NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

FEBRUARY 2016

PRESIDENT'S NOTES

IS IT SPRING YET?

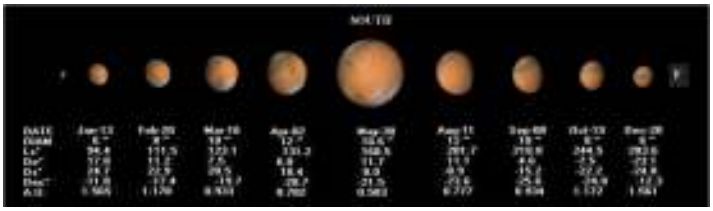
Just three weeks into February and we have already seen more clear nights than we had in December and January, so big hope for March. These cold nights have been tough on the toes but beautiful at the eyepiece. There's still time in the early evenings to view all the glories of Taurus and Orion while waiting on Jupiter to rise high enough in the sky to settle down enough to start using higher powers (so to speak). The wait will also allow your optics to come to down to the ambient nighttime temperature.

Another object still viewable every evening is Comet Catalina. While the comet is quickly receding from the inner solar system, it has just recently had its nearest pass by our planet, and is now a semi-polar object on its way out. Recent images show the comet looking more orthodox, with a wide dust tail and a very less noticeable ion tail. Although the comet never attained the hoped-for brightness, it still has been a good telescopic and photographic object, and remains so this month.

AND NOW TO MARS

Closest approach occurs at 2136 UT on May 30, 2016, with Mars having an apparent planetary disk diameter of 18.6'' at a distance of 0.5 astronomical units (AU) just 46,777,481 miles. During closest approach this year the apparent diameter of Mars will be larger than it was at the same period in 2014, but it will be lower in the sky so not quite as good for observing the Red Planet for observers in the northern hemisphere. It should also be noted that closest approach between Earth and Mars is not necessarily coincident with the time of opposition but varies by as much as two weeks.

As it approaches Earth, it will swell from a small apparent disk of 6" in 13, 2016, to a maximum diameter on May 30, 2016, and then shrink as it moves away. January 2016 through December 2016 are the prime observing months. Images shown at 0000h UT.



Original graph prepared by Roger Venable (ALPO Mars Section).

The observable disk diameter of Mars will be greater than 6 arcsec from January 13, 2016, growing in apparent size until it reaches 18.6 arcsec in late May. Imaging should be on-going.

FROM A PUBLICATION OF THE TIME

> During the opposition of 1894 a great light was seen on the illuminated part of the disk, first at the Lick Observatory, then by Perrotin of Nice, and then by other observers. English readers heard of it first in the issue of NATURE dated August 2. [At the time they were] inclined to think that this blaze may have been the casting of the huge gun, in the vast pit sunk into their planet, from which their shots were fired at us. Peculiar markings, as yet unexplained, were seen near the site of that outbreak during the next two oppositions.
>
> As Mars approached opposition [in 1900], [Dr.] Lavelle of Java set the wires of the astronomical exchange palpitating with the amazing intelligence of a huge outbreak of incandescent gas upon the planet. It had occurred towards midnight and the spectroscope, to which he had at once resorted, indicated a mass of flaming gas, chiefly hydrogen, moving with an enormous velocity towards this earth. This jet of fire had become invisible about a quarter past twelve. He compared it to a colossal puff of flame suddenly and violently squirted out of the planet, "as flaming gases rushed out of a gun."

There is always something happening on Mars that deserves our attention. Even more than a hundred years ago we were drawn to its activity on the surface during close approaches. Oh, by the way, the above passage concerning past oppositions is from H. G. Wells' War of the Worlds.

Welcome our new members

Jay Leblanc of Sonoita Arizona joined HAC at the January imaging special interest group (Img SIG). Jay frequently shares his photography on HAClist. Also joining in January, Carolyn Harris utilized our on-line application. Our newest student member, Lisa Hathaway, joined in February. Welcome, we are glad you joined.

The February Meeting

The February meeting will be held in in the Student Union Building, Cochise College, 901 N. Colombo Avenue Sierra Vista AZ on Friday, February 19 at 7p.m. Our speaker will be HAC member Tom Kaye.

