IO - December 2013

Issue 2013-12

Eugene Astronomical Society
Annual Club Dues $25
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EAS is a proud member of:
The Astronomical League
The World's Largest Federation of Amateur Astronomers

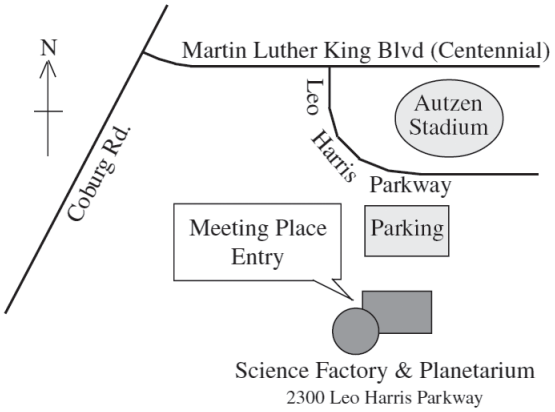
Eugene Astronomical Society
www.eugeneastro.org

Next Meeting Thursday, December 19th
Annual Swap Meet

Our December meeting will be a chance to visit with fellow amateur astronomers, plus swap extra gear for new and exciting equipment from somebody else's stash. We can't do a potluck dinner this time (not a good idea in the planetarium), so just bring any astronomy gear you'd like to sell, trade, or give away.

We will have on hand some of the gear that has been donated to the club over the years, including mirrors, lenses, blanks, telescope parts, and possibly even entire telescopes. Come check out the bargains and visit with your fellow amateur astronomers in a relaxed evening before Christmas.

We also encourage people to bring any new gear or projects they would like to show the rest of the club. Remember we no longer meet at EWEB. The meeting is at 7:00 on Thursday, December 19th at the Science Factory planetarium. **Please arrive on time**; we can't leave the door open unattended, so someone would have to miss the meeting to stand around waiting for late arrivals.



Next First Quarter Friday: December 6

Our November First Quarter Friday was cancelled due to clouds. Here's hoping we'll have better luck on December 6th. If the 6th is clouded out, we'll try again on Saturday the 7th.

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 thru 2014. Note that we've scheduled four of the star parties (January 3, May 2, August 29, and September 26) a week earlier than the calendar would normally dictate in order to have less moon in the sky.

December 6 (24% lit)	January 3 (10% lit)*	February 7 (63% lit)
March 7 (46% lit)	April 4 (29% lit)	May 2 (15% lit)*
June 6 (63% lit)	July 4 (47% lit)	August 1 (32% lit)
August 29 (18% lit)*	September 26 (8% lit)*	October 31 (61% lit)
November 28 (46% lit)	December 26 (31% lit)	

*These star parties are a week earlier than normal to provide less moon glare.

November Meeting Report: Mel Bartels on Einstein's Telescopes

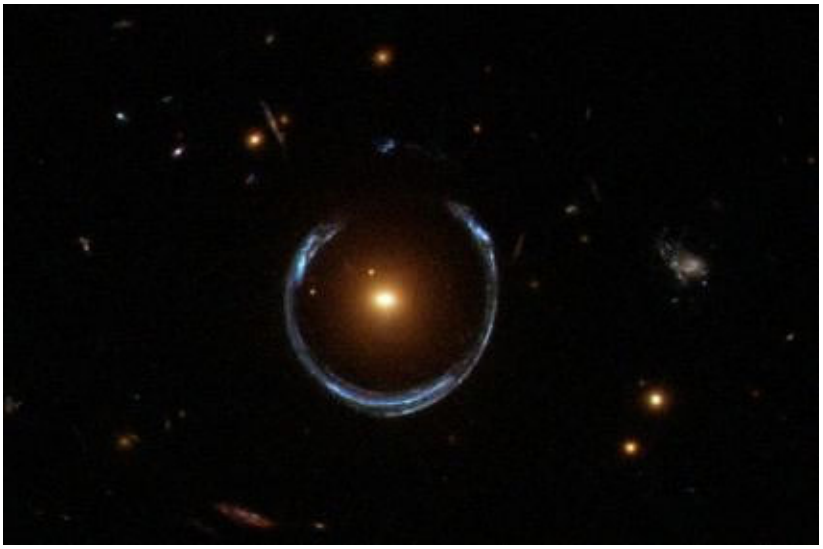
At our November 21st meeting, Mel Bartels gave his talk wearing a lab coat. "How is science done?" he asked. Answer: we make a guess, then we compute the consequences and look for real-world verification of those consequences. If observation matches theory, our guess might be correct. If not, we make a different guess.

