# IO - November 2015

Issue 2015-11
Eugene Astronomical Society



Eugene Astronomical Society
Annual Club Dues $25
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The Astronomical League
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# Next Meeting Thursday, November19th
# Time Lapse and Astrophotography
## by Bill Basham


Helix Nebula © by Bill Basham

At our November 19th meeting, club member Bill Basham will describe how he does his time lapse videos and astronomy photographs. Bill will demonstrate the time lapse program he developed that runs inside Canon Powershot cameras, such as the Canon G1X, and automatically adjusts the exposure as the lighting changes. Bill will also describe the techniques he has learned for taking astrophotos, including tracking, autoguiding, and how to take pictures through a telescope.

Here's just one great image Bill has taken recently; see more of his work on p.4 and p.6.

At our meetings we also encourage people to bring any new gear or projects they would like to show the rest of the club. The meeting is at 7:00 on Thursday, November 19th at the Science Factory planetarium.

# Next First Quarter Friday: November 20th

Our October 23rd First Quarter Star Party was clouded out, and our Saturday backup was little better. We had three scopes and three guests to observe through them during the three minutes (or so) of clearing. Here's hoping November will treat us better.

Our next First Quarter Friday is on November 20th. First Quarter Fridays are laid-back opportunities to do some observing and promote astronomy at the same time. Mark your calendar and bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up. Here's the schedule for the rest of 2015. Star parties start at dusk or 6:00, whichever is later.

November 20 (70% lit) December 18 (55% lit)

## Dues are Past Due!

EAS membership runs from October thru September. If you haven't renewed already, please bring your payment to the meeting or mail your dues to the Eugene Astronomical Society, PO Box 7264, Springfield, OR 97475. Dues are still the same low $25 they've been for years. Make your checks payable to Eugene Astronomical Society, or just EAS if your pen is low on ink.

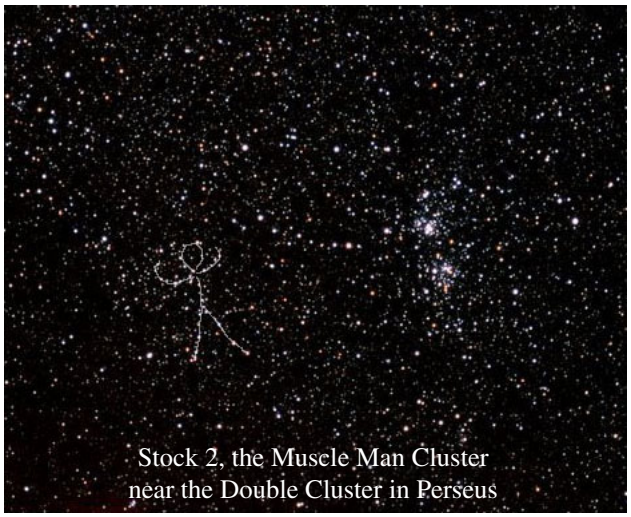
# October 15th Meeting Report

Our October 15th meeting attracted a nearly full house. The planetarium was filled with club members old and new, and several guests who were there for the first time. This was dues month, so we collected quite a few renewals and a couple of new memberships. It was also our annual business meeting, so we re-elected Jacob Strandlien and John Loper to the board of directors. (Diane Martin, Mel Bartels, and Jerry Oltion have another year on their terms.) Diane has agreed to stay on as club president and Jerry Oltion has agreed to stay on as secretary.

Bruce Hindrichs showed us a proposed design for a big sandwich-board star party sign that he plans to make for the club. Thanks, Bruce!

Mel Bartels gave a talk on telescope magnification, in which he showed how a few basic principles apply to just about any telescope. For instance, the minimum useful magnification is about four times the mirror diameter in inches. Below that you waste light because the exit pupil (the beam of light leaving the eyepiece) can't fit into your eye. The maximum useful magnification is roughly 25 times the mirror diameter in inches before diffraction effects dominate the image quality. The sweet spot is somewhere inbetween, typically at a magnification that gives you a 2mm exit pupil. (Exit pupil is most easily calculated by dividing the telescope's f-ratio into the eyepiece focal length. For instance, a 10mm eyepiece in an f/5 telescope would give you a 2mm exit pupil.) Mel taught us quite a bit more about magnification and de-mystified a lot of the misconceptions floating around about it. It was a great talk.

