NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

JULY 2016

PRESIDENT'S NOTES

TIME IS RUNNING OUT FOR JUPITER

On the night of July 8, giant planet Jupiter appeared to pass within a few degrees of the Moon, making a pretty pairing in the sky above the western horizon. July is the last month of the year to grab a good telescopic view of Jupiter in the early evening before it sinks below the horizon in early August.

However, Saturn and Mars are still well placed for some serious staring in July night skies. Look for the bright planets in south to southwestern July skies by mid-evening, with Saturn a bit north of Scorpius' brightest star Antares and Mars near the constellation Libra. Use as much power as your telescope and the seeing can hold to resolve the planets. Saturn's beautiful rings should be easy targets, even for small telescopes. The reddish-orange coloring of Mars will need a larger scope. "How big is a bigger scope Dave?" The snotty answer is "slightly larger than the scope you have," but to be honest, an excellent 6" refractor or a very good 8" scope, SCT, Newt, or of course refractor, will just begin to bring out fine surface detail.

With our monsoon summers, take every opportunity you get to scan the summer Milky Way with just your eyes, binoculars, or a telescope, to reveal some of the best emission and dark nebulae. For bright nebulae, look for M8, the "Lagoon Nebula"; M20, the "Trifid Nebula"; and M17, the "Swan Nebula," in Sagittarius. In the constellation Serpens Cauda, try for the "Eagle Nebula," M16. But wait, there are dark nebulae as well. Indeed, each of these "M" objects is defined as much by its nebulous dark lanes as by the vivid bright areas. Then there are the huge dark clouds, such as the "Great Rift" or "Dark Rift" that runs lengthwise through and divides the wider star-studded Milky Way. The rift is a series of overlapping, molecular dust clouds that are located between our Solar System and the Sagittarius Arm of our Milky Way Galaxy. Because they are cold and obscure what's behind them, they seem dark. Here in dark skies we usually find the rift to be an easy naked eye object, and low power binoculars can give the rift an almost three dimensional quality.

M20, THE TRIFID, BOTH BRIGHT AND DARK NEBULAR COMPONENTS
Image: Trifid Nebula by David R

There are also many smaller dark nebulae associated with the same complex that makes up the rift, but appeared disconnected and so were given other designations. They are most commonly given designation numbers from the compiled a list of dark nebulae known as the Barnard Catalogue of Dark Markings in the Sky, or Barnard's Catalog for short. Yes, another catalog just like Charles Messier's, but Edward Emerson Barnard's catalog contains 370 dark nebulae and, yes, again there is an Astronomical League, *Dark Nebulae Program* with pin for your effort.

Take a look at the Astronomical League's website. To get there all you have to do is go to our website and click on the League's logo. Put simply, you must independently locate, visually observe, and log at least 70 dark nebulae. Thirty-five dark nebulae on the program list are required, and then you may choose 35 from the optional list for 70, to receive your pin and certificate. To give you more incentive, ten of the required and 37 of the optional nebulae are in Scorpius, Sagittarius, and Ophiuchus alone. Those three constellations are in the same naked eye field of view.

So, what are you waiting on? Oh yeah, for the monsoons to be over.

At the July Meeting

Tom Polakis of the Saguaro Astronomy Club (SAC) in Phoenix will discuss time-lapse imaging with dSLR, planetary, and CCD cameras.

Tom Polakis is a well-known amateur astronomer, photographer and writer. His articles have appeared in *Deep Sky*, *Astronomy* magazine and *Sky & Telescope*

magazine. Most notable was a series called "Celestial Portraits", which *Astronomy* ran for six years. In 46 articles, he discussed the constellations, north and south, until he ran out of sky.

He has traveled to Australia, Chile, and Namibia to study the southern sky, and travels extensively in Arizona, which he describes as “the greatest state in the US.”

His other scientific interests include meteorology.

Tom tells us that he enjoys:

“Visual observing of any kind. I love the deep sky, but the shallow sky is fascinating as well. I did astro-imaging from the backyard with my 13-inch for a few years, but it became too similar to my day job. I vastly prefer camera-and-tripod scenic night photography; there's plenty of that on my Web site.” Tom’s website is: http://www.pbase.com/polakis

The July meeting will be held in the community room of the Student Union Building at Cochise College at 7 p.m. on Friday July 15. We will take Tom and his wife Jennifer to dinner at Outback before the meeting. If you would like to join us for dinner, please RSVP to Ted Forte by emailing tedforte511@gmail.com or posting your intention on Haclist.

Space Place Article

July 2016

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 emits energy at a rate hundreds of thousands of times as great as our own star.

The Bubble Nebula *[see image, next page]*, 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 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.

