

IO - November 2010

Issue 2010-11
Eugene Astronomical Society

Eugene Astronomical Society
Annual Club Dues \$25
President: Sam Pitts - 688-7330
Secretary: Jerry Oltion - 343-4758
Additional Board members:
Jacob Strandlien, Tony Dandurand,
John Loper.

www.eugeneastro.org

EAS is a proud member of:

The Astronomical League
The World's Largest Federation of Amateur Astronomers



Next Meeting: Wednesday, November 24th

How to Buy the Right Telescope by Sam Pitts

Remember that our November meeting is on a Wednesday, due to Thanksgiving the following day. At our November meeting, Sam Pitts will talk about the multitude of telescopes available for purchase, and which ones are worth the money. There are many “hobby killers” out there advertising 600x on a 2.5” refractor with a shaky mount; come learn how to avoid these boondoggles and get a decent scope that you’ll use for years.

After Sam’s presentation, a panel of EAS members will field questions from the audience.

In addition to our main presentation, Jacob Strandlien will present the astronomy news of the month, and as always there will also be time for any of us to bring items for show & tell. If you’ve got a new scope or piece of equipment you’d like to show off, bring it! The meeting is at 7:00 in EWEB’s Community Room, 500 E. 4th in Eugene.

Next First Quarter Friday: November 12th

Our October 15th star party was surprisingly well attended, considering the high clouds that grew increasingly dense all afternoon and evening. The Moon and Jupiter were still visible at sunset, though, and there were several people ready to observe (including a busload of kids), so several of us set up scopes and showed them what we could. Io was just approaching Jupiter, so we enjoyed watching it make contact and then begin dragging its shadow along behind it. Several double stars also shone through the muck well enough to examine. The visitors weren’t as overwhelmed as they are on clearer nights, but we did quite well with what we had to offer.

Let’s hope for clearer sky in November!

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 are the dates for First Quarter Fridays through December of 2010:

November 12

December 10

October Meeting Report

At our October 28th meeting, Mel Bartels gave a talk about meteorites to about 40 members and guests. He called this his “anti-meteorite” talk because he focused on the things people most likely didn’t already know about meteorites, such as that they can corkscrew as they fall (long disbelieved until photographic evidence proved it true) and that they can produce sound via electromagnetic effects on metal objects near the observer. He talked about the “missing 100” meteorites that statistics say should have been found in Oregon, and some of the ones that were (maybe) found and lost again. He also explained how to find meteorites yourself with a magnet and a big plastic sheet (or in your roof gutter).

Several members brought meteorites to show, including one fist-sized iron that weighed a couple of pounds at least. Jean Grendler and Sue Moe shared their extensive collection, including pieces of Mars and the Moon.

Garth Price took home the door prize meteorite donated by Jerry Oltion.



Our next meeting will be on WEDNESDAY, November 24th, at 7:00 PM in the EWEB north building’s Community Room. This is the first room in the semicircular building to the north of the fountain at EWEB’s main campus on the east end of 4th Avenue.

Meeting dates for 2010: (All meetings are at 7:00 in the Community Room)

November 24 (Wednesday)

December 23

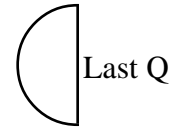
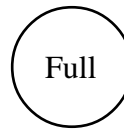
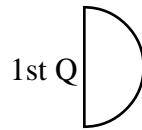


Thank You Castle Storage

For the last two years, Castle Storage has generously provided EAS a place to store its telescopes and equipment. EAS would like to thank Castle Storage for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. They are great people and offer secure and quality storage units.