One of the greatest scientists of all time, Albert Einstein, made a guess about gravitation that led to several odd predictions, one of which was that light would bend in a strong gravitational field. Einstein believed in his guess strongly enough to be certain that it would happen, but he dismissed the phenomenon as "of little value."

Mel's subject was this gravitational lensing that Einstein predicted, but Mel started with the invention of the telescope, which led people to begin believing (scientifically!) in things that they couldn't see directly with their own eyes. He described how the telescope itself came about, not as a sudden discovery but an inevitble consequence of improvements in lensmaking ability. Ironically, it may have been the aperture stop — intentionally reducing the amount of a lens that is used — that led to the acceptance of the telescope as a valuable scientific tool.

The telescope opened up a Pandora's box of scientific questions, many of which we explored at the meeting. What is inertia? A jar of water spinning at the end of a string gave us a visual demonstration of how it works and led to several theories as to why.

Inertia leads to speculation about gravity. Why are inertia and gravity so closely linked? At the beginning of the 20th Century, that was a big question (and still is!). Einstein came up with his theory of relativity in part to explain gravity. One of the consequences of his theory of gravity was that space itself bends around a heavy object, which means it acts like a lens. It's an odd kind of lens that bends light more near the center than at the edges — exactly the opposite of a regular lens. Mel passed around several lenses that approximate that effect, the bottom of a wine bottle being perhaps the best. He also demonstrated the light paths with string and volunteers.



A nearly perfect "Einstein Ring" caused by gravitational lensing of a distant galaxy by a massive galaxy between us and the distant one.

With that, we dived into gravitational lensing in earnest, talking about how distant objects can be magnified (and distorted) by intervening objects such as galaxies or even entire clusters of galaxies. We can examine the spectra of these galaxies and learn a great deal about parts of the early universe that we couldn't see without lensing. Dark matter provides even more mass to bend passing light rays, allowing us to map the distribution of dark matter in the universe. A great deal of our understanding of the universe around us comes from gravitational lensing, a concept that Einstein considered a mere curiosity when he came up with it.

Thanks, Mel, for a great discussion!

EAS Receives 10" SCT Donation

In early November, the Eugene Astronomical Society received a fabulous donation from Dale Craig of Monroe, who gave us a 10" Meade LX200 Schimdt-Cassegrain telescope. The scope is in like-new condition and came with all the accessories necessary for observing: eyepieces, two finders (a Telrad and an optical finder), filters, and so on. It even came with the manual! It needs a dew shield, but we can make one easily enough.

This is an early model go-to scope. Bill and Jerry powered it up and ran it through its paces and it works beautifully. The object library uses codes rather than names, so you need the manual to know what catalog number to enter for what objects, but it's a simple lookup procedure and the scope came with a variable red flashlight for just that purpose. The scope can also be run manually for people who already know the sky, and running it manually won't mess up the scope's go-to ability whenever you need it.

It's a rare wide-field Schmidt-Cassegrain design with a focal ratio of only f/6.3. That gives it a focal length of only 1600mm and a field of view of over a degree at 45x — incredibly low and wide for a scope of this size. Its high-quality mirrors will also let you crank up the magnification to the seeing limit and beyond.

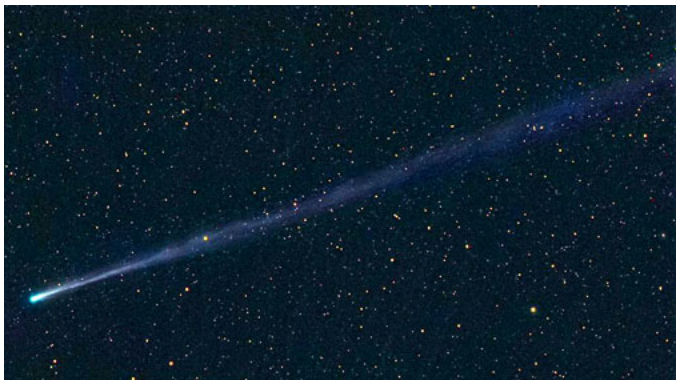
This scope will be going into our lending library, available for members in good standing to check out and use. It's a hefty scope that comes in a big hard case with two more equipment cases and the tripod, so it will take up a back seat and the trunk of a typical car, and it's heavy enough that it really helps to have two people carry it and set it up. It has a power brick to run it from a 110-volt outlet if you set up near a house; otherwise expect to run it from your car's battery with cable clamps provided. (A typical 12-volt jump start battery would probably be too small for this scope.)

This is an amazing donation, and it should be a flagship scope in our lending program for many years to come.

Thank You Castle Storage

For the last six 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.