Jerry Oltion then gave us a tour of the Autumn sky, showing us several objects that might not be familiar to everyone even if they've been observing for a while. He mentioned several good doubles that are still visible from light-polluted sky, some of which present a challenge to split and some of which are easy and offer nice color contrast. (Zeta Piscium, Zeta Aquarii, Gamma Arietis, Gamma Andromeda.) He also showed us some good galaxies and planetary nebulae that would reward a trip out of town. (M74, NGC 7479, NGC 246, NGC 253.) He showed us where we can see individual stars in a distant galaxy (NGC 604 within M33) and a couple of clusters that are so big they're better in binoculars or by naked eye than in a telescope, yet most people have never heard of them. (Stock 2, the Muscle Man Cluster; the Alpha Persei Moving Group.)



Stock 2, the Muscle Man Cluster near the Double Cluster in Perseus

It was a fun meeting! Don't miss next month when Bill Basham will tell us how he does his beautiful time lapse videos and astrophotos.

# UO Science Fair

The University of Oregon Science Fair, targeting young children, was held on October 7th at Willamette Hall on the UO campus. Jim Kiely represented the EAS there and reports: "Great turnout. Went through 5 bags of candy! :) Had presentation on solar wind and Sun's energy production cycle. Video, models and charts. Met some awesome future physicists. Humbling." Thanks, Jim, for being there!


# Concert of the Cosmos

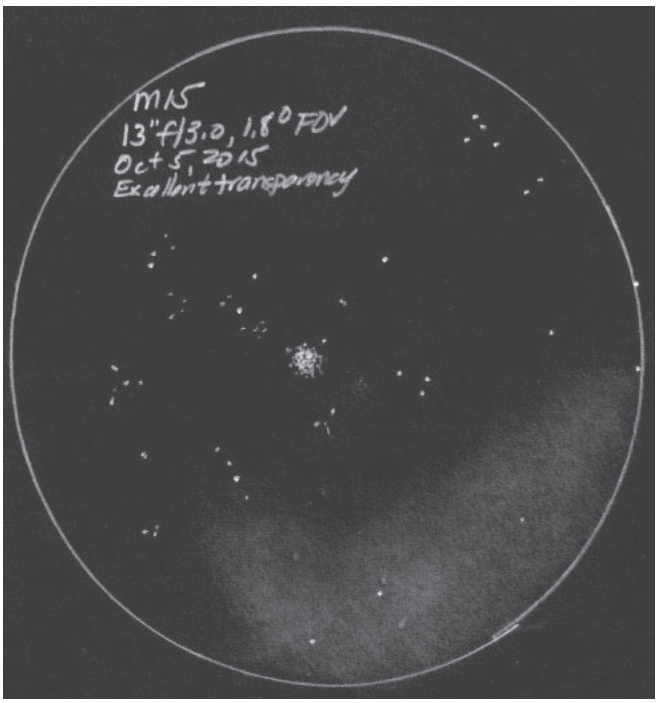
The Concert of the Cosmos, the astronomy-themed pipe organ concert organized by our very own Dan Rinnan and that has been put on twice in Eugene (once in 2008 with Jerry Oltion as narrator, and again last year with Bernie Bopp as narrator) will be shown again this November 15th in Corvallis. This concert is a tour de force of pipe organ music accompanied by stunning visuals illustrating the themes of the various musical pieces. Those themes range from the Sun and planets to stars, novae, aurorae, nebulae, and the Hubble Ultra Deep Field reaching back nearly to the Big Bang itself.

