NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

DECEMBER 2016

PRESIDENT'S NOTES

It's December 2016. Happy winter solstice everybody!

Sorry, I didn't mean to shout, but long clear nights are exciting. We have a few cool events to look forward to this month and early next year. Mercury, Venus, and Mars are all lined up in the western sky after sunset for most of the month. However, by Christmas, Mercury will just about disappear below the horizon. Therefore, if you see a bright object below Venus, it is probably not the planet but a reflection off Santa's sled.

Last year at this time we were all watching comet Lovejoy as it wandered through the night skies. We've had a bit of a dry spell of comets this year, but early next year we have a chance to see a couple early in the 2017. The two comets are 41P/Tuttle-Giacobini-Kresak, and 45P/Honda-Mrkos-Pajdusakova. Another close comet will pass on by in 2018. The comets pass by Earth at distances ranging from 0.08 AU to 0.15 AU. That's very close in astronomical terms. An AU or Astronomical Unit is the average distance from the Sun to Earth. These comets are coming to visit, so we should be ready to look.

The Planetary Science Institute in Tucson would like us do more than just look. They would like us to take pictures of the visits and send them the images. "We are organizing a worldwide coma morphology campaign for three comets," says Nalin Samarasinha, Senior Scientist at the Planetary Science Institute, who is leading the project. "Two of these comets will have close approaches to Earth in early 2017 while the third one will come close in late 2018. We want to get both professional and amateur astronomers involved in the campaign."

They aren't asking for wide-field panoramas of the comets. No, they want close-up views of the area around the comets' nuclei, around the clock. Their aim is to understand the dynamics of comets as they get warmed by the Sun upon entering the inner solar system. So really, they want to see how the dust and gas blows off and away from the comets. Their hope is to have a worldwide network of camera eyes on the comets 24/7 throughout that period. This promises to be an exciting project and one to be a part of if possible. Visit http://www.psi.edu/41P45P46P for more information on participating in the project.

WELCOME OUR NEW MEMBERS

Roland Bockhorst of Hereford joined at the November meeting. Welcome, we are glad you joined!

NO MEETING IN DECEMBER

The December meeting will be superseded by the Holiday Party at the Pizzeria Mimosa. The next meeting will be January 13, 2017 in the Student Union building of Cochise College. Our speaker will be Nalin Samarasinha of the Planetary Science Institute.

DUES NOTICE

Most HAC memberships expire in December. If you have already paid your dues, thank you! You can pay your dues in person at a meeting or event by cash or check. You can mail a check for your dues to PO Box 922 Sierra Vista 85636. You can pay your dues on-line using a credit card or your PayPal account by going to the HAC website www.hacastronomy.org, pull down the Membership menu and click on Renew. Make checks out to "Huachuca Astronomy Club" or just "HAC" is fine.

If you joined the club during 2016, your dues will come due the month following your one-year anniversary of joining. At that time, you will be asked to prorate your payment to adjust your membership expiration to December.

Dues are $25 individual, $35 family and $10 for students. Active duty military pays $20 individual and $25 family.

HOLIDAY GIVING

If you shop at Amazon.com, please remember to use the Amazon link on the HAC webpage to get to Amazon. The club gets a donation for your purchase that way.

If you are shopping for astronomy gear, please consider supporting our sponsors FarPoint Astro and Starizona and don't forget to check the Astronomical League store https://store.astroleague.org/

If you have friends or family interested in astronomy, why not consider a gift of HAC membership? You'll be doing them a great service and helping to grow your club. Another unique gift idea for the astronomer on your list is a membership in the International Dark Sky Association or the Planetary Society.

December Star Party Corner

Over 20 members attended Craig and LeAnne Gundy's first HAC Members Star Party at their Mesquite Ranch Observatory (MRO) on Saturday night Dec. 3rd. The weather was questionable most of the day but cleared at sunset for a couple hours of quality observing. MRO is a 20 x 20 ft. roll off roof observatory with more scopes than Starizona. His 20" Obsession was down while having a new mirror coating done by guess who? So, we used Craig's handmade 16" Dob instead, which actually has quite a set of optics! [Ted said the scope's mirror was one of the finest he has seen, high praise indeed] We were going to get a look at his new 11" Celestron HD w/HyperStar but the sky's clouded up before we got things up and running, so that will be on his agenda next time.

What really made things special was that many of the HAC Wife's Club turned out to accept LeAnne into the club and WOW that woman put on the best-looking snack table since I can't remember when. All this proves that no matter what the weather, a member star party goes on no matter what. I think we'll be seeing a lot more of Craig, LeAnne, and MRO in the future so many thanks to Craig and LeAnne for sharing their home with us.

