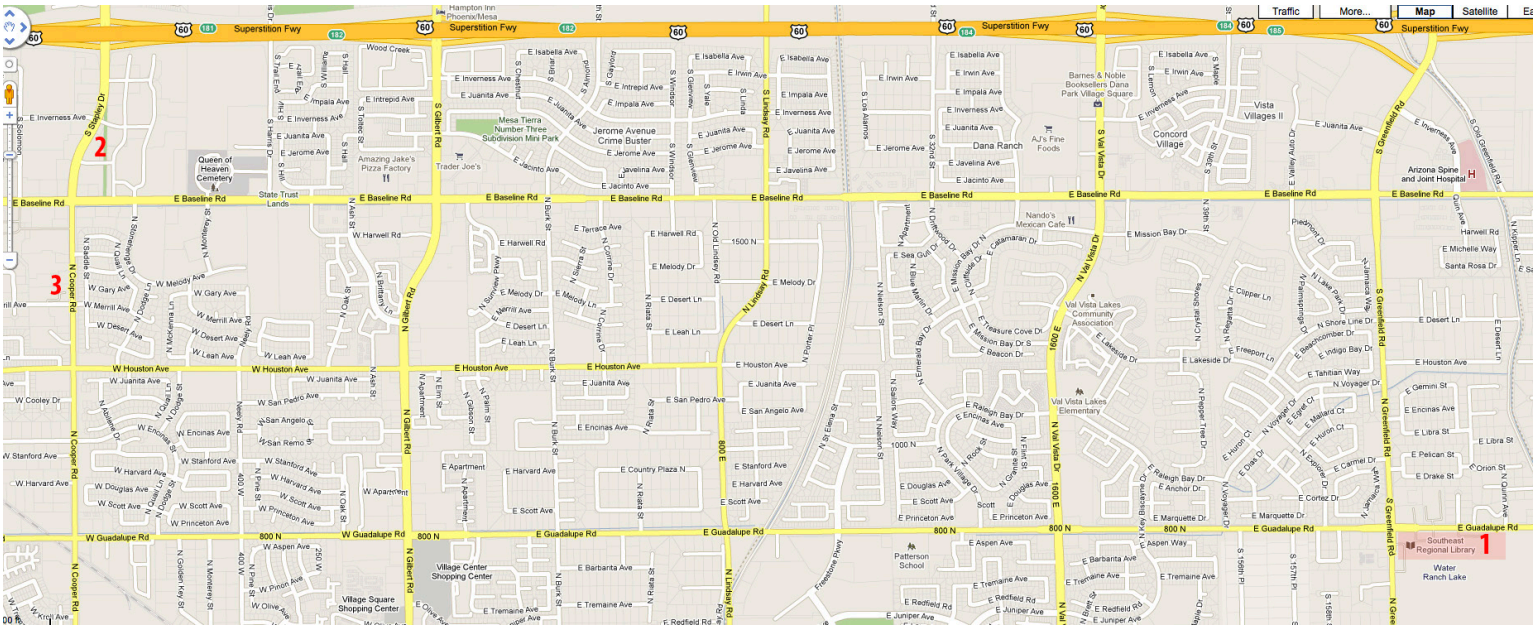
January 18
February 15
March 15
April 19
May 17
June 21

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.

Visitors are always welcome!



January 2013

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**		

January 5 - Local Star Party at Boyce Thompson

January 10 - Centennial Middle School Star Party

January 11 - Public Star Party & SkyWatch at Riparian Preserve

January 12 - Deep Sky Observing Night

January 17 - Charlotte Patterson Elementary Star Party

January 18 - Special Meeting at SE Library

January 22 - Payne Junior High Star Party

January 23 - Kyrene Middle School Star Party

January 29 - Concordia Charter School Star Party

January 31 - Basha Elementary Star Party

February 2013

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**		

February 2 - Local Star Party at Picketpost Trailhead

February 6 - Navarette Elementary Star Party

February 7 - Mohave Middle School Star Party

February 8 - Public Star Party & SkyWatch

February 9 - Deep Sky Observing Night

February 15 - General Meeting at SE Library

February 16 - Veteran's Oasis Park Star Party

February 20 - Knox Elementary Star Party

February 21 - Settler's Point Elementary Star Party

February 28 - Sousa Elementary Star Party

East Valley Astronomy Club -- 2013 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):