Tom Kaye is an advanced amateur astronomer that moved from Chicago to Sierra Vista to take advantage of the clear skies. He runs a wide field telescope nightly in search of exoplanets and records data on other unusual stellar targets. He is also the caretaker of the famous Junk Bond Observatory 32" telescope one of the largest in southern Arizona. His projects can be seen at www.spectrashift.com

His talk is titled: White Dwarf Eats Asteroids for Lunch

For many years, observations of white dwarf stars showed there were unusual elements in their spectrums. These elements must have come from asteroids spiraling in to the star. It wasn't until last year that the Kepler space telescope detected an anomaly around a white dwarf that was suspected of being a large asteroid in close orbit. Before much investigation could take place on the star WD-1145 it went behind the Sun and was gone for the season. Coming back out of the Sun a professional / amateur collaboration was formed to tackle low-in-the-sky observations before the professional observatories were able to image it. The team stumbled into the most active phase of the system, tracking multiple dust clouds, chunks and the main planetesimal orbiting every 4.5 hours. This talk will cover the discoveries made by this team and the new physics used to analyze the data.

We will be going to dinner at Outback before the meeting (5 p.m.). Please RSVP to Ted Forte (tedforte511 at gmail dot com) if you would like to join us for dinner.

2016 Dues

If you have not paid your HAC dues for 2016, you can bring cash or check to the meeting on February 19. You can also pay your dues with your credit card or Pay Pal account by visiting the HAC website. We hope to finalize the 2016 roster by the end of this month. If you have decided to leave the club, we will miss you, but would appreciate your letting us know.

HAC Swap Meet

Mark your calendars, check your closets and dust off those old eyepieces – HAC will hold an Astro Gear Swap Meet at the Patterson Observatory on Saturday, March 26 starting at 1PM. We will advertise this event and it will be open to the public. Members are invited to bring items for sale or swap. You are also encouraged to bring your scope if you need any help with it. And, oh yeah, bring your checkbook – there will be toys to buy!

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Space Place Article
February 2016

The Loneliest Galaxy In The Universe

By Ethan Siegel

Our greatest, largest-scale surveys of the universe have given us an unprecedented view of cosmic structure extending for tens of billions of light years. With the combined effects of normal matter, dark matter, dark energy, neutrinos and radiation all affecting how matter clumps, collapses and separates over time, the great cosmic web we see is in tremendous agreement with our best theories: the Big Bang and General Relativity. Yet this understanding was only possible because of the pioneering work of Edwin Hubble, who identified a large number of galaxies outside of our own, correctly measured their distance (following the work of Vesto Slipher's work measuring their redshifts), and discovered the expanding universe.

But what if the Milky Way weren't located in one of the "strands" of the great cosmic web, where galaxies are plentiful and ubiquitous in many different directions? What if, instead, we were located in one of the great "voids" separating the vast majority of galaxies? It would've taken telescopes and imaging technology far more advanced than Hubble had at his disposal to even detect a single galaxy beyond our own, much less dozens, hundreds or millions, like we have today. While the nearest galaxies to us are only a few million light years distant, there are voids so large that a galaxy located at the center of one might not see another for a hundred times that distance.

While we've readily learned about our place in the universe from observing what's around us, not everyone is as fortunate. In particular, the galaxy MCG+01-02-015 has not a single known galaxy around it for a hundred million light years in all directions. Were you to draw a sphere around the Milky Way with a radius of 100 million light years, we'd find hundreds of thousands of galaxies. But not MCG+01-02-015; it's the loneliest galaxy ever discovered. Our Milky Way, like most galaxies, has been built up by mergers and accretions of many other galaxies over billions of years, having acquired stars and gas from a slew of our former neighbors. But an isolated galaxy like this one has only the matter it was born with to call its own.

Edwin Hubble made his universe-changing discovery using telescope technology from 1917, yet he would have found absolutely zero other galaxies at all were we situated at MCG+01-02-015's location. The first visible galaxy wouldn't have shown up until we had 1960s-level technology, and who knows if we'd have continued looking? If we were such a lonely galaxy, would we have given up the search, and concluded that our galaxy encompassed all of existence? Or would we have continued peering deeper into the void, eventually discovering our unusual location in a vast, expanding universe? For the inhabitants of the loneliest galaxy, we can only hope that they didn't give up the search, and discovered the entire universe.

Image credit: ESA/Hubble & NASA and N. Gorin (STScI); Acknowledgement: Judy Schmidt, of the loneliest void galaxy in the known: MCG+01-02-015.

