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ASTRONOMY CLUB OF TULSA

OBSERVER

JULY 2016

IMAGE OF THE MONTH: MARS AND ANTARES

TAKEN AT THE ACT OBSERVATORY JUNE 6, 2016

BY BYRON LABADIE



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**THE ASTRONOMY CLUB TULSA
IS A PROUD MEMBER OF**



View is of Mars shining over the constellation Scorpius, taken at the ACT Observatory, looking Southeast. Thank you Byron for such a stunning image!

THE ASTRONOMICAL LEAGUE

JULY 2016

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

MOON PHASES AND HOLIDAYS:

NEW MOON MON JUL 4
INDEPENDENCE DAY MON JUL 4
FIRST QUARTER MON JUL 11
FULL (Buck) MOON TUES JUL 19
LAST QUARTER TUES JUL 26



UPCOMING EVENTS:

MEMBERS' NIGHT**	FRI, JUL 1	8:45 PM	ACT OBSERVATORY
MEMBERS' NIGHT BACKUP**	SAT, JUL 2	8:45 PM	ACT OBSERVATORY
SIDEWALK ASTRONOMY	SAT, JUL 9	8:00 PM	BASS PRO
PUBLIC STAR PARTY	SAT, JUL 23	8:30 PM	ACT OBSERVATORY
MEMBERS' NIGHT POTLUCK**	FRI, JUL 29	TBA	ACT OBSERVATORY
MEMBERS' NIGHT BACKUP**	SAT, JUL 30	8:30 PM	ACT OBSERVATORY
SIDEWALK ASTRONOMY	SAT, AUG 13	7:15 PM	BASS PRO
PUBLIC STAR PARTY	SAT AUG 27	8:00 PM	ACT OBSERVATORY

**MEMBERS AND FAMILY ONLY PLEASE.

AUGUST 2016

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

MOON PHASES & HOLIDAYS:

NEW MOON TUES, AUG 2
FIRST QUARTER WED, AUG 10
FULL (Sturgeon) MOON THU AUG 18
LAST QUARTER WED AUG 24



PRESIDENT'S MESSAGE

BY RICHARD BRADY



Hi everyone!

The king of the planets, Jupiter, is still in the southwest. It is at magnitude -1.9 at the beginning of the month but dims slightly to -1.7 by month's end. It is 29 degrees up at nightfall on July 1 but only 8 degrees up by July 31.

The Juno mission is scheduled to arrive at Jupiter on July 4th. The scientists will be gathering input on imaging opportunities from amateurs. While Juno has cameras on board, most of the science will come from non-imaging instruments. May's NSN Telecon was all about this mission. You can view the telecon through the NSN telecon page https://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=575. You must be logged into NSN to view the video. There is also an article at Sky and Telescope, "Amateur Astro-imagers Get Ready for Juno", at <http://www.skyandtelescope.com/astronomy-news/observing-news/juno-pro-am-workshop-05252016/>

Mars and Saturn are still in the south in the early evening. (9:30 is early evening in July.) Mercury and Venus won't be visible until later in the month. All five naked-eye planets will be visible in August; Jupiter, Mercury, and Venus low in the west, and Mars and Saturn in the south-southwest, soon after sundown.

The June NSN webinar was titled "NASA's Mars Trek: Powerful Online Tools for Exploring Mars". The speaker was Brian Day. He talked about the latest visualization tools. In the webinar he demonstrated Marstrek (<http://marstrek.jpl.nasa.gov>), Vestatrek (<http://vestatrek.jpl.nasa.gov>), and the Lunar Mapping and Modelling Portal (http://pub.lmmp.nasa.gov/LMMPUI/LMMP_CLIENT/LMMP.html). More information is at https://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=584.

The next NSN webinar is scheduled Thursday, July 21st at 8 PM. This one is on the upcoming mission "The OSIRIS-REx Asteroid Sample Return Mission". The speaker is Ed Beshore. OSIRIS-Rex is designed to return a sample from the asteroid Bennu in 2018. More information is at https://nightsky.jpl.nasa.gov/download-view.cfm?Doc_ID=585. You must be signed in to the NSN network view the webinar. If you've never signed in to NSN, please do so a day or two before the webinar to be sure you can. If you have problems let me know and I will try to help you.

LIGO (the Laser Interferometer Gravitational-Wave Observatory) has already detected another gravity wave. It was discovered back on December 26 and announced on June 15. APOD actually delayed their picture of the event that day until it was announced officially. The June 15 APOD can be seen at <http://apod.nasa.gov/apod/ap160615.html>. Sky & Telescope has an article at <http://www.skyandtelescope.com/astronomy-news/ligo-detects-second-black-hole-collision-06162016/>.