Observing in November



| November 5 | November 13 | November 21 | November 28 |
|----------------------|-----------------------|-----------------------|-----------------------|
| Mercury Set: 6:23 PM | Mercury Set: 5:26 PM | Mercury Set: 5:34 PM | Mercury Set: 5:44 PM |
| Venus Rise: 7:04 AM | Venus Rise: 5:12 AM | Venus Rise: 4:34 AM | Venus Rise: 4:12 AM |
| Mars Set: 7:01 PM | Mars Set: 5:50 PM | Mars Set: 5:40 PM | Mars Set: 5:33 PM |
| Jupiter Set: 3:42 AM | Jupiter Set: 2:09 AM | Jupiter Set: 1:38 AM | Jupiter Set: 1:11 AM |
| Saturn Rise: 5:09 AM | Saturn Rise: 3:42 AM | Saturn Rise: 3:14 AM | Saturn Rise: 2:50 AM |
| Uranus Set: 4:00 AM | Uranus Set: 2:28 AM | Uranus Set: 1:56 AM | Uranus Set: 1:28 AM |
| Neptune Set: 1:18 AM | Neptune Set: 11:43 PM | Neptune Set: 11:12 PM | Neptune Set: 10:45 PM |
| Pluto Set: 9:13 PM | Pluto Set: 7:42 PM | Pluto Set: 7:12 PM | Pluto Set: 6:45 PM |

All times: Pacific Standard Time (Nov 7, 2010-March 12, 2011) = UT -8 hours or U.S. Pacific Daylight Time (March 14-November 6, 2010) = UT -7 hours.

| Date | Moonrise | Moonset | Sunrise | Sunset | Twilight | |
|------------|----------|---------|---------|--------|----------|-------|
| | | | | | Begin | End |
| 10/1/2010 | 02:21 | 15:22 | 07:49 | 18:02 | 06:11 | 19:40 |
| 10/2/2010 | 03:37 | 15:49 | 07:50 | 18:01 | 06:12 | 19:39 |
| 10/3/2010 | 04:54 | 16:16 | 07:52 | 18:00 | 06:14 | 19:38 |
| 10/4/2010 | 06:12 | 16:47 | 07:53 | 17:58 | 06:15 | 19:37 |
| 10/5/2010 | 07:29 | 17:22 | 07:54 | 17:57 | 06:16 | 19:35 |
| 10/6/2010 | 08:45 | 18:04 | 07:56 | 17:56 | 06:17 | 19:34 |
| 10/7/2010 | 08:56 | 17:53 | 06:57 | 16:55 | 05:18 | 18:33 |
| 10/8/2010 | 09:58 | 18:50 | 06:58 | 16:53 | 05:19 | 18:32 |
| 10/9/2010 | 10:50 | 19:52 | 07:00 | 16:52 | 05:21 | 18:31 |
| 10/10/2010 | 11:32 | 20:57 | 07:01 | 16:51 | 05:22 | 18:30 |
| 10/11/2010 | 12:06 | 22:01 | 07:02 | 16:50 | 05:23 | 18:30 |
| 10/12/2010 | 12:34 | 23:04 | 07:04 | 16:49 | 05:24 | 18:29 |
| 10/13/2010 | 12:58 | | 07:05 | 16:48 | 05:25 | 18:28 |
| 10/14/2010 | 13:20 | 00:06 | 07:06 | 16:47 | 05:26 | 18:27 |
| 10/15/2010 | 13:41 | 01:07 | 07:08 | 16:46 | 05:27 | 18:26 |
| 10/16/2010 | 14:02 | 02:07 | 07:09 | 16:45 | 05:28 | 18:26 |
| 10/17/2010 | 14:24 | 03:08 | 07:10 | 16:44 | 05:30 | 18:25 |
| 10/18/2010 | 14:49 | 04:11 | 07:12 | 16:43 | 05:31 | 18:24 |
| 10/19/2010 | 15:17 | 05:15 | 07:13 | 16:42 | 05:32 | 18:23 |
| 10/20/2010 | 15:51 | 06:21 | 07:14 | 16:42 | 05:33 | 18:23 |
| 10/21/2010 | 16:33 | 07:26 | 07:15 | 16:41 | 05:34 | 18:22 |
| 10/22/2010 | 17:24 | 08:28 | 07:17 | 16:40 | 05:35 | 18:22 |
| 10/23/2010 | 18:24 | 09:24 | 07:18 | 16:39 | 05:36 | 18:21 |
| 10/24/2010 | 19:32 | 10:13 | 07:19 | 16:39 | 05:37 | 18:21 |
| 10/25/2010 | 20:43 | 10:54 | 07:20 | 16:38 | 05:38 | 18:20 |
| 10/26/2010 | 21:57 | 11:29 | 07:22 | 16:38 | 05:39 | 18:20 |
| 10/27/2010 | 23:11 | 11:58 | 07:23 | 16:37 | 05:40 | 18:20 |
| 10/28/2010 | | 12:25 | 07:24 | 16:37 | 05:41 | 18:19 |
| 10/29/2010 | 00:25 | 12:51 | 07:25 | 16:36 | 05:42 | 18:19 |
| 10/30/2010 | 01:39 | 13:17 | 07:26 | 16:36 | 05:43 | 18:19 |