If you missed the local showings, it would be well worth your time to drive to Corvallis to see this one. Some of the region's best pipe organists will be playing, and the music ranges from the thundrous to the sublime. There's nothing quite like a pipe organ to get your attention, and nothing quite like the sight of the universe to render you properly awed. Go!

# M15 Wide Field Reveals Nebula

Mel Bartels continues to find things in his fast, wide-field telescopes that nobody has reported seeing visually before. This time it's a wide swath of nebulosity near M15. Deep photos do indeed show this very object, but whether it's a faint reflection nebula, part of the "integrated flux nebula" that permeates the sky, or an extension of the Milky Way is an open question. This feature has apparently not been named yet.

Who says there's nothing left to discover visually? Mel is proving again and again that that's not so. It just takes a practiced eye, a fast scope, and close attention to what you're seeing. Way to go, Mel!



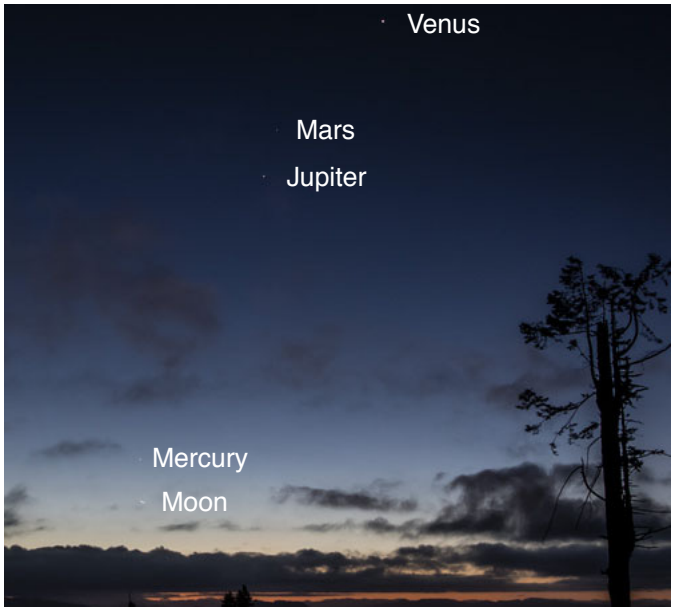

## Thank You Storage Junction

Storage Junction has donated the use of a storage unit for us to hold our loaner telescopes when they're not in use. EAS would like to thank Storage Junction for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. Storage Junction is located at 93257 Prairie Road (at the intersection of Hwy 99 and Hwy 36, 3 miles south of Junction City) Phone: 541-998-5177

# Morning Conjunctions

Venus, Mars, and Jupiter have been packed close together in the early morning all month. Early on the morning of October 9th, the Moon joined them and Alan Gillespie caught them plus the bright star Regulus in one frame, all while the rising Sun was turning the sky blue.

The planets played tag all month as Jupiter and Mars passed one another, then Venus passed Jupiter on its way to a conjunction with Mars on November 2nd and 3rd. The Moon will join them again on November 6th when it will be near Jupiter, which will be even higher in the sky by then, and then on November 7th the Moon will be near Venus, which will be the lowest planet of the three.




Morning Planets on October 11th, photo © by Bill Basham

Bill Basham caught part of the action on October 11th, and he got Mercury and the Moon in the frame, too. Mercury never quite reached the other planets, rising up into the morning sky for just a few days before dropping back toward the Sun.

Jeff Phillips caught the image to the right later in the month after Venus had passed Jupiter.

It has been a dynamic month for the early morning sky, well worth the trouble of getting up early to watch it. Thanks to Alan, Bill and Jeff, all of whom have been documenting the changes and sending photos to our club email list so those of us who don't do early mornings can still see the conjunctions.


Morning Planets on October 9th, photo © by Alan Gillespie


Morning Planets on October 26th, photo © by Jeff Phillips

# Globular Clusters Compared

While playing around with a new digital SLR camera, Jeff Phillips took the following three images with the same camera and settings through the same 6-inch telescope. They reveal very nicely what you might see through the eyepiece of a 6 or 8-inch scope on these same targets.