☐ **$30.00 Individual** January through March

☐ **$35.00 Family** January through March

☐ **$22.50 Individual** April through June

☐ **$26.25 Family** April through June

☐ **$15.00 Individual** July through September

☐ **$17.50 Family** July through September

☐ **$37.50 Individual** October through December

☐ **$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

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

Name: ☐ Phone: ☐

Address: ☐ Email: ☐

☐ Publish email address on website

City, State, Zip: ☐ 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):

☐ 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.evaconline.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

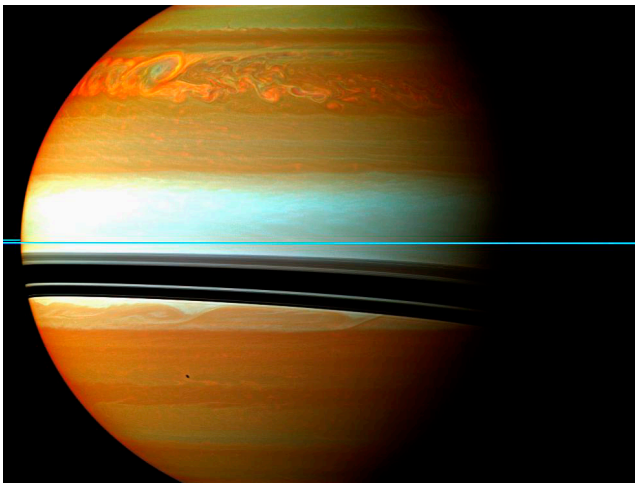
Partnering to Solve Saturn's Mysteries

by Diane K. Fisher

From December 2010 through mid-summer 2011, a giant storm raged in Saturn's northern hemisphere. It was clearly visible not only to NASA's Cassini spacecraft orbiting Saturn, but also astronomers here on Earth—even those watching from their back yards. The storm came as a surprise, since it was about 10 years earlier in Saturn's seasonal cycle than expected from observations of similar storms in the past. Saturn's year is about 30 Earth years. Saturn is tilted on its axis (about 27° to Earth's 23°), causing it to have seasons as Earth does.

But even more surprising than the unseasonal storm was the related event that followed.

First, a giant bubble of very warm material broke through the clouds in the region of the now-abated storm, suddenly raising the temperature of Saturn's stratosphere over 150 °F. Accompanying this enormous "burp" was a sudden increase in ethylene gas. It took Cassini's Composite Infrared Spectrometer instrument to detect it.



This false-colored Cassini image of Saturn was taken in near-infrared light on January 12, 2011. Red and orange show clouds deep in the atmosphere. Yellow and green are intermediate clouds. White and blue are high clouds and haze. The rings appear as a thin, blue horizontal line.

According to Dr. Scott Edgington, Deputy Project Scientist for Cassini, "Ethylene [C2H4] is normally present in only very low concentrations in Saturn's atmosphere and has been very difficult to detect. Although it is a transitional product of the thermochemical processes that normally occur in Saturn's atmosphere, the concentrations detected concurrent with the big 'burp' were 100 times what we would expect."

So what was going on?

Chemical reaction rates vary greatly with the energy available for the process. Saturn's seasonal changes are exaggerated due to the effect of the rings acting as venetian blinds, throwing the northern hemisphere into shade during winter. So when the Sun again reaches the northern hemisphere, the photochemical reactions that take place in the atmosphere can speed up quickly. If not for its rings, Saturn's seasons would vary as predictably as Earth's.

But there may be another cycle going on besides the seasonal one. Computer models are based on expected reaction rates for the temperatures and pressures in Saturn's atmosphere, explains Edgington. However, it is very difficult to validate those models here on Earth. Setting up a lab to replicate conditions on Saturn is not easy!

Also contributing to the apparent mystery is the fact that haze on Saturn often obscures the view of storms below. Only once in a while do storms punch through the hazes. Astronomers may have previously missed large storms, thus failing to notice any non-seasonal patterns.

As for atmospheric events that are visible to Earth-bound telescopes, Edgington is particularly grateful for non-professional astronomers. While these astronomers are free to watch a planet continuously over long periods and record their finding in photographs, Cassini and its several science instruments must be shared with other scientists. Observation time on Cassini is planned more than six months in advance, making it difficult to immediately train it on the unexpected. That's where the volunteer astronomers come in, keeping a continuous watch on the changes taking place on Saturn. Edgington says, "Astronomy is one of those fields of study where amateurs can contribute as much as professionals."

Go to http://saturn.jpl.nasa.gov/ to read about the latest Cassini discoveries. For kids, The space Place has lots of ways to explore Saturn at http://spaceplace.nasa.gov/search/cassini/.