PRESIDENT'S MESSAGE

BY RICHARD BRADY, CT'D.

And Earth has a second moon, or at least a quasi-satellite, 2016 HO₃. It is in a very strange orbit, sometimes ahead of us and other times behind us. It's been there for at least a century and is expected to remain for several more centuries. But don't go looking for it. It is only magnitude 24. Details can be found at <http://www.skyandtelescope.com/astronomy-news/2016-ho3-a-new-minimoon-for-the-earth/>.

The painting in the observatory classroom is basically done except for some minor touch-up. We will be hanging banners on the wall very soon. Come on out to the next event and see our handiwork.

Finally, for the Members Observing Night scheduled for Friday, July 29th, we would like to have a potluck supper before it gets dark. Only one person has volunteered to help arrange this. Any volunteers to help coordinate this event?

Clear Skies!
Richard Brady

TREASURER'S AND MEMBERSHIP REPORT

BY TIM DAVIS



Astronomy Club of Tulsa: 182 members, including 42 new members in 2016.

Welcome to our new members this month: Shelley McGoffin, Geeth Bagisetty, James Andrew, and Brady Whisenhunt



Club Accounts as of June 30, 2016:

Checking: 7,224.52; Savings: \$4,775.50; Investment accounts: \$19,045.47 (Value Fluctuates with Market); PayPal: \$ 0.00

The club now has **PayPal** available for you to start or renew memberships and subscriptions using your credit or debit cards. Fill out the registration form at <http://astrotulsa.com/page.aspx?pageid=16> Click **Submit** and you will be given the choice of either **mailing in your dues** with a check or **using PayPal** which accepts most major credit cards. A modest processing fee is added to PayPal transactions.

You may also renew your membership or join at one of our club events using your credit card by seeing one of our officers. We can take payments with the Square card reader. A small fee is also added on to these transactions.

ALSO NOTE: For our current members who are renewing their memberships, you can now go to a new link on the website to start your renewal process. On the home page, hover over the "Member" tab on the ribbon menu near the top of the page. Then select the "Membership Renewal" link and this will take to a page to fill out your information. Fill this out, submit it, then pay your dues by whatever method you choose.

NEWS NOTE: Both Sky & Telescope and Astronomy have free Digital subscriptions available with print subscriptions, or Digital subscriptions may be purchased separately. Contact their websites for details.

Membership rates for 2016 are as follows:

Adults: \$45.00 per year, includes Astronomical League Membership.

Sr. Adult: \$35.00 per year for those 65 or older, includes Astro League Membership.

Students: \$30.00 with League membership; Students: \$25.00 without League membership.

Additional Family membership: \$20.00 with voting rights and League membership, \$15.00 with voting rights but without League Membership.

The regular membership allows all members in the family to participate in club events, but only **ONE** Voting Membership and one Astronomical League membership.

Join Online – Add or renew magazine subscriptions. <http://www.astrotulsa.com/page.aspx?pageid=16>

Magazine Subscriptions: If your magazines are coming up for renewal, try to save the mailing label or renewal form you get in the mail. Forms are available on the club website.



Astronomy is \$34 for 1 year, or \$60 for 2 years. www.astronomy.com

To get the club discount you must go through the club group rate.



Sky & Telescope is \$33 per year www.skyandtelescope.com

Sky & Telescope also offers a 10% discount on their products.

Note: You may renew your Sky & Telescope subscription directly by calling the number on the renewal form, be sure to ask for the club rate.

NEW SUBSCRIPTIONS must still be sent to the club

TELESCOPE FOR SALE

Nice telescope for sale!!!

From: **Don Kraycik** <dkraycik@sbcglobal.net>

Date: Thursday, June 23, 2016

Subject: Celestron 9.25 Schmidt-Cassegrain for sale

I have a 9.25 Celestron Schmidt-Cassegrain Telescope for sale. It has a carbon fiber tube, GPS and comes with a Celestron Barlow lens/filter set. I'm asking \$1100.

Don Kraycik

[918-492-8130](tel:918-492-8130)



For some time I've mulled over various ideas to make an observing pad in my backyard. Due to various neighborhood lights there is just a small area without direct lights in site. Of course a concrete pad would be a permanent solution but the labor involved and its weight over the septic laterals lead me to consider other options.

While buying some yard supplies at the "Tractor Store", a farm and garden etc. store, I noticed they had a pallet of stable stall mats. It's a 6 ft by 4 ft dense rubber mat 3/4 inch thick. I bought two of them and cut one in half using a sturdy box knife. **Note:** Had to borrow a pick up and the mat is heavy and awkward to get in the bed of the truck. Fortunately there was strong young man there to assist.