They also clearly illustrate that all globular clusters are not alike. M15 has a tightly packed, dense core with little scattering around it, M2 has a somewhat less packed core with more halo, while M13 is nearly all halo. Their relative sizes are both intrinsic and a factor of distance. M2 and M15 are nearly equidistant, which means that M2 is simply larger than M15, but M2 and M13 are about the same actual size, which means M13 is closer. Compare them next time you go out; all three are nicely placed in the November sky.


Photos © by Jeff Phillips

# Yet Another Club Member Goes to the Dark Side

Jon Schwartz thought it might be neat to observe from the comfort of his living room rather than go outside into the cold. So he got a Mallincam DSc and hooked it up via a long USB cable to his laptop computer. And thus astrophotography lured another of us into its clutches. Who knows where this will ultimately lead, but for now it has led to several neat screen captures, including he ones presented here. Thanks, Jon!

The Ghost of Mirach (a galaxy near bright star Mirach in Andromeda) © by Jon Schwartz

The Ring Nebula © by Jon Schwartz

# Bruce, Too!

Bruce Hindrichs has also been bitten by the astrophotography bug. Here's his first image (!) with his new camera: an impressively detailed shot of the nearly full Moon.

About image and camera, Bruce says: "The camera is a Sony A5100 (mirrorless) DSLR. For this one photo I used a feature on the camera called, 'Hand-held Twilight.' With one push of the button it takes several shots, and then stacks them (like a simplified stacking software) and then saves one image."

Bruce has recently completed a photography class and reports that he now knows everything there is to know about this camera (uh-huh), so we can expect to see many more great shots from him in times to come.

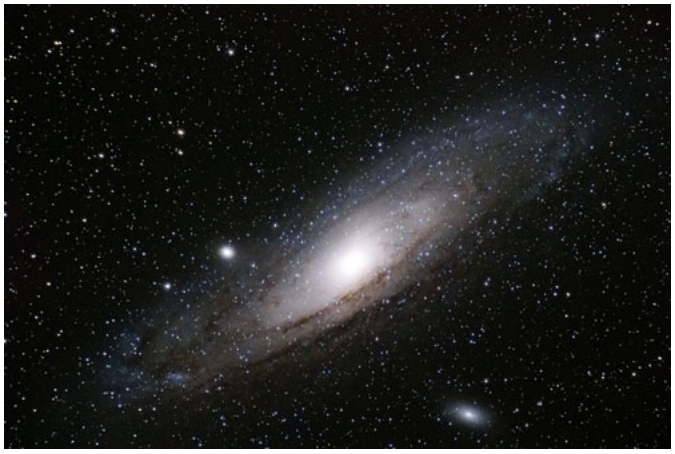
This one is presented here at high-resolution so you can zoom in up to 300%. It's an amazingly crisp, well-exposed image, especially for a first shot. Way to go, Bruce!

Waxing Gibbous Moon © by Bruce Hindrichs

# And More from Bill Basham

Here are a couple more great photos from Bill Basham. These were just test shots while he tinkered with his autoguider. You can imagine what he'll be getting once he figures out what he's doing!

Eagle Nebula with "Pillars of Creation" © by Bill Basham



M31, the Andromeda Galaxy © by Bill Basham

# LED Street Lights Come to Eugene

## by Jerry Oltion

The September 17th *Register-Guard* had an article about all the great new ways that people could increase light pollution with LED lighting around their homes. I responded to that with a guest viewpoint article in the September 29th issue, in which I pointed out that more light is seldom better. I got lots of positive feedback and was thinking that maybe I'd had some positive impact when the October 10th *Register-Guard* showed up with an article entitled "Eugene Updating Street Lights."

Uh-oh.

