

IO - February 2009

Issue 2009-02
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.

www.eugeneastro.org

EAS is a proud member of:

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

Next Meeting: February 26th

Telescope Workshop and Information Sharing

Our February meeting will be a telescope workshop and information sharing session. People with telescopes they would like assistance with are encouraged to bring them to this meeting and let EAS members help tune them up, provide instruction for use, and answer questions about them. We will provide a collimation workshop to teach people how to collimate their scopes, and a mirror-cleaning demonstration to show how one member, at least, cleans mirrors. We will have telescopes of various types on hand for demonstration purposes, and will happily provide opinions on what type of telescope a newcomer to the field should buy (or build).

We also encourage people to bring any new gear or projects they would like to show the rest of the club. Join us on February 26th for a fun evening focused on the equipment we use for observing.

Next First Quarter Friday: March 6th

Our January 2nd star party was clouded out, but our January 30th party was successful, with five scopes and a couple dozen people sharing the view with us.

We don't have any star parties scheduled for February, so our next one will be March 6th. Mark it on 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 through December of 2009.

March 6, 2009

April 3, 2009

May 1, 2009

May 29, 2009

June 26, 2009

July 31, 2009

August 28, 2009

September 25, 2009

October 23, 2009

November 27, 2009

December 25, 2009

The Eugene Astronomical Society meets at EWEB

500 E. 4th Avenue in Eugene.

Our next meeting will be on Thursday, February 26th at 7:00 in the north building's Community Room. This is 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 2009: (All meetings are at 7:00 in the Community Room)

February 26

May 28

August 27

November 19

March 26

June 25

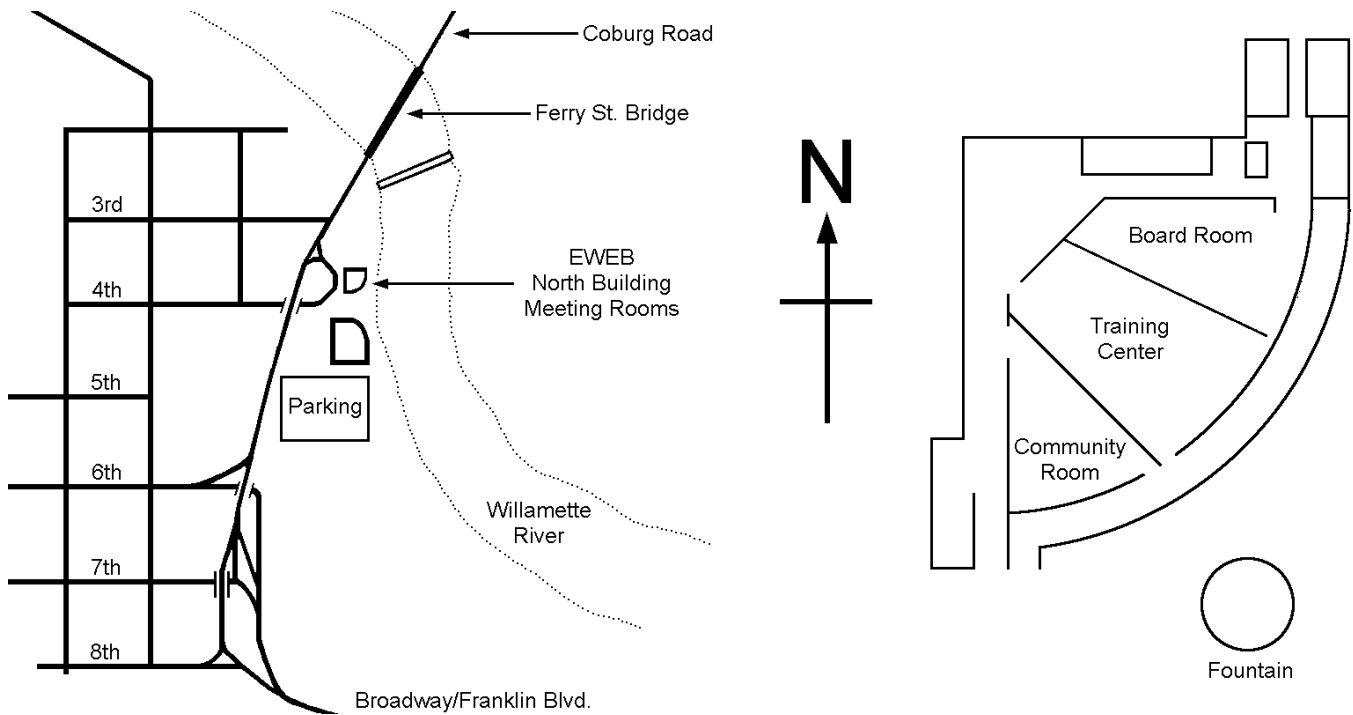
September 24

December 17

April 23

July 23

October 22



EWEB is located at 500 E. 4th Avenue.

EAS meets in the first room in the semicircular building to the north of the fountain.

CASTLE STORAGE

Unit _____
Code _____

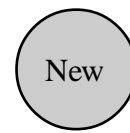
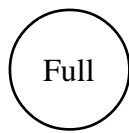
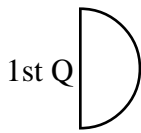
120 S. Danebo • Eugene, OR 97402 • 541.607.3800

Thank You Castle Storage

For over a year now, 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 February



February 2	February 9	February 16	February 24
Mercury Rise: 6:09 AM	Mercury Rise: 6:00 AM	Mercury Rise: 6:01 AM	Mercury Rise: 6:04 AM
Venus Set: 9:07 PM	Venus Set: 8:46 PM	Venus Set: 8:22 PM	Venus Set: 7:52 PM
Mars Rise 6:49 AM	Mars Rise 6:39 AM	Mars Rise 6:28 AM	Mars Rise 6:14 AM
Jupiter Rise: 7:12 AM	Jupiter Rise 6:49 AM	Jupiter Rise 6:26 AM	Jupiter Rise 6:00 AM
Saturn Rise: 8:23 PM	Saturn Rise: 7:53 PM	Saturn Rise: 7:23 PM	Saturn Rise: 6:48 PM
Uranus Set: 8:31 PM	Uranus Set: 8:05 PM	Uranus Set: 7:40 PM	Uranus Set: 7:10 PM
Neptune Set: 6:10 PM	Neptune Behind Sun	Neptune Behind Sun	Neptune Rise: 6:33 AM
Pluto Rise: 4:39 AM	Pluto Rise 4:13 AM	Pluto Rise: 3:46 AM	Pluto Rise: 3:15 AM

All times: Pacific Standard Time (Nov 2, 2008-March 8, 2009) = UT -8 hours or U.S. Pacific Daylight Time (March 8-November 1, 2009) = UT -7 hours.

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
2/1/2009	09:58		07:30	17:23	05:50	19:02
2/2/2009	10:26	00:44	07:28	17:25	05:50	19:03
2/3/2009	11:03	01:59	07:27	17:26	05:49	19:05
2/4/2009	11:50	03:14	07:26	17:27	05:48	19:06
2/5/2009	12:51	04:24	07:25	17:29	05:46	19:07
2/6/2009	14:04	05:23	07:24	17:30	05:45	19:08
2/7/2009	15:25	06:11	07:22	17:31	05:44	19:10
2/8/2009	16:48	06:49	07:21