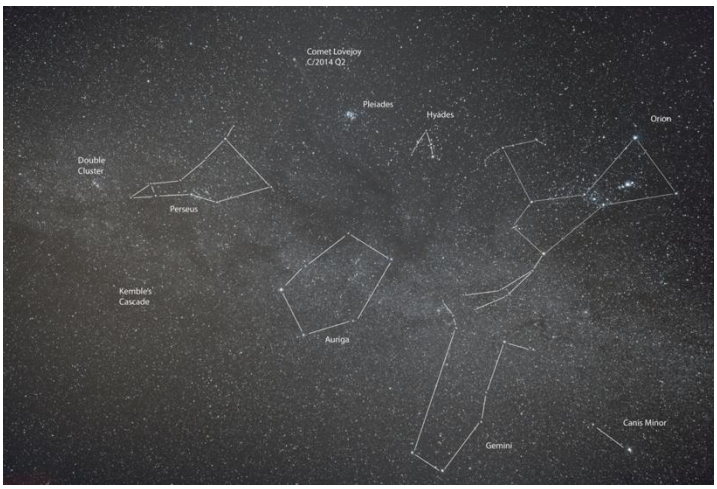
Bubble Nebula
Image credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA), of the Bubble Nebula as imaged 229 years after its discovery by William Herschel.

Comet 2013 X1 Panstarrs
Bob Kepple

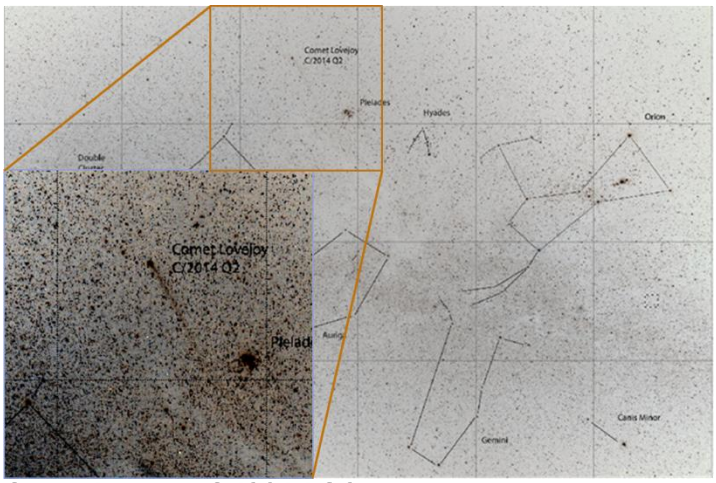
Starfield around Antares
Jay LeBlanc

Pictures from HAC Members

Mars
David Roemer



Winter Milky Way
Glenn Sanner



Comet Lovejoy C/2014 Q2
Glenn Sanner

Want Ads

FOR SALE: Meade Starfinder 8" Reflector Telescope

Will Sell at a very reasonable price. Included are a Telrad Finder, Filters, and additional Lenses.

Contact Mr. Jim Moses at (520) 803-0913 or by email jjmoses2@gmail.com

FOR SALE: Celestron Celestar 8 inch S/C Deluxe - $1200.

Will also sell pieces individually

Contact Rhonda and Terry Taylor at (520) 366-2378 or by email at twrl2@yahoo.com. Or see Craigslist at http://sierravista.craigslist.org/bar/4523742100.html

FOR SALE: Older Optical Guidance Systems 12.5" f/9 Ritchey-Chretian telescope

Very good Paul Jones ceramic optics, Robofocus secondary focuser, will include Takahashi collimating telescope. Some of the images through the scope are at Mshadephotography.com.

Contact Mike J. Shade at mshade@q.com

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Starizona	http://starizona.com/

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HAC Jul/Aug Calendar of Events

SU	MO	TU	WE	TH	FR	SA
10	11 8:52PM	12	13	14	15 HAC Meeting Student Union Tom Polakis	16
17	18	19 6:57PM	20	21	22	23
24	25	26 7:00PM	27	28 Delta Aquariid meteors	29 Delta Aquariid meteors	30 Delta Aquariid meteors
31	Aug 1	2 4:45PM	3	4	5	6
7	8	9	10 2:21PM	11 Perseid Meteors	12 Perseid Meteors	13 Perseid Meteors
14 Perseid Meteors	15	16	17	18 5:27AM	19 HAC Meeting Library Commons Wen-fai	20 Pallas Opposition
21	22	23	24 11:41PM	25	26	27
28	29	30	31	Sep 1 5:03AM	2 Neptune Opposition	3 Member Star party. TBD
4	5 Labor Day	6	7 Patterson Public Night 7PM	8	9 7:49AM	

NO OUTREACH EVENTS ARE SCHEDULED DURING MONSOON MONTHS

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com