I chose a relative level spot for the mats and tried them out a couple of nights to find the best location. It works fairly well. Gives me a firm surface to set up and work with the telescope without having to stand in wet grass. The rubber mat minimizes any vibrations created as I walk around. It may not be suitable for photography but works great for visual observing.

I chose to have the option to move the two half pieces around as needed then stack them on the main mat at the end of the session. That minimizes the impact on the lawn. The thick mat deprives oxygen and water from the grass so that section of lawn will die. In the future I may use some finely crushed rock under it to make it perfectly level.



IOTA (International Occultation Timing Association) MEETING
JULY 29-31, 2016

OKLAHOMA STATE UNIVERSITY, STILLWATER CAMPUS

Below is a link to the upcoming IOTA (International Occultation Timing Association) meeting in Stillwater, this next month. Anyone interested in occultations of stars, asteroids, and planets may want to attend. Registration should be made via the link on the page I am sending you. There is a grazing occultation of Aldebaran during the time of the meeting, the graze line goes very close to Tulsa. Many of the attendees will form a line along the path to observe, or photograph, or time the occultation. This is considered a "spectacular" graze, since it is by a very bright star...it's not often a star of such brightness has a graze line so close to home. The benefit of timing a graze is that there are multiple disappearances and reappearances by the star, along there mountains on the moon's limb. At the bottom of the page is what is called a Watts Limb Profile, which is what the limb looks like on the date, location, and portion of the moon Aldebaran "skims". These Watts charts change with the moon's phase, libration, point where the object grazes, and lunar phase. Much can be learned at a event like this.

Regards,
Byron Labadie

<http://occultations.org/community/meetingsconferences/na/2016-annual-meeting/>

PHOTOS OF THE OBSERVATORY
TAKEN JUN 6, 2016, BY BYRON LABADIE



These photos were taken on Jun 6, 2016 at the ACT Observatory, where we hosted the ORU Summer Science Academy students. We had a good crowd of junior high school science students and chaperones who enjoyed the night sky with us. All photos are by Byron Labadie.



This article is provided by NASA Space Place.

With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology.

Visit spaceplace.nasa.gov to explore space and Earth science!

Hubble's bubble lights up the interstellar rubble

By Ethan Siegel

When isolated stars like our Sun reach the end of their lives, they're expected to blow off their outer layers in a roughly spherical configuration: a planetary nebula. But the most spectacular bubbles don't come from gas-and-plasma getting expelled into otherwise empty space, but from young, hot stars whose radiation pushes against the gaseous nebulae in which they were born. While most of our Sun's energy is found in the visible part of the spectrum, more massive stars burn at hotter temperatures, producing more ionizing, ultraviolet light, and also at higher luminosities. A star some 40-45 times the mass of the Sun, for example, might emit energy at a rate hundreds of thousands of times as great as our own star.

The Bubble Nebula, discovered in 1787 by William Herschel, is perhaps the classic example of this phenomenon. At a distance of 7,100 light years away in the constellation of Cassiopeia, a molecular gas cloud is actively forming stars, including the massive O-class star BD+60 2522, which itself is a magnitude +8.7 star despite its great distance and its presence in a dusty region of space. Shining with a temperature of 37,500 K and a luminosity nearly 400,000 times that of our Sun, it ionizes and evaporates off all the molecular material within a sphere 7 light years in diameter. The bubble structure itself, when viewed from a dark sky location, can be seen through an amateur telescope with an aperture as small as 8" (20 cm).

As viewed by Hubble, the thickness of the bubble wall is both apparent and spectacular. A star as massive as the one creating this bubble emits stellar winds at approximately 1700 km/s, or 0.6% the speed of light. As those winds slam into the material in the interstellar medium, they push it outwards. The bubble itself appears off-center from the star due to the asymmetry of the surrounding interstellar medium with a greater density of cold gas on the "short" side than on the longer one. The blue color is due to the emission from partially ionized oxygen atoms, while the cooler yellow color highlights the dual presence of hydrogen (red) and nitrogen (green).

The star itself at the core of the nebula is currently fusing helium at its center. It is expected to live only another 10 million years or so before dying in a spectacular Type II supernova explosion.



Image credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA), of the Bubble Nebula as imaged 229 years after its discovery by William Herschel.

WHERE WE MEET

JENKS HS PLANETARIUM



**Our Club General meetings are held at the
Jenks Public Schools Planetarium
105 East B St, Jenks, OK**

When you enter the building lobby, take the elevator to the 3rd floor.

