NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

FEBRUARY 2020

PRESIDENT'S NOTES

Yep, it's February. Time for cold clear nights and clean optics. That's a thing, right? March madness and February clean optics? Well, you've got to clean them sometime so it might as well be in the dead of winter. As for myself, I like a nice clean glass surface close to my eye. As the distance from the eye increases so my level of cleanliness decreases. Luckily most of my telescopes have been short tube Schmitt-Cassegrain designs but the distance/cleanliness equation became more apparent when I got my first Newtonian. The mirror looked more like it was still being ground than a fully finished mirror. Still if it can still function as a telescope mirror and you never look at it in the daylight everything is fine, for a while. For a long while actually but still it should be put on some sort of schedule to at least look at it, say once a year. And so, clean optics February.

A DIRTY PRIMARY MIRROR

Source: David R

But what to look at once the glass is all clean? Well, you can start by looking at the last objects you observed before you cleaned your glass. This isn't a trivial as it seems. You will probably determine two things to be true. First that there isn't as much difference between dirty and clean glass and secondly you do see more through the clean glass. Maybe not quantitively different but clean glass does give (yes, it's redundant) a certain clarity, a qualitive difference. For example, try a few close double stars. You will probably notice the space between the pairs are more defined, distinct, cleaner? Dirty optics don't just lower the light through put they reduce resolution and scatter light. The haze you might have been seeing through your telescope wasn't may not just have been the smudge on the eyepiece but the overall degradation of your entire telescopic system. Objective (lens or mirror), secondary (or diagonal) and eyepiece. A little eyewash might also be warranted if you been using your eyes in a dusty environment or reading a book or computer monitor much of the day. Another very common cause for the higher contrast is that you gave your optics and maybe yourself a little tender loving care.

TEST OBJECT THE FLAME NEBULA: NGC 2024

Source: David R

But back to what to look at graduate from doubles stars to open clusters and nebulae. My first choice in any size scope would be the Orion Nebula (M42) but the Flame Nebula may even be a better test for your clean optics. The Flame is just north of the star Alnitak, the east most star in the Orion's belt. This is a wonderful object but usually overlooked because of Alnitak's glare. But you now have clean aligned optics so, no worries. The Flame starts before your eyepiece field of view obscures Alnitak so you will be looking through the star's shine but with your system's higher contract you have a great chance of capturing the beauty and textures of the Flame's flowing dust and gas. It looks like a burning bush to me. When you get it don't hurry off, this is a hard-fought prize so, linger. In fact, if you need to, start at the northeastern most

part of the nebula away from the star's glare and then try to fight your way back towards the star, claiming more and more of the nebulosity for your own. Once you've spent some time gazing at this object, I think it will become one of your favorites. And each time you return you will see more and if not, it will be a reminder to clean your optics!

Until next time remember to get out there and stare.

Please Welcome Our New Members

Maryann and Fabio Osaben of Sierra Vista joined in January. Joining at the January meeting was Katie Halter of Benson. Katie works at Kartchner Caverns and will be the club liaison there. Andrew Carlson of Sierra Vista joined at the end of January. Welcome! We are glad you joined.

At the Feb Meeting

The February meeting of the Huachuca Astronomy Club will be held at the Patterson Observatory at 7 PM. Our usual venues are unavailable. The Observatory is located on the campus of the University of Arizona Sierra Vista at 1140 N. Colombo Avenue (behind Cochise College). We do not have an outside speaker because of the venue.

Mark your Calendars for these special events

The HAC Messier Marathon: Saturday, March 21 at the Patterson Observatory. View the Messier objects through the 20-inch RC or bring your own scope. This event is scheduled for 6 pm till 6 am (if our observers hold out). March 28 is reserved as a rain date.

The Kartchner Star Party: Saturday April 18 at Kartchner Caverns State Park begging about noon with solar viewing. The LPL's Dolores Hill will deliver a talk on the OSIRIS REx mission in the Discovery Center at 5:30 PM. Stargazing from dark until 9PM (or later)

Math and Science Experience Friday April 24 from 9 am to 12:30 pm at the Patterson Observatory. This Cochise College outreach event is aimed at middle school students from all over the county. Patterson will be an "open exhibit" for the event.