I always try to get everyone to sign in so we know who attended. Unfortunately not everyone did, but here's a partial list of who was there. Of course Craig and LeAnne, Keith and Teresa, Hans and Joanie, Howard Day, Wendell Perry, Ted Forte, Glen and Deanna Sanner, Jeannie Herbert and brother, Bob and Barb Kepple, Rick Burke, Gary, Aracelis and Ben Grue, Ken Duncan, Tony Lemak and forgive me if I missed you, it will take me awhile to remember all the members, but not a bad turnout on a questionable weather night.

We aren't scheduling a members star party for later Dec. due to the holidays, but Sat. Jan. 28th, we're having a special Welcome Lumicon to the neighborhood with a Filter Demonstration (and I have every filter imaginable), at Keith and Teresa Mullen's, Repogazer Observatory (RGO), starting with a pot-luck at 5:00 pm followed by a demonstration of how a quality filter can show you many variances of the same object. I will also offer to any HAC member who want his/ her filter/filters professionally tested (with a spec sheet) supplied and cleaned by one of our technicians at Farpoint/Lumicon, free of charge, all you have to do is mail it up to Sacramento w/return postage and we'll take care of the rest. Instructions to RGO will be supplied next month, hope to see you all there.

Merry Christmas to All and clear skies too!

Keith Mullen, HAC Star Party Coordinator

RASC Handbooks and Astronomy Calendars

If you purchased a RASC handbook or Astronomy Magazine calendar, you can pick them up at the holiday party, the January 5th Patterson Public Night or at the HAC meeting on January 13.

Space Place Article November 2016

Dimming stars, erupting plasma, and beautiful nebulae

By Marcus Woo

Boasting intricate patterns and translucent colors, planetary nebulae are among the most beautiful sights in the universe. How they got their shapes is complicated, but astronomers think they've solved part of the mystery—with giant blobs of plasma shooting through space at half a million miles per hour.

Planetary nebulae are shells of gas and dust blown off from a dying, giant star. Most nebulae aren't spherical, but can have multiple lobes extending from opposite sides—possibly generated by powerful jets erupting from the star.

Using the Hubble Space Telescope, astronomers discovered blobs of plasma that could form some of these lobes. "We're quite excited about this," says Raghvendra Sahai, an astronomer at NASA's Jet Propulsion Laboratory. "Nobody has really been able to come up with a good argument for why we have multipolar nebulae."

Sahai and his team discovered blobs launching from a red giant star 1,200 light years away, called V Hydrae. The plasma is 17,000 degrees Fahrenheit and spans 40 astronomical units—roughly the distance between the sun and Pluto. The blobs don't erupt continuously, but once every 8.5 years.

The launching pad of these blobs, the researchers propose, is a smaller, unseen star orbiting V Hydrae. The highly elliptical orbit brings the companion star through the outer layers of the red giant at closest approach. The companion's gravity pulls plasma from the red giant. The material settles into a disk as it spirals into the companion star, whose magnetic field channels the plasma out from its poles, hurling it into space. This happens once per orbit—every 8.5 years—at closest approach.

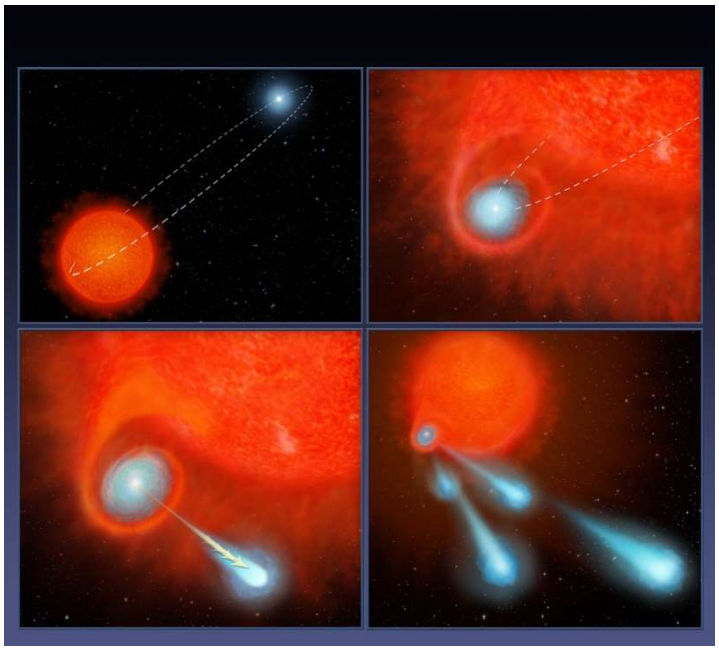
When the red giant exhausts its fuel, it will shrink and get very hot, producing ultraviolet radiation that will excite the shell of gas blown off from it in the past. This shell, with cavities carved in it by the cannon-balls that continue to be launched every 8.5 years, will thus become visible as a beautiful bipolar or multipolar planetary nebula.