Sure enough, the city is planning to replace most of its high-pressure-sodium lights with LED lights. I called Matt Rodrigues, the city engineer who authored the feasibility study that led to the decision to replace the lights, and we had a very productive conversation. It turns out that he did indeed consider light pollution when he made his recommendations, and he chose as many options as possible to limit any excess glare. He went with 4000K color temperature rather then the harsher, bluer 5000K or 6000K lights that some cities use, and he chose a design that offered three power levels: 29, 42, or 54 watts. Most of the new lights will be set at 29 watts, which produces about 2/3 the total light of the current sodium lights. It looks brighter on the ground because it's all directed there, and it's whiter.

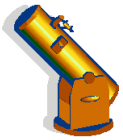
The lights are full-cutoff, which means that they don't cast any light upward. That may mean an actual reduction in the overall skyglow over the city, but blue light scatters more than red light does, so we could wind up with even more. We won't know until the swap is completed.

Despite being full-cutoff lights, the glare as you approach one on the street is still appreciable. There are several lights already installed on Throne Drive, so I had a look myself and as I was driving down the street toward them I was going "Ow, ow, ow!" as I approached each one. They could definitely use more shielding.

Fortunately, Rodrigues says that shielding them is possible, and the city has bought a supply of shields to accomodate people who ask for them. I suppose it would be too much to ask that they shield them all, but at least if you get one shining into your bedroom window you should be able to have the city mask it off.

But alas, there will be no turning them off, nor any turning back. The vast majority of city dwellers want more light, not less, and LED lights will cut the city's lighting costs to a fraction of what it is under sodium lights, so they're clearly the wave of the future whether amateur astronomers like them or not. We can only hope that they're not as bad as they look from underneath, and thank the city engineers who did at least attempt to keep their impact to a minimum.

An LED streetlight next to a more traditional high-pressure sodium light, photographed from both sides to give a valid comparison. The LED light glares more, but its total light output is lower. Photos by Jerry Oltion.



# Observing in November

Last Q | New | 1st Q | Full

| Nov. 3, 4:24 AM | Nov. 11, 9:47 AM | Nov. 18, 10:27 PM | Nov. 25, 2:44 PM |
|---|---|---|---|
| Mercury Rise: 6:04 AM | Mercury lost in Sun | Mercury lost in Sun | Mercury lost in Sun |
| Venus Rise: 2:49 AM | Venus Rise: 3:01 AM | Venus Rise: 3:13 AM | Venus Rise: 3:27 AM |
| Mars Rise: 2:47 AM | Mars Rise: 2:41 AM | Mars Rise: 2:35 AM | Mars Rise: 2:29 AM |
| Jupiter Rise: 2:11 AM | Jupiter Rise: 1:46 AM | Jupiter Rise: 1:24 AM | Jupiter Rise: 1:01 AM |
| Saturn Set: 6:15 PM | Saturn Set: 5:47 PM | Saturn Set: 5:22 PM | Saturn lost in Sun |
| Uranus Set: 4:56 AM | Uranus Set: 4:23 AM | Uranus Set: 3:55 AM | Uranus Set: 3:26 AM |
| Neptune Set: 1:25 AM | Neptune Set: 00:53 AM | Neptune Set: 00:26 AM | Neptune Set: 11:54 PM |
| Pluto Set: 8:53 PM | Pluto Set: 8:23 PM | Pluto Set: 7:56 PM | Pluto Set: 7:29 PM |

All times Pacific Daylight Time (March 13 – Nov. 5, 2016 = UT -7 hours) or **Pacific Standard Time (November 1, 2015 – March 12, 2016 = UT -8 hours)**