2020 Dues

Don't forget to pay your 2020 dues. There are several memberships in arrears (you know who you are). Actually, if you are not sure about your membership's status, please contact the treasurer (Ted Forte tedforte511@gmail.com). We hate to lose members, but it's a given that a few will leave us. If you are someone that has decided not to renew, please inform Ted so we can remove you from the roster.

Dues are $35 family ($25 for active duty military family), $25 regular individual ($20 military) and $10 for students with a valid student ID.

HAC dues payment options

1. You can pay your dues in person by cash or check made out to Huachuca Astronomy Club. See the treasurer, Ted Forte, at a meeting or event.
2. You can mail your dues check to the Huachuca Astronomy Club PO Box 922, Sierra Vista AZ 85636
3. You can pay online by visiting www.hacastronomy .org and pulling down the membership menu. You'll be directed to Pay Pal where you can use your Pay Pal account OR your credit card.
4. If you have a Pay Pal account, you can use PayPal Direct to send your payment to paypal@hacastronomy.org
5. If you have a Zelle account with your bank, you can make a dues payment by transferring funds to twforte@powerc.net

NASA Night Sky Notes

February 2020

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Betelgeuse and the Crab Nebula: Stellar Death and Rebirth

David Prosper

What happens when a star dies? Stargazers are paying close attention to the red giant star **Betelgeuse** since it recently dimmed in brightness, causing speculation that it may soon end in a brilliant supernova. While it likely won't explode quite yet, we can preview its fate by observing the nearby **Crab Nebula.**

Betelgeuse, despite its recent dimming, is still easy to find as the red-hued shoulder star of Orion. A known variable star, Betelgeuse usually competes for the position of the brightest star in Orion with brilliant blue-white Rigel, but recently its brightness has faded to below that of nearby Aldebaran, in Taurus. Betelgeuse is a young star, estimated to be a few million years old, but due to its giant size it leads a fast and furious life. This massive star, known as a supergiant, exhausted the hydrogen fuel in its core and began to fuse helium instead, which caused the outer layers of the star to

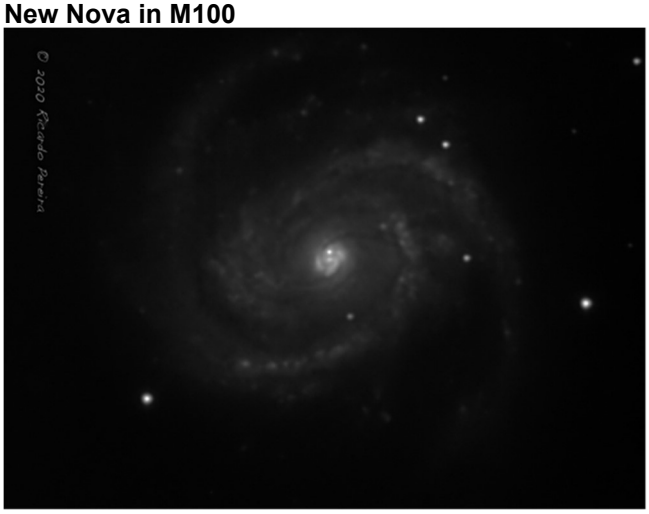
cool and swell dramatically in size. Betelgeuse is one of the only stars for which we have any kind of detailed surface observations due to its huge size – somewhere between the diameter of the orbits of Mars and Jupiter - and relatively close distance of about 642 light-years. Betelgeuse is also a "runaway star," with its remarkable speed possibly triggered by merging with a smaller companion star. If that is the case, Betelgeuse may actually have millions of years left! So, Betelgeuse may not explode soon after all; or it might explode tomorrow! We have much more to learn about this intriguing star.

