



NOVEMBER 2015

NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

PRESIDENT'S NOTES

November or December? Who in the club had these months in the, "When Clear Skies Will Reliably Return" betting pool? Well sir or madam November, you can begin shredding your ticket now and, anybody with December should start getting nervous.

If the skies do clear up it is, time to begin another comet hunt. This time C/2013 US10 Catalina, will be poking its head above the horizon, at first it will be an object for brave souls with binoculars and telescope scrapping the edge of the eastern hilltops. However, if it brightens as expected (read we hope) then it will move higher in the sky and into darker sky as the year ends. Yep, it's another Christmas comet, anybody out there comet Kohoutek?

Comet Kohoutek, formally designated C/1973 E1, 1973 XII, and 1973f, was first sighted on 7 March 1973 by Czech astronomer Luboš Kohoutek. Before its close approach, Kohoutek was played up by the media as the "Comet of the Century" and "The Daylight Comet". I waited for it in the chill of the evening peering through my mighty 60mm Tasco as a kid ready to be amazed. Well, Kohoutek was a dud, probably due to partial disintegration when the comet closely approached the Sun before the Earth flyby. Although it failed to dazzle as expected, it was still a naked-eye object, barely. Does this comet story sound familiar? Does comet ISON ring a bell? There are a few commonalities.

All three of these comets were (are) making their first visit to the inner Solar System and contained (contain) large amounts of frozen volatiles leftover from the solar system's creation. These volatiles add real uncertainty to the sturdiness of the comet as it is buffeted by solar wind and gravity wells of the big gas planets and the Sun. In addition, these comets all come close physically close to the Sun. Now, I'm not saying that comet Catalina will disappear or disappoint. The comet has been seen and imaged after its close encounter with the Sun so it jumped that hurdle. In fact, the latest image show the comet to be sporting two tails angled off at wildly different directions. We'll just have to see if it brightens up into a beauty or fizzles out quickly. Either way I'm a sucker for a cosmic snowball and I know I'll be waiting and watching no matter what, yep in the chill of dawn.



Imagine a clear sky before dawn on Dec. 7th to see a remarkable pairing of comet, Venus and the waning lunar crescent with earthshine. Source: Stellarium by Bob King

AT THE NOVEMBER MEETING

Br. Guy Consolmagno of the Vatican Observatory will give a talk: "Adventures of a Vatican Astronomer" at the meeting that will be held at 7PM on Friday, November 27 in the community room of the Student Union Building at Cochise College, 901 N. Colombo Avenue Sierra Vista. We will be treating Br Guy to dinner at outback before the meeting. Please RSVP to Ted Forte [tedforte511@gmail.com] if you would like to join us for dinner.

HAC HOLIDAY PARTY

Mark your calendars for Friday, December 18. The date for the HAC Holiday party at Mimosa Pizzeria on Hwy 92 in Hereford. Seating is limited so tickets are being sold (\$20 per seat). You must buy your ticket in advance and before December 10 so we can give the restaurant an accurate count of attendees. This discounted price is being made possible through the generosity of some of our members. We still have a bit of a shortfall in the party fund so if you can make a small donation to help with that, (any amount will help) it would be much appreciated. Speaking of appreciation, a big *Thank You* goes out to Ken Kirchner

who has very generously donated the \$200 room fee for the party room at Mimosa, as his gift to HAC. Wow! Thanks Ken!

The party room will be open to us at 5 pm, Friday Dec 18, and we have it the rest of the night until restaurant close, if needed. Dinner will be served about 5:30 pm or so. The buffet style meal includes a chicken dish (with prosciutto, pine nuts, arugula, and other delicious herbs and spices), a mixed vegetable dish, and a vegetarian pasta dish. There will be tiramisu for desert courtesy of Terrie and Bob Gent. Alcoholic beverages are not included in the buffet price but can be purchased at the bar or through your server. **There will be no regular meeting in December.**

WELCOME OUR NEW MEMBERS

Dick Elden of Sierra Vista joined the club at the October meeting. Ben and Janis Benson of Sierra Vista joined in November. Welcome to the club Dick, Ben and Janis, we are glad you joined!

OUTREACH REPORT

A big THANK YOU to our outreach stars that have donated their time, equipment, and enthusiasm to share astronomy with the public this month.

On November 3rd, Bob Gent was the instructor at the final installment of the season's "Astronomy for the Curious" class that was held in the Patterson Observatory. For the previous six weeks, Bob, David Roemer and Ted Forte gave these free lectures to an average of 22 students. They were assisted by Rick Burke and Ken Duncan on the nights when clouds were absent and observing took place.

At the November 5 scout, night at Patterson, Bob Gent, David Roemer, Rick Burke, Ken Duncan, Sean Ludden, Scott and Sylvia Conklin and Ted Forte hosted about 50 cub scouts and 25 adults from pack 445 for a night of observing and to help the scouts with their astronomy badges.

A daytime event titled "Guano Happens" at Kartchner Caverns State Park saw Bob Gent, Ken Duncan, Nancy Hannaford, David Roemer, Rick Burke and Ted Forte show the sun, moon, and Venus to park visitors on November 7th.

On November 12th, HAC hosted a group from the Teacher Education Program at the University of Guanajuato Mexico at Patterson. Along with our Mexican guests there were representatives from UA South and their family members. Bob Gent gave a talk in the classroom about astronomy and preserving the night sky, and afterward, the group was treated to views through the 20-inch scope and HAC's 8-inch SCT guided by David Roemer, Rick Burke, Ken Duncan and Ted Forte.