| Date | Moonrise | Moonset | Twilight Begin | Sunrise | Sunset | Twilight End |
|---|---|---|---|---|---|---|
| 11/1/2015 | 22:05 | 11:59 | 05:11 | 06:49 | 17:03 | 18:40 |
| 11/2/2015 | 23:04 | 12:41 | 05:12 | 06:50 | 17:01 | 18:39 |
| 11/3/2015 | | 13:18 | 05:13 | 06:51 | 17:00 | 18:38 |
| 11/4/2015 | 00:03 | 13:50 | 05:14 | 06:53 | 16:59 | 18:37 |
| 11/5/2015 | 01:02 | 14:20 | 05:16 | 06:54 | 16:57 | 18:36 |
| 11/6/2015 | 02:00 | 14:47 | 05:17 | 06:55 | 16:56 | 18:35 |
| 11/7/2015 | 02:57 | 15:15 | 05:18 | 06:57 | 16:55 | 18:34 |
| 11/8/2015 | 03:55 | 15:42 | 05:19 | 06:58 | 16:54 | 18:33 |
| 11/9/2015 | 04:52 | 16:11 | 05:20 | 06:59 | 16:53 | 18:32 |
| 11/10/2015 | 05:51 | 16:42 | 05:21 | 07:01 | 16:51 | 18:31 |
| 11/11/2015 | 06:49 | 17:16 | 05:23 | 07:02 | 16:50 | 18:30 |
| 11/12/2015 | 07:47 | 17:55 | 05:24 | 07:03 | 16:49 | 18:29 |
| 11/13/2015 | 08:44 | 18:39 | 05:25 | 07:05 | 16:48 | 18:28 |
| 11/14/2015 | 09:39 | 19:28 | 05:26 | 07:06 | 16:47 | 18:27 |
| 11/15/2015 | 10:30 | 20:23 | 05:27 | 07:07 | 16:46 | 18:26 |
| 11/16/2015 | 11:16 | 21:24 | 05:28 | 07:09 | 16:45 | 18:26 |
| 11/17/2015 | 11:59 | 22:28 | 05:29 | 07:10 | 16:44 | 18:25 |
| 11/18/2015 | 12:38 | 23:35 | 05:30 | 07:11 | 16:43 | 18:24 |
| 11/19/2015 | 13:14 | | 05:32 | 07:13 | 16:43 | 18:24 |
| 11/20/2015 | 13:48 | 00:44 | 05:33 | 07:14 | 16:42 | 18:23 |
| 11/21/2015 | 14:22 | 01:55 | 05:34 | 07:15 | 16:41 | 18:22 |
| 11/22/2015 | 14:58 | 03:08 | 05:35 | 07:16 | 16:40 | 18:22 |
| 11/23/2015 | 15:35 | 04:21 | 05:36 | 07:18 | 16:40 | 18:21 |
| 11/24/2015 | 16:17 | 05:34 | 05:37 | 07:19 | 16:39 | 18:21 |
| 11/25/2015 | 17:03 | 06:46 | 05:38 | 07:20 | 16:38 | 18:21 |
| 11/26/2015 | 17:54 | 07:54 | 05:39 | 07:21 | 16:38 | 18:20 |
| 11/27/2015 | 18:50 | 08:55 | 05:40 | 07:22 | 16:37 | 18:20 |
| 11/28/2015 | 19:49 | 09:49 | 05:41 | 07:24 | 16:37 | 18:19 |
| 11/29/2015 | 20:49 | 10:36 | 05:42 | 07:25 | 16:36 | 18:19 |
| 11/30/2015 | 21:50 | 11:16 | 05:43 | 07:26 | 16:36 | 18:19 |

All times are for Eugene, Oregon Latitude 44º 3' Longitude 123º 06'

## Items of Interest This Month

Saturn leaves the evening sky this month.

Taurid meteors visible during most of month. Slow moving, bright fireballs.

Another good month to find Asteroid Vesta in Cetus.

**11/1 Daylight Savings Time ends.**

11/2-4 Morning: Mars and Venus within 1°

11/7 Moon near Venus and Mars.

11/17 Leonid meteor shower peaks late tonight into early morning of the 18th.

11/19 Plato and Straight Wall nicely lit on Moon.

**11/20 First Quarter Friday Star Party** .

11/25 Full Moon in Hyades. Moon occults Aldebaran early morning of 26th. (Disappearance 2:10 AM, reappearance 2:46 AM.)

For ongoing discussion of astronomical topics and impromptu planning of telescope outings, join the EAS mail list at http://eugeneastro.org/mailman/listinfo/general_eugeneastro.org