The **Crab Nebula** (M1) is relatively close to Betelgeuse in the sky, in the nearby constellation of Taurus. Its ghostly, spidery gas clouds result from a massive explosion; a supernova observed by astronomers in 1054! A backyard telescope allows you to see some details, but only advanced telescopes reveal the rapidly spinning neutron star found in its center: the last stellar remnant from that cataclysmic event. These gas clouds were created during the giant star's violent demise and expand ever outward to enrich the universe with heavy elements like silicon, iron, and nickel. These element-rich clouds are like a cosmic fertilizer, making rocky planets like our own Earth possible. Supernova also send out powerful shock waves that help trigger star formation. In fact, if it wasn't for a long-ago supernova, our solar system - along with all of us - wouldn't exist! You can learn much more about the Crab Nebula and its neutron star in a new video from NASA's Universe of Learning, created from observations by the Great Observatories of Hubble, Chandra, and Spitzer: bit.ly/CrabNebulaVisual

Our last three articles covered the life cycle of stars from observing two neighboring constellations: Orion and Taurus! Our stargazing took us to the "baby stars" found in the stellar nursery of the Orion Nebula, onwards to the teenage stars of the Pleiades and young adult stars of the Hyades, and ended with dying Betelgeuse and the stellar corpse of the Crab Nebula. Want to know more about the life cycle of stars? Explore stellar evolution with "The Lives of Stars" activity and handout: bit.ly/starlifeanddeath .

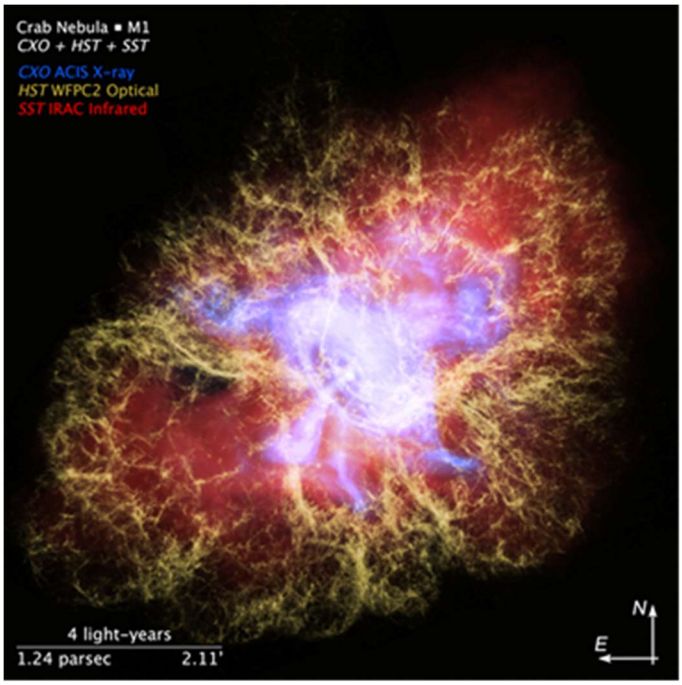
Check out NASA's most up to date observations of supernova and their remains at nasa.gov

New Nova in M100



I had a chance to photograph M100 a couple of days ago. SN2020oi is pretty bright. Jose Ricardo Pereira