Meetings begin at 7:00 PM

Printable Detailed map available at http://astrotulsa.com/cms_files/

We hope to see you there!

MEMBERSHIP INFORMATION

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MEMBERSHIP RATES FOR 2016 WILL BE AS FOLLOWS:

ADULTS - \$45 PER YEAR. INCLUDES ASTRONOMICAL LEAGUE MEMBERSHIP.

SENIOR ADULTS - \$35 PER YEAR. **FOR THOSE AGED 65 AND OLDER.** INCLUDES ASTRONOMICAL LEAGUE MEMBERSHIP.

STUDENTS - \$30 PER YEAR. INCLUDES ASTRONOMICAL LEAGUE MEMBERSHIP.

STUDENTS - \$25 PER YEAR. **DOES NOT INCLUDE ASTRONOMICAL LEAGUE MEMBERSHIP.**

THE REGULAR MEMBERSHIP ALLOWS ALL MEMBERS OF THE FAMILY TO PARTICIPATE IN CLUB EVENTS, BUT ONLY ONE VOTING MEMBERSHIP AND ONE ASTRONOMICAL LEAGUE MEMBERSHIP PER FAMILY.

ADDITIONAL FAMILY MEMBERSHIP - \$15 WITH ASTRONOMY CLUB OF TULSA VOTING RIGHTS, \$20 WITH CLUB VOTING RIGHTS AND ASTRONOMICAL LEAGUE MEMBERSHIP.

THOSE WISHING TO EARN ASTRONOMICAL LEAGUE OBSERVING CERTIFICATES NEED TO HAVE A LEAGUE MEMBERSHIP.

MAGAZINE SUBSCRIPTIONS:

ASTRONOMY IS \$34 FOR ONE YEAR OR \$60 FOR 2 YEARS.

WEBSITE: www.astronomy.com

SKY & TELESCOPE IS \$33 PER YEAR.

WEBSITE: www.skyandtelescope.com

SKY & TELESCOPE OFFERS A 10% DISCOUNT ON THEIR PRODUCTS.

IF YOU ARE AN EXISTING S&T SUBSCRIBER, YOU CAN RENEW DIRECTLY WITH S&T AT THE SAME CLUB RATE. BOTH S&T AND ASTRONOMY NOW HAVE DIGITAL ISSUES FOR COMPUTERS, IPADS AND SMART PHONES.

ONLINE REGISTRATION

WE NOW HAVE AN AUTOMATED ONLINE REGISTRATION FORM ON THE WEBSITE FOR NEW MEMBERSHIPS, MEMBERSHIP RENEWALS AND MAGAZINE SUBSCRIPTIONS. JUST SIMPLY TYPE IN YOUR INFORMATION AND HIT "SEND" TO SUBMIT THE INFORMATION. YOU CAN THEN PRINT A COPY OF THE FORM AND MAIL IT IN WITH YOUR CHECK, OR USE OUR CONVENIENT PAYPAL OPTION. .

LINK: <http://www.astrotulsa.com/Club/join.asp>

OR, IF AT A STAR PARTY OR MEETING, SIMPLY FIND A CLUB OFFICER TO ASK ABOUT JOINING OR RENEWING WITH YOUR DEBIT OR CREDIT CARD THROUGH OUR CONVENIENT SQUARE OPTION!



THE ASTRONOMY CLUB OF
TULSA INVITES YOU TO MAKE
PLANS THIS SUMMER TO JOIN
US AT A STAR PARTY!

OPEN TO THE PUBLIC

FOR MORE INFORMATION
PLEASE VISIT
WWW.ASTROTULSA.COM.

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3 NON-PROFIT ORGANIZATION OPEN TO
THE PUBLIC. THE CLUB STARTED IN
1937 WITH THE SINGLE MISSION TO
BRING THE JOY AND KNOWLEDGE OF
ASTRONOMY TO THE COMMUNITY OF
TULSA, OK AND THE SURROUNDING
AREA. TODAY OUR MISSION REMAINS
EXACTLY THE SAME. WE TRAVEL TO
LOCAL SCHOOLS, CHURCHES AND
MANY OTHER VENUES WITH SCOPES
AND PEOPLE TO TEACH. OUR
OBSERVATORY IS LOCATED IN MOUNDS
AND MANY PUBLIC PROGRAMS ARE
OFFERED THERE. TO JOIN THE
ASTRONOMY CLUB OF TULSA, PLEASE
VISIT WWW.ASTROTULSA.COM WHERE
YOU WILL FIND ALL THE INFORMATION
NECESSARY TO BECOME A MEMBER.



Also find us on Facebook!