Items of Interest This Month

- First half of month: Taurid meteor shower
- 11/6-7: Standard time begins. We're now -7 hours from Universal time until March.
- 11/7 dusk: Moon, Mars, Antares, and Mercury on horizon just after sunset
- 11/7 Io shadow transit 7:42 - 9:55 PM PST
- 11/12 First Quarter Friday Star Party**
- 11/14 Io shadow transit 9:38 - 11:51 PM PST
- 11/17-18 Leonid meteor shower
- 11/23 Io shadow transit 6:03 - 8:16 PM PST
- 11/24 Europa shadow transit 5:22 - 8:03 PM PST



For Current Occultation Information

Visit Derek C. Breit's web site

"BREIT IDEAS Observatory"

<http://www.poyntsource.com/New/Regions/EAS.htm>

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often.

All times are for Eugene, Oregon, Latitude 44° 3' Longitude 123° 06' for listed date

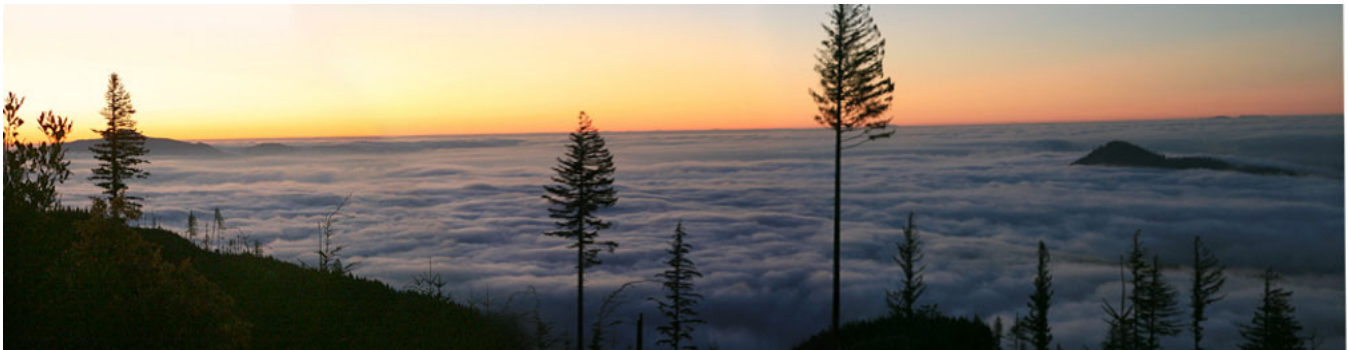
Above the Clouds at Eagle's Ridge

On October 1st, several photon-starved EAS members drove out of town under less than ideal skies, hoping the patchy clouds to the south and west would blow away by dark. (The Clear Sky Chart said they would, and we all know the CSC is never wrong...) As they drove toward Eagle's Rest, the cloud cover only thickened, turning to dense fog when they began to climb into the hills.

The fog dissipated momentarily on the flank of Eagle's Rest itself, then surrounded them again until the last half mile or so to Eagle's Ridge. There, a beautiful and welcome sight awaited: a sea of clouds lapping gently against the hillside only a few hundred feet below. Bill Murray took several photos of it, which Jerry Olton stitched into the panorama below.

That's Eagle's Rest sticking up to the right. We drive over the ridge to the right of it on our way to either of our two observing sites. Eugene and Springfield are to the far left, hidden in the mist beyond what we assume to be Spencer Butte.

The clouds stayed low all night, giving everyone a fabulous view upward as well as below. The photo is in high enough resolution that you can blow it up a bit and study the scene.