The Crab Nebula

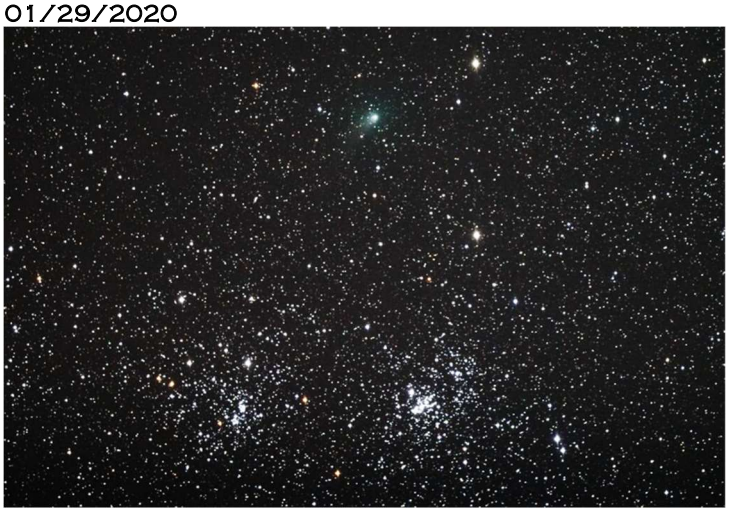


This image of the Crab Nebula combines X-ray observations from Chandra, optical observations from Hubble, and infrared observations from Spitzer to reveal intricate detail. Notice how the violent energy radiates out from the rapidly spinning neutron star in the center of the nebula (also known as a pulsar) and heats up the surrounding gas. More about this incredible "pulsar wind nebula" can be found at bit.ly/Crab3D Credit: NASA, ESA, F. Summers, J. Olmsted, L. Hustak, J. DePasquale and G. Bacon (STScI), N. Wolk (CfA), and R. Hurt (Caltech/IPAC)

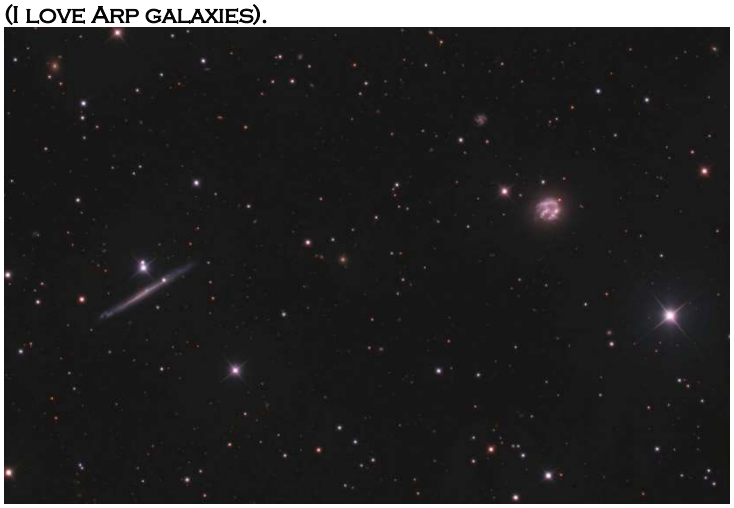
Pictures from HAC Members

Bob Kepple PANSTARRS C2017/T2
01/20/2020

Bob Kepple PANSTARRS C2017/T2
01/29/2020



Mike Shade Bear Paw galaxy, NGC 2537 or Arp 6 (I love Arp galaxies).



David Roemer Horsehead Nebula

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***Nightfall* Editor:** Cindy Lund cindy.jean.lund@gmail.com

Webmaster: Ken Kirchner

Facebook Editors: Bert Kelher

Website: http://www.hacastronomy.org

Facebook: http://www.facebook.com/HuachucaAstronomyClub

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Starizona http://starizona.com/

HAC Feb/Mar Calendar of Events

SU	MO	TU	WE	TH	FR	SA
26	27	28	29 **School Visit to Patterson 9:30AM**	30 **Patterson Public Night 6:30 PM**	31	1 Feb 6:42 PM
2	3	4	5	6 School Field trip Patterson 9-11 AM	7 **HAC Meeting Patterson Obs.**	8
9 12:33AM	10	11	12	13	14 	15 3:17PM
16	17 	18	19	20	21	22
23 8:32AM	24 **School Visit to Patterson 9:30AM**	25 **School Visit to Patterson 9:30AM**	26	27 **Patterson Public Night 7:00 PM**	28	29
1 Mar	2 12:57PM	3	4	5	6 **HAC Meeting Library Commons**	7
8 Daylight Savings Time begins	9 10:48AM	10	11	12	13	14
15	16 2:34AM	17 	18	19 Faras Elementary Pirttleville 9-11AM Vernal Equinox	20	21 Messier Marathon Patterson Observatory
22	23	24 4:28AM Venus greatest eastern elongation	25	26	27	

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Send an email to: HACAstro+subscribe@groups.io