The astronomers also discovered that the companion's disk appears to wobble, flinging the cannonballs in one direction

during one orbit, and a slightly different one in the next. As a result, every other orbit, the flying blobs block starlight from the red giant, which explains why V Hydrae dims every 17 years. For decades, amateur astronomers have been monitoring this variability, making V Hydrae one of the most well-studied stars.

Because the star fires plasma in the same few directions repeatedly, the blobs would create multiple lobes in the nebula—and a pretty sight for future astronomers.

If you'd like to teach kids about how our sun compares to other stars, please visit the NASA Space Place: http://spaceplace.nasa.gov/sun-compare/en/



This four-panel graphic illustrates how the binary-star system V Hydrae is launching balls of plasma into space. Image credit: NASA/ESA/STScI

Pictures from HAC Members

The Carr Canyon Fire – by Glen Sanner

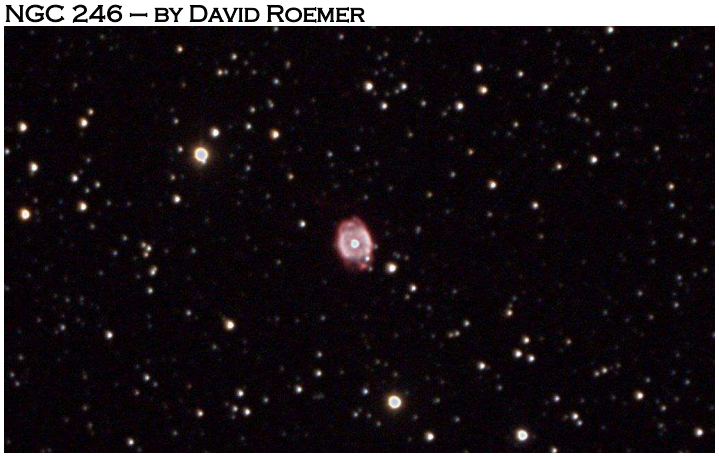
The Carr Canyon Fire – by David Roemer

M1, The Crab Nebula – by Mike J. Shade

The Carr Canyon Fire – by Glen Sanner

NGC 246 – by David Roemer

NGC 246 – by David Roemer



CTA 102 - By David Roemer

want Ads

We've cleaned out the want ads this month. There were too many, too old, to know if they had sold or not. Next month we will be rolling out refreshed want ads so please send us your new and revised ads. We will then begin to print the ads for only two months. If they don't sell or you make changes drop us a note and we will update the ad.

Thanks!

Please Support Our Sponsors

Our sponsors have been keeping us supplied in door prizes for some years. If you have not contacted them lately, please consider this. They have a lot of great astronomical products that we all need.

For more information on products and contact information, their websites are:

Farpoint Astronomy	http://www.farpointastro.com/
Starizona	http://starizona.com/

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HAC Nov/Dec Calendar of Events

SU	MO	TU	WE	TH	FR	SA
Dec 11	**12**	**13** 7:06 PM	**14**	**15**	**16** PARTY TIME 5PM Pizzeria Mimosa	**17**
18	**19**	**20** 8:56 PM	**21**	**22**	**23**	**24**
25 	**26**	**27**	**28**	**29** 1:53 AM	**30**	**31** 
1 January 	**2** Venus/Moon 1.9°	**3** Mars/Moon 0.1° Quadrantid meteors	**4** Quadrantid Meteors	**5** 2:47 PM Patterson Public Night 6PM	**6**	**7**
8	**9** Aldebaran/Moon 0.4°	**10**	**11**	**12** 6:34 AM Eastern Elong. Venus	**13** Hac Meeting Student Union Nalin Samarasinha PSI	**14** Regulus/Moon 0.8°
15	**16**	**17** Vesta Opposition	**18** Jupiter/Moon 3°	**19** 5:23 PM Western Elong. Mercury	**20**	**21**
22	**23**	**24** Saturn/Moon 4°	**25** Mercury/Moon 4°	**26** Coronado School Stem Night 5:30PM	**27** 7:07 PM	**28** Member Star party. Repogazr Obs Keith Mullen
29	**30**	**31** Venus/Moon 4° Mars/Moon 2°	**Feb 1**	**2** Patterson Public Night 6:30PM	**3** 11:19PM	**4**
5	**6** Jupiter Sationary	**7**	**8**	**9**	**10** 7:33 Hac Meeting Library Commons	Huachuca Astronomy Club

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