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

January 2013

Celestial events (from Sky & Telescope magazine, Astronomy magazine, and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is ½ degree or 30 arcminutes in diameter. All times are Mountain Standard Time.

On Thursday, January 3, before dawn (astronomical twilight starts at 6:08 AM), you might see some Quadrantid meteors. The gibbous Moon interferes somewhat, but other conditions are good. Look about 30 degrees up in the northeast for the radiant. I have a $5 bill for anyone who thinks they dressed too warmly after an hour of observing meteors tonight.

On the night of Friday, January 4, the third quarter Moon rises at 12:56 AM (Saturday).

On the night of Sunday, January 6, you can see several events with Jupiter's Moons. Here is the schedule:
10:09 PM Ganymede disappears behind Jupiter.
10:26 PM Jupiter's Red Spot transits.
11:35 PM Io moves in front of Jupiter.
12:14 AM Ganymede appears from behind Jupiter.
12:25 AM Io's shadow falls on Jupiter.
1:16 AM Ganymede disappears in Jupiter's shadow. (takes about 15 minutes)
1:46 AM Io appears from in front of Jupiter.
2:35 AM Io's shadow leaves Jupiter.
3:43 AM Ganymede appears from Jupiter's shadow. (takes about 15 minutes)
4:47 AM Jupiter sets

On Friday, January 11, it is new Moon and you have all night to hunt for faint fuzzies.

On the night of Sunday, January 13, Io and Ganymede repeat their dance around Jupiter which they did on January 6, only this time they start at 1:23 AM (Monday) and Jupiter sets before the show is over.

On Monday, January 14, soon after sunset (5:42 PM), you can see the Southeast (lower-left) part of the Moon at its best. Libration tips that part toward us. The Moon sets at 9:20 PM. The next night should be good also.

On Tuesday, January 15, from 7:51 PM to 11:00 PM you can watch an entire transit of Io and its shadow on Jupiter.

On Thursday, January 17, from 7:37 PM to 9:48 PM, you can see Ganymede's shadow on Jupiter.

On the night of Friday, January 18, at 1:16 AM (Saturday), the first quarter Moon sets.

On Monday, January 21, from 6:13 PM (about the start of civil twilight) to 10:43 PM, you can watch an entire transit of Europa and its shadow on Jupiter. You can also see the Moon little more than 1/2 a degree from Jupiter.

On Wednesday, January 23, at 7:37 PM, Algol will be at its minimum brightness (magnitude 3.4). It should brighten to magnitude 2.1 over the next 5 hours. See http://SkyandTelescope.com/algol for a finder and magnitude comparison chart. While you are out, at 9:21 PM, you can see the magnitude 4.6 star, Chi2 Orionis, disappear behind the dark limb of the gibbous Moon. It reappears at 10:58 PM.

On Saturday, January 26, at 5:50 PM (4 minutes before sunset), the full Moon rises, spoiling any chance of seeing faint fuzzies for the night.

On the night of Monday, January 28, you can see some events on Jupiter. Here is the schedule:
8:37 PM Jupiter's red spot transits.
8:38 PM Europa moves in front of Jupiter.
10:56 PM Europa's shadow falls on Jupiter.
11:02 PM Europa moves from in front of Jupiter.
1:18 AM Europa's shadow leaves Jupiter.
2:21 AM Io disappears behind Jupiter.
3:17 AM Jupiter sets.

Looking for that perfect weekend activity?