The Other Comet

By Ted Forte

With all the interest in US10 Catalina, perhaps we've been forgetting that there is another nice telescopic comet in the northern sky. Comet C/2014 S2 PanSTARRS is still around and still looking great. It's currently in Draco and at its best just before dawn. I viewed it with the 30-inch this morning. I didn't try it in binoculars, but it should be bright enough to see.

I spent the wee-hours under the stars this morning, went out about 1 a.m. and observed into twilight. It was 10 degrees colder than forecast but also a lot clearer than forecast. I saw no evidence of the high thin cloud that Skippy Sky and Clear Outside made me expect. I got really great SQM readings (about 1:30 a.m.) of 21.61, 21.64 and 21.63. That's as good as it gets at DCO. Seeing was good too!

It was a "bright" list of objects this morning: nothing more challenging than 15.0 (which is child's play for the 30). I added to my life list of galaxies viewed in Virgo and encountered one of those designation anomalies that we were just discussing on this list. It was Megastar that alerted me to the probable linking of NGC 4240 with NGC 4243. It is one of those cases where the original discovery has a position error so that the object got "re-discovered" again later and looked like two objects in the data. Sky Tools handles 4243 as non-existent but Megastar listed it as an alternate designation for 4240. Software can also cause your heart to race. Not just once, but twice this morning, uncharted stars led to me wonder if there was something transient within the boundaries of a couple of galaxies and I needed the DSS images to dash my hopes of discovery. Sigh, no comet Forte and no supernova discovery this session.

To end my session, I turned the 30 first to Omega Centauri, then Centaurus A and finally M83. Visual astronomy just doesn't get much better than those three objects. Makes frozen fingers and missed sleep more than worth it.

Pictures from HAC Members

M42 – By Mike J. Shade

The Beehive Galaxies – By Rick Burke

M42 – By Glen Sanner

Program at Coronado School by Bob Gent

Want Ads

FOR SALE: Dobsonian Reflector and StellaCam

16-inch, f4.5 Truss-tube Dobsonian Reflector for sale. It has wheelbarrow handles to wheel it around and load into a van or pickup truck with a set of ramps. It comes with an 8x50 viewfinder, Sky commander digital setting circles, and a rainproof scope cover. Was asking $2000.00 but will sell for $1800.00 to fellow club members.

Also have a StellaCam II video camera with video to computer adapter to view on a computer monitor. $150.00.

Contact Bob Kepple at 520-366-0490, or Astrocards@aol.com.

FOR SALE: Mirror Blank.

13 7/8" diameter by 4 1/2" thick. Pyrex Glass with no scratches or bubbles. Very Rare - Perfect for doing a large binocular. $75.00

Contact Rob Shernick at (520) 458-6790 or by email at nuvolari_p3@q.com

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

FOR SALE: 8" Celestron Nex Star

Good condition with all original accessories.

Contact Mae Childs at maechilds2014@aol.com

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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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HAC Feb/Mar Calendar of Events

SU	MO	TU	WE	TH	FR	SA
14 	**15** 2:46AM 	**16** 6 PM Bisbee B&G Club Vista Park	**17**	**18**	**19** Hac Meeting Student Union Tom Kaye	**20**
21	**22** 1:20 PM	**23** Jupiter 1.8^0 N of moon	**24**	**25**	**26** Moon at apogee	**27**
28	**29** Mars 4° S of moon	**March 1** 6:11PM	**2** Saturn 4° South of Moon	**3**	**4**	**5** Member Star Party
6	**7**	**8** 8:54 PM **Jupiter at opposition**	**9** Master Gardeners at Patterson	**10** 7 PM Patterson Public Night	**11**	**12** Kartchner Star Party
13	**14**	**15** 1:03 PM Joyce Clark Middle School Pie in Sky	**16** Village Meadow Elementary	**17**	**18** HAC Meeting Student Union	**19**
20 Vernal Equinox 12:30 AM	**21** Jupiter 2° North of Moon	**22**	**23** 8:01 AM	**24**	**25** Saturn Stationary	**26**
27 	**28** Mars 4° south of moon	**29** Saturn 3° South of moon	**30**	**31** 11:17 AM	**1 April** 7 PM Our Lady of the Mountains	**2** **1PM Patterson Observatory** 
2	**4**	**5**	**6**	**7** 7:24 AM	**8**	

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