Comet ISON Teases Us to the End



Comet ISON on November 17th, 2013

We've all been watching Comet ISON for months, trying not to get too taken in by the hype that it would become the "comet of the century" but at the same time hoping that it would put on at least a good show as it rounded the Sun and headed into the northern sky. Several of us were able to spot it in the early mornings in the week before its perihelion passage. And on Thanksgiving day we had a nail-biting finish as the comet faded out on its approach and was declared dead, then miraculously reappeared from behind the Sun, then faded again to what we now believe to be its final curtain call.

It may not have become the comet of the century, but it did treat us all to a dramatic story as it dropped in from the outer solar system and burned out in a blaze of glory.

Don Bishoff on Halley's Comet, 1986

In 1986, Halley's Comet came around for another trip past Earth. The hype for it resembled what we've been seeing for Comet ISON. In February of 1986, Bishoff wrote an article about it for the *Register-Guard*, which we reprint here for your amusement (with permission from the *R-G*).

TV Provides a Better View

by Don Bishoff

What happens when several hundred would-be Halley's Comet watchers all arrive the same night at a remote mountain observatory?

You could call the answer "Bad Night on Pine Mountain."

"It was less than a grand experience, " said John Wilson of Eugene, who was there.

"It was a zoo," said James Kemp, directory of the University of Oregon's Pine Mountain Observatory, who wasn't there, but heard reports from his staff.

It happened last Saturday night at the observatory east of Bend. The largest single-night crowd in history was on hand — and that was just the ones who made it to the top.

There were cars sliding all over the steep, narrow, ice-covered nine-mile road up to the mountain — and jammed together in a hapless mass at the top. There were hundreds of people huddled up to two hours in freezing temperatures for only a brief squint at historic Halley's.

None of it was anybody's fault, really, but it probably dampened some folks' craze.

"Basically the problem was that a lot of people got the wrong idea that this was the very last weekend to see the comet," said Gary Henson, graduate research assistant at the observatory. "So we had two or three times what we might have expected as a normal crowd. I would estimate that we had at least 400 people. Our caretaker counted 110 cars parked at one point — all over the mountain top."

In that crowd were Wilson, his wife and two daughters.

"I don't want this to be a downer on the university," Wilson said, "But people ought to know what they're getting into before they choose to spend the time to do it."

The Wilsons found what they were getting into when they started up the observatory road from Highway 20.

"The last half of the road to the top is fairly steep and was very slick — almost completely covered with ice," Wilson said. "We found a number of cars unable to get up the hill; they didn't have chains or snow tires. We have a small, front-wheel drive car with snow tires, and once going we did well, but if you've ever been in a situation where a car stalled in front of you on a slick hill, you know what it was like. There were cars who decided they couldn't make it up trying to turn around, but there's no place to turn around, really, until you get to the top.

"On top, we found totally inadequate parking, a large number of people, four telescopes and long slow-moving lines. It involved waiting in the cold and snow. A lot of people were inadequately prepared for it. Some brought babies with them."

Wilson said his family waited 45 minutes before the line started moving when it was dark enough to see the comet. It took them another 45 minutes to get into the observatory building, and another 15 to finally reach a telescope.

The view, said Wilson, wasn't exactly worth the wait.

"The comet was a fuzzy blur," he said.

Halley's "set" about 7:15, Wilson said, leaving many who got no view at all. And early arrivals found their exit blocked by latecomers' cars.

"I think they did really a good job for the situation," he said, "but the situation was, oh, not optimal."

Comet Halley in 1986

Observatory staffer Henson agreed with most of Wilson's description, although he estimated that 90 percent of those who made it to the top got a peek at Halley's. Those surprised by the treacherous trip either ignored the observatory's advertised advice to phone ahead for a road-condition report or ignored the report, Henson said.

"Most people were quite understanding," he said. "They appreciated the chance to get a nice view of the comet. A few were grumbling, but 99 percent were willing to be patient."

Observatory Director Kemp was viewing the situation with mixed emotions. He and his predecessor, the late E.G. Ebbighausen, worked for years to generate public interest in the observatory, but this time public interest overwhelmed it.

"We have proposed putting a sign at the bottom of the hill saying the entire staff has a communicable disease," Kemp cracked.

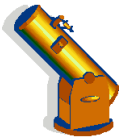
More seriously, he added, the place needs a visitor's center building that would have given people a place to get out from the cold Saturday night.

And Henson said he thinks Saturday night's mess was a one-time-only problem. Other night's crowds have been manageable, he said, and normally the road's in better shape. And the best future observatory comet-watching will be the last weekend in April and the first two weekends in May, he said, when the weather should be much improved.

Wilson plans to do his future comet-watching via TV, however.

"We'll get a much better look there, I suspect," he said.

Ah, but without the excitement of a live performance.