The clouds below Eagle's Ridge on October 1st. Photos © by Bill Murray, panorama by Jerry Olton

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



Telescope Lending Library

The EAS has several telescopes available for members to borrow. Check out the telescope lending page on our website to see the many scopes in our lending program, and contact Tony Dandurand, our lending coordinator, to arrange to check out one of these excellent scopes.

Tony can be reached via email at [<tdandurand@comcast.net>](mailto:tdandurand@comcast.net) or by phone at 726-8147.

Dues are Past Due!

EAS membership runs from October thru September. If you haven't renewed already, please mail your dues to the Eugene Astronomical Society, PO Box 7264, Eugene, OR 97401. Dues are \$25. Make your checks payable to Eugene Astronomical Society, or just EAS if your pen is low on ink.

John Taylor Finishes His Trackball

At the same outing described on p.4, John Taylor brought his newly completed 10" trackball scope for its first night of serious observing. John built this scope from scratch — literally. He ground the primary mirror in Mel's mirror class last year, built the fiberglass ball to mount it in, and built the mount and motor drive.

The scope performed wonderfully. The view through it was crisp and contrasty, and the tracking system kept targets in the eyepiece without the need to nudge the scope along. Everyone agreed he had a fantastic scope on his hands.

John also brought the scope to the October 15th First Quarter Friday, where admirers from all over town (and John himself) gave it a big thumbs-up.

This is only the 5th trackball known to exist in the world. (Jerry has built three, and a Canadian amateur astronomer named Pierre LeMay has built one.) Congratulations to John for tackling the project and finishing it in style.



Astronomy Day at the Science Factory

EAS members helped the Science Factory with solar viewing for their Astronomy Day event on October 15th. Ken Martin writes:

We had a pretty good afternoon at the Science Factory. We arrived around 12 noon with our 60mm H-alpha solar scope and Tony arrived a few minutes later with his 80mm refractor with solar filter. Frank from the Science Factory was already there with his solar filtered 8" Celestron SCT. Even with a light cloud haze we were able to amaze and delight many who came to attend the events at the Science Factory with good views of several very prominent sunspots. Especially fun was the reaction to the younger kids. Cloud haze built up to the point where we called it quits around 2pm. Sue and Carolyn from the Science Factory came out a couple of times to say thanks for our participation. Several people asked about our Friday night monthly star parties, and picked up the one-sheet inside.

A fun day!

Tony Dandurand writes:

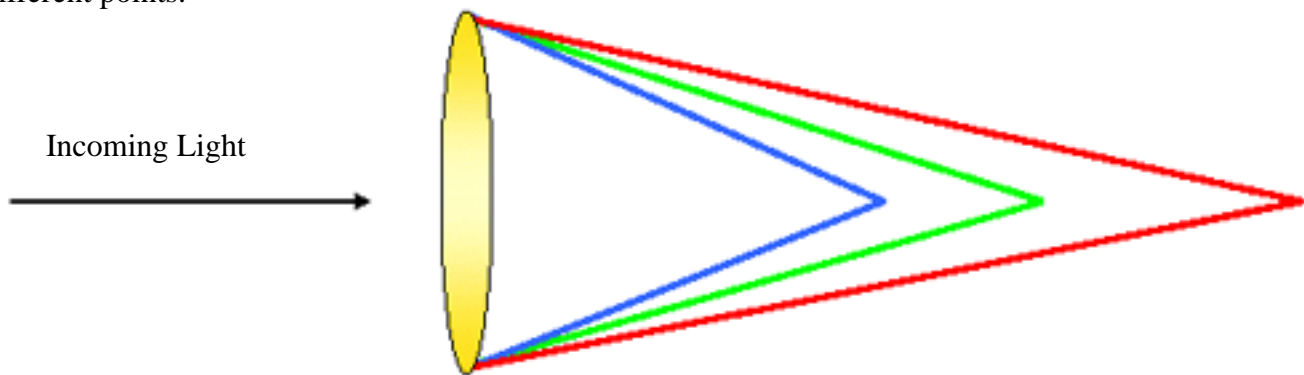
And since it wasn't real busy, it was great to take some time to really compare the views through Ken's H-alpha scope and the 'white light' filtered scopes. I perceived more detail in the sunspots perhaps through the solar filtered scope (brighter image, a little more magnification), but the view through H-alpha always wows me. There were several small but distinct prominences off the limb, and the edge darkening showed better. But the highlight was the long filament (a darker bent line) near Sunspot 1112 (a little cluster of small sunspots). A great view of the nearest star.