The November member star party at Max Mirot's new observatory was clouded out but Max was able to debut his impressive hybrid observatory and demonstrate the scopes and his imaging software. About 25-30 members attended a yummy potluck dinner and enjoyed this rare chance to socialize and do a bit of "inreach".

Bob Gent, Rick Burke, Ken Duncan and Ted Forte set up telescopes at Faras Elementary School in Pirtleville, AZ on November 17 to show the moon and some deep sky objects to about 100 kids, parents and teachers. The night was cold but they got a warm welcome from the youngsters and adults.

The November Patterson Public night on November 19 had a disappointingly small number of guests but was well attended by HAC members. Rick Burke, Scott and Sylvia Conklin, Ken Duncan, Dick Elden, Bert Kelher, David Roemer and Ted Forte hosted the event under clear but moonlit skies.

And sometimes outreach adds to our coffers. We recently received a donation from the Amerind Museum for an event that Bob Gent did on behalf of the club last month. We have also received a donation from Kartchner Caverns, which was based on the number of volunteer hours HAC members logged at the park. Bob Gent who is a RIM Astronomer for the park reports the club's participation after each event.

SSVEC HONORED AT BAT



HAC President David Roemer and past president Bob Gent deliver an IDA dark sky award to Jack Blair of SSVEC at the Sierra Vista Chamber of Commerce "Business at Twilight" event on 19 November. The award recognizes SSVEC for shielding the lights at their facility adjacent to the Patterson Observatory. Mr. Blair was also recognized by the University South Foundation, which owns the Patterson. So far, SSVEC has shielded five lights and the effort will continue as funding allows until all of the offending lights are shielded.

SPACE PLACE ARTICLE NOVEMBER 2015

HOW WE KNOW MARS HAS LIQUID WATER ON ITS SURFACE BY ETHAN SIEGEL

Of all the planets in the solar system other than our own, Mars is the one place with the most Earth-like past. Geological features on the surface such as dried up riverbeds, sedimentary patterns, mineral spherules nicknamed "blueberries," and evidence of liquid-based erosion all tell the same story: that of a wet, watery past. But although we've found plenty of evidence for molecular

water on Mars in the solid (ice) and gaseous (vapor) states, including in icecaps, clouds and subsurface ices exposed (and sublimated) by digging, that in no way meant there'd be water in its liquid phase today.

Sure, water flowed on the surface of Mars during the first billion years of the solar system, perhaps producing an ocean a mile deep, though the ocean presence is still much debated. Given that life on Earth took hold well within that time, it's conceivable that Mars was once a rich, living planet as well. But unlike Earth, Mars is small: small enough that its interior cooled and lost its protective magnetic field, enabling the sun's solar wind to strip its atmosphere away. Without a significant atmosphere, the liquid phase of water became a virtual impossibility, and Mars became the arid world we know it to be today.

But certain ions—potassium, calcium, sodium, magnesium, chloride and fluoride, among others—get left behind when the liquid water disappears, leaving a “salt” residue of mineral salts (that may include table salt, sodium chloride) on the surface. While pure liquid water may not persist at standard Martian pressures and temperatures, extremely salty, briny water can indeed stay in a liquid state for extended periods under the conditions on the Red Planet. It's more of a "sandy crust" like you'd experience on the shore when the tide goes out than the flowing waters we're used to in rivers on Earth, but it means that under the right temperature conditions, liquid water does exist on Mars today, at least in small amounts.

The measured presence and concentration of these salts, found in the dark streaks that come and go on steep crater walls, combined with our knowledge of how water behaves under certain physical and chemical conditions and the observations of changing features on the Martian surface supports the idea that this is the action of liquid water. Short of taking a sample and analyzing it in situ on Mars, this is the best current evidence we have for liquid water on our red neighbor. Next up? Finding out if there are any single-celled organisms hardy enough to survive and thrive under those conditions, possibly even native to Mars itself!



Images credit: NASA/JPL-Caltech/Univ. of Arizona, of a newly-formed gully on the Martian surface (L) and of the series of gullies where the salt deposits were found (R)

WANTADS

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 twr12@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

FOR SALE: 8" CELESTRON NEX STAR

Good condition with all original accessories.

Contact Mae Childs at maechilds2014@aol.com

FOR SALE: CELESTRON 8" OTA

with additional Hyperstar III Optics from Starizona. Both for 1000.00

Contact Max Mirot at galileo@yahoo.com

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:

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Starizona	http://starizona.com/

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HAC Calendar of Events for Nov-Dec 2015

SU	MO	TU	WE	TH	FR	SA
22 Nov	23	24	25  5:44PM	26 	27 HAC Meeting Student Union 7PM Guy Consolmagno	28
29 Saturn in Conjunction with Sun	30	Dec 1	2	3  2:40AM	4	5
6	7 Moon occults Venus Start 9:27AM End 11:20AM	8	9	10 6:30PM Boys & Girls Club of Bisbee Vista Park	11  5:29AM	12 Member Star Party
13 Geminid Meteors	14 5PM Astro Night Joyce Clark Middle School Geminid Meteors	15 Geminid Meteors	16 HACBOD Mtg	17 6:00PM Patterson Public night	18 HAC Party!  10:14 AM Mimosa Pizza	19
20	21 Winter Solstice	22	23	24	25  6:11 AM 	26
27	28 Mercury at greatest eastern elong	29	30	31 	1 Jan 2016 	2  12:30AM
3 Quadrantid Meteors	4 Quadrantid Meteors	5	6	7 Lowell Middle School (Warren Ball park Bisbee)	8	9  8:31PM Member Star Party
10	11	12	13	14 Patterson Public Night 6PM	15 HAC Meeting Student Union Danielle Adams	

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@yahoo.com

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