Observing in December

New 1st Q Full Last Q

December 2	December 9	December 17	December 25
Mercury Rise: 6:13 AM	Mercury Rise: 6:44 AM	Mercury Rise: 7:17 AM	Mercury lost in Sun
Venus Set: 7:25 PM	Venus Set: 7:19 PM	Venus Set: 7:05 PM	Venus Set: 6:39 PM
Mars Rise: 1:05 AM	Mars Rise: 12:56 AM	Mars Rise: 12:46 AM	Mars Rise: 12:34 AM
Jupiter Rise: 7:12 PM	Jupiter Rise: 6:41 PM	Jupiter Rise: 6:05 PM	Jupiter Rise: 5:29 PM
Saturn Rise 5:25 AM	Saturn Rise: 5:01 AM	Saturn Rise: 4:34 AM	Saturn Rise:4:07 AM
Uranus Set: 2:14 AM	Uranus Set: 1:46 AM	Uranus Set: 1:14 AM	Uranus Set: 12:43 AM
Neptune Set: 11:02 PM	Neptune Set: 10:35 PM	Neptune Set: 10:04 PM	Neptune Set: 9:34 PM
Pluto Set: 6:48 PM	Pluto Set: 6:21 PM	Pluto Set: 5:51 PM	Pluto Set: 5:21 PM

All times: Pacific Standard Time (Nov 3, 2013-March 9, 2014) = UT -8 hours or U.S. Pacific Daylight Time (March 10-November 2, 2013) = UT -7 hours.

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
12/1/2013	05:49	15:52	07:28	16:35	05:44	18:19
12/2/2013	06:59	16:45	07:29	16:35	05:45	18:18
12/3/2013	08:04	17:46	07:30	16:35	05:46	18:18
12/4/2013	09:03	18:54	07:31	16:35	05:47	18:18
12/5/2013	09:54	20:06	07:32	16:34	05:48	18:18
12/6/2013	10:37	21:19	07:33	16:34	05:49	18:18
12/7/2013	11:15	22:31	07:34	16:34	05:50	18:18
12/8/2013	11:48	23:41	07:35	16:34	05:51	18:18
12/9/2013	12:19		07:36	16:34	05:51	18:18
12/10/2013	12:49	00:49	07:37	16:34	05:52	18:18
12/11/2013	13:19	01:55	07:37	16:34	05:53	18:19
12/12/2013	13:51	02:59	07:38	16:34	05:54	18:19
12/13/2013	14:25	04:02	07:39	16:34	05:54	18:19
12/14/2013	15:03	05:02	07:40	16:35	05:55	18:19
12/15/2013	15:45	05:59	07:41	16:35	05:56	18:20
12/16/2013	16:32	06:52	07:41	16:35	05:56	18:20
12/17/2013	17:22	07:40	07:42	16:36	05:57	18:20
12/18/2013	18:16	08:23	07:43	16:36	05:58	18:21
12/19/2013	19:12	09:02	07:43	16:36	05:58	18:21
12/20/2013	20:09	09:36	07:44	16:37	05:59	18:22
12/21/2013	21:08	10:06	07:44	16:37	05:59	18:22
12/22/2013	22:06	10:35	07:45	16:38	06:00	18:23
12/23/2013	23:06	11:02	07:45	16:38	06:00	18:23
12/24/2013		11:29	07:46	16:39	06:01	18:24
12/25/2013	00:08	11:56	07:46	16:40	06:01	18:24
12/26/2013	01:11	12:27	07:46	16:40	06:01	18:25
12/27/2013	02:17	13:01	07:47	16:41	06:02	18:26
12/28/2013	03:24	13:40	07:47	16:42	06:02	18:26
12/29/2013	04:33	14:27	07:47	16:43	06:02	18:27
12/30/2013	05:41	15:23	07:47	16:43	06:03	18:28
12/31/2013	06:44	16:28	07:47	16:44	06:03	18:29

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

Items of Interest This Month

12/4 Earliest end of evening twilight
12/6 First Quarter Friday Star Party
12/6 Venus at its brightest (-4.9)
12/7 Earliest sunset
12/12 Io shadow transit 7:02 – 9:17
12/14 early AM, peak of Geminid meteor shower (alas, with bright Moon)
12/17 Callisto shadow transit 7:01 – 10:15
12/17 Red spot transits 10:45
12/19 Io shadow transit 8:56 – 11:36
12/21 Winter solstice 9:11 AM
12/21 Europa shadow transit 9:26 – 12:07
12/22 Red spot transits 9:52
12/25 3 of Jupiter's moons pile up 7:00 – 9:00
12/27 Ganymede shadow transit 6:13 – 9:21
12/28 Io shadow transit 5:18 – 7:33

For Current Occultation Information

Visit Derek C. Breit's web site: 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.