Refractors: Achromatic, ED & APO

By Sam Pitts

The telescope that most people envision when we talk about astronomy is the refractor design that Galileo used to look at the stars for the first time. The refractor was the only design around for roughly sixty years, and then Newton introduced the reflector in 1669.

The refractor gained in popularity in the late eighties, and really took off in the nineties with manufacturers offering many new models. The basic refractor suffers from Chromatic Aberrations because of the prism effect of glass. When light passes through the objective lens to reach focus, various light waves (color) are bent by a different amount. As an example: Red, Green, and Blue (RGB) come to focus at different points.



This focus issue can be corrected to some degree by using additional lenses that make up a doublet or triplet objective. The other way to enhance performance is a longer focal length, so the cone of focus is extended. That is why Achromatic Refractors have longer focal lengths, ranging from $f/10$ to $f/20$.

Modern optical glass is very good, as are the machines and technicians that make lenses, allowing for improved optical assemblies. The expense increases with the additional labor and expertise that is needed to figure and polish such lenses. The introduction of exotic glasses like ED (extra low dispersion) and Fluorite has greatly enhanced the finished product, producing ED & APO (Apochromatic) refractors we know today.

The most common glass used is FPL 51 & FPL 53 to make ED Refractors and some APOs. The definition of a true APO refractor is no false color at focus and usually requires a 3-element objective utilizing at least one Fluorite element.

Many scopes that utilize two elements (with FPL 51 or FPL 53 are called ED Refractors or APO refractors; they exhibit little false color especially in the visual range but are not true APOs. True APOs require much more figuring and expertise to bring all the wavelengths to an acceptable point of focus. True APOs are used for imaging where the sensitivity of a camera to correctly focused wavelengths of light is critical. Some high-end scopes are actually tuned for imaging with specific type of CCDs and or wavelengths. These true APOs offer shorter focal lengths ($f/6$ - $f/8$) to accommodate short exposures to capture very sharp, detailed color images; they also perform extremely well in the visual realm at a premium cost.

Now let's be clear that the visual observer can obtain very good to excellent results with many of the scopes advertised as ED/APO, even though they are not true Apochromatic Refractors. In fact all ED refractors are really Achromatic Refractors with varying degrees of corrections to reduce false color using 2 or 3 elements. Some of these scopes are so good that many visual observers will not see any false color unless they view a very bright object like Vega. These scopes are real bargains for the amateur astronomer who wants pinpoint stars and contrasty glimpses of the moon & planets that good refractors are known for.



Trapped Mars Rover Finds Evidence of Subsurface Water

From Science@NASA.gov

The ground where NASA's Mars Exploration Rover Spirit became stuck last year holds evidence that water, perhaps as snow melt, trickled into the subsurface fairly recently and on a continuing basis.

Stratified soil layers with different compositions close to the surface led the rover science team to propose that thin films of water may have entered the ground from frost or snow. The seepage could have happened during cyclical climate changes in periods when Mars tilted farther on its axis. The water may have moved down into the sand, carrying soluble minerals deeper than less soluble ones. Spin-axis tilt varies over timescales of hundreds of thousands of years.

The relatively insoluble minerals near the surface include what is thought to be hematite, silica and gypsum. Ferric sulfates, which are more soluble, appear to have been dissolved and carried down by water. None of these minerals are exposed at the surface, which is covered by wind-blown sand and dust.

"The lack of exposures at the surface indicates the preferential dissolution of ferric sulfates must be a relatively recent and ongoing process since wind has been systematically stripping soil and altering landscapes in the region Spirit has been examining," said Ray Arvidson of Washington University in St. Louis, deputy principal investigator for the twin rovers Spirit and Opportunity.