<https://www.facebook.com/AstronomyClubofTulsa>



WE ALSO ARE A PROUD PARTICIPANT IN NASA'S NIGHT SKY
NETWORK.

THE EDITOR WISHES TO THANK THE FOLLOWING FOR
THEIR CONTRIBUTIONS TO "THE OBSERVER" FOR
THIS ISSUE:

DR. ETHAN SIEGEL

BYRON LABADIE

JOHN LAND

RICHARD BRADY

TIM DAVIS

TAMARA GREEN

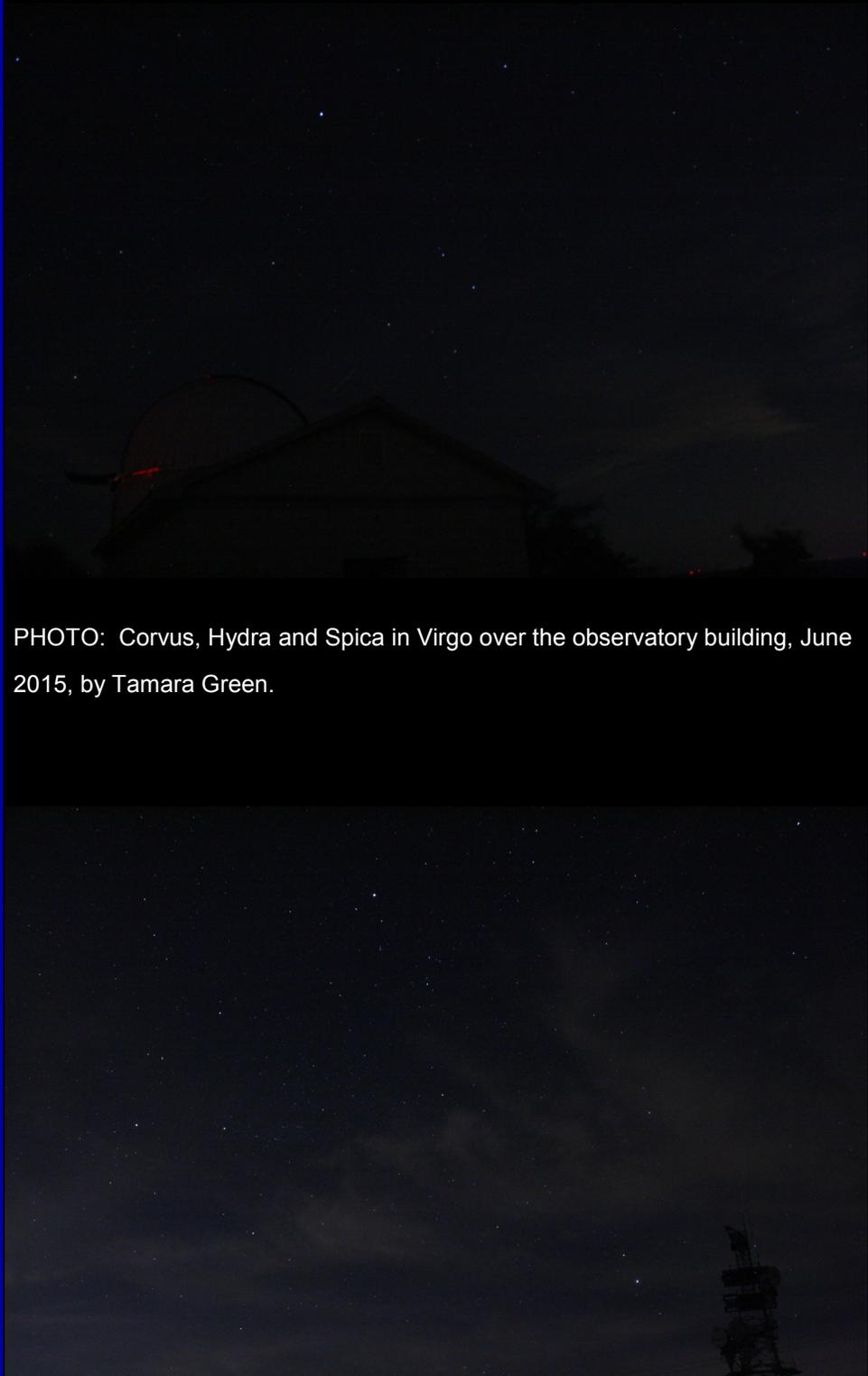


PHOTO: Corvus, Hydra and Spica in Virgo over the observatory building, June
2015, by Tamara Green.

PHOTO: The Summer Triangle over the observatory, June 2015,
by Tamara Green.