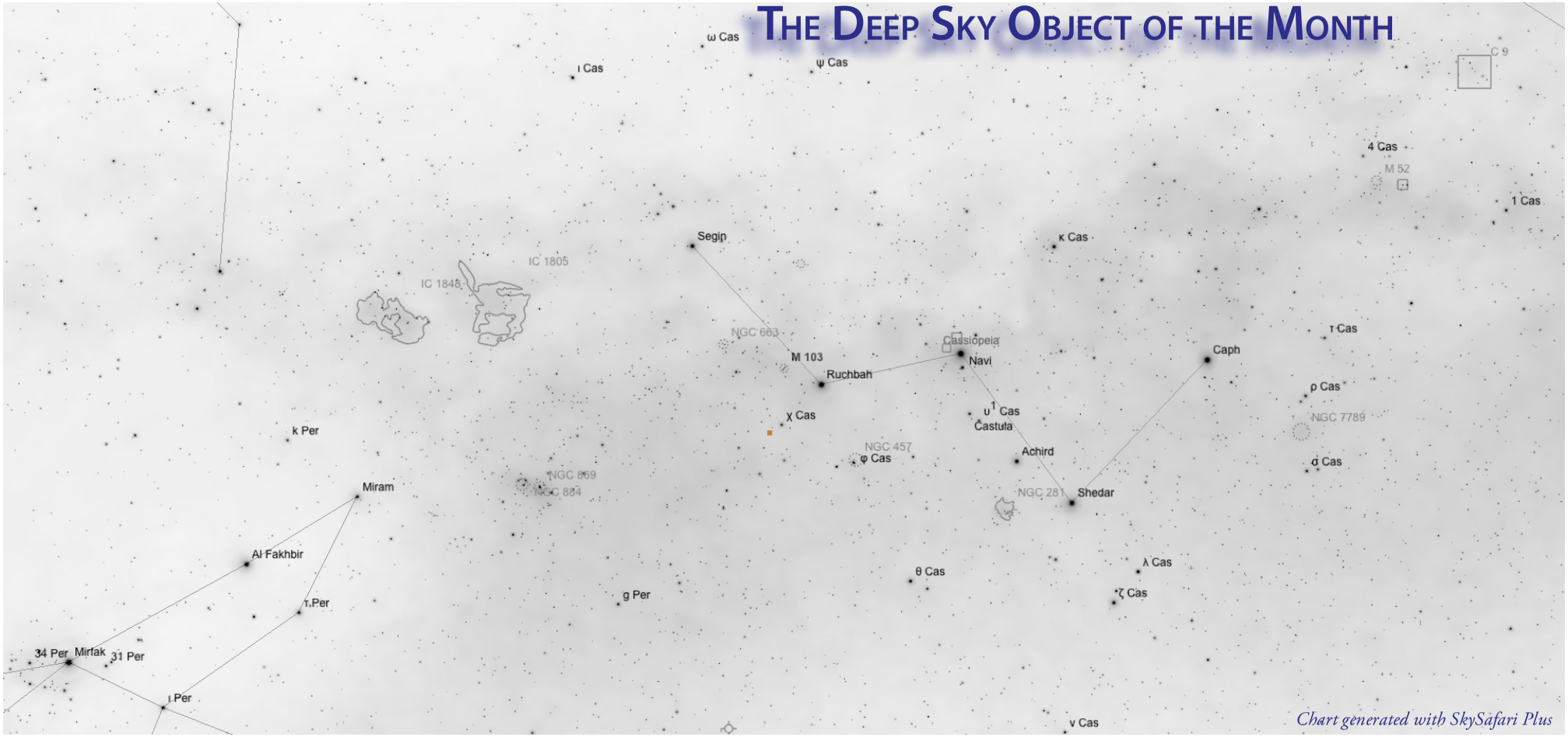
Why not resolve to getting involved?

Contact Dave Coshow to join the staff at GRCO

Email: grco@evaconline.org

M42
Orion's Sword
December 4 - 5, 2005
Takahashi Epsilon 210 Astrograph F/3
SBIG STL11000M Camera
240 Minutes Luminance; 45R 25G 40B
Image courtesy of Jon Christensen

The Deep Sky Object of the Month



Messier 103 is an open cluster in the constellation Cassiopeia. It was discovered by Pierre Mechain in 1781, and was the last object that Charles Messier added to his original catalog.

This cluster is quite easy to find, 1.5° NE of δ Cassiopeiae (Ruchbah). In binoculars, M 103 is visible as a nebulous fan-shaped patch. It is not so easy to identify in telescopes because it is quite loose and poor, and may be confused with other clusters in the vicinity. But telescopes show many fainter member stars. The cluster is bright, large, fairly rich, moderately compressed, and has forty 8th- to 12th- magnitude stars. The field is liberally sprinkled with 8th and 9th magnitude stars, the brighter stars lying to the north.

M 103 is one of the more remote open clusters in Messier's catalog. It lies at about 8,000 - 9200 light years' distance, the uncertainty mainly due to the amount of interstellar absorption by interstellar dust; for this cluster lies well within the band of the Milky Way. M 103 has a true diameter of about 15 light years, and is about 25 million years old.

M103 (NGC 581) Open Cluster in Cassiopeia

RA: 01h 34m 17.32s Dec: +60° 43' 03.1" Size: 5.0' Magnitude: 7.40

As one of the many benefits to becoming an East Valley Astronomy Club member, we have the following telescopes available for monthly check-out to current EVAC members:

8 inch Orion manual Dobsonian
8 inch Orion Intelliscope Dobsonian
60mm Tasco Alt-Azimuth Refractor

For more information, or to check out one of these scopes, please talk to:

David Hatch
EVAC Properties Director
480.433.4217

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