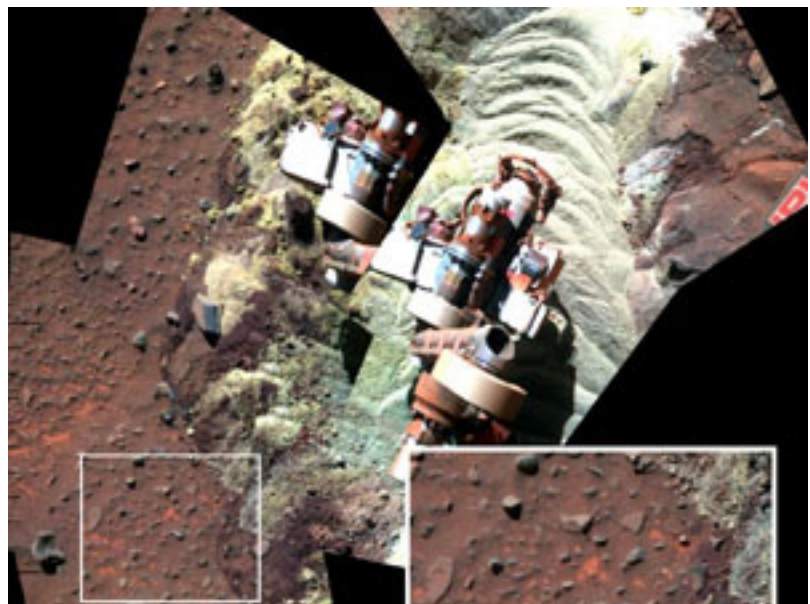
Analysis of these findings appears in a report in the *Journal of Geophysical Research* published by Arvidson and 36 co-authors about Spirit's operations from late 2007 until just before the rover stopped communicating in March.

In April 2009, Spirit's left wheels broke through a crust at a site called "Troy" and churned into soft sand. A second wheel stopped working seven months later. Spirit could not obtain a position slanting its solar panels toward the sun for the winter, as it had for previous winters. Engineers anticipated it would enter a low-power, silent hibernation mode, and the rover stopped communicating March 22. Spring begins next month at Spirit's site, and NASA is using the Deep Space Network and the Mars Odyssey orbiter to listen if the rover reawakens.

Researchers took advantage of Spirit's months at Troy last year to examine in great detail soil layers the wheels had exposed, and also neighboring surfaces. Spirit made 13 inches of progress in its last 10 backward drives before energy levels fell too low for further driving in February. Those drives exposed a new area of soil for possible examination if Spirit does awaken and its robotic arm is still usable.

"With insufficient solar energy during the winter, Spirit goes into a deep-sleep hibernation mode where all rover systems are turned off, including the radio and survival heaters," said John Callas, project manager for Spirit and Opportunity at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "All available solar array energy goes into charging the batteries and keeping the mission clock running."

The rover is expected to have experienced temperatures colder than it has ever before, and it may not survive. If Spirit does get back to work, the top priority is a multi-month study that can be done without driving the rover. The study would measure the rotation of Mars through the Doppler signature of the stationary rover's radio signal with enough precision to gain new information about the planet's core. The



rover Opportunity has been making steady progress toward a large crater, Endeavour, which is now approximately 8 kilometers (5 miles) away.

Spirit, Opportunity, and other NASA Mars missions have found evidence of wet Martian environments billions of years ago that were possibly favorable for life. The Phoenix Mars Lander in 2008 and observations by orbiters since 2002 have identified buried layers of water ice at high and middle latitudes and frozen water in polar ice caps. These newest Spirit findings contribute to an accumulating set of clues that Mars may still have small amounts of liquid water at some periods during ongoing climate cycles.

Dob for Sale

Tony Dandurand has a 6" f/8 dob for sale. It's a handy size for young and old alike; has the crisp image long focus reflectors are known for. Features a 3 vane curved spider (no diffraction spikes), and an upgraded secondary mirror. Home made baltic birch base is stable, moves well, and looks good under 5 coats of urathane. The scope has a 1-1/4" focuser, and a 6X30 finder.

Scope only: \$225

Scope w/ 25 & 10mm (plossl) eyepieces: \$250

Scope w/ 32, 15 (plossl), 8mm (TMB) eyepieces and laser collimator: \$300

Contact Tony at tdandurand@comcast.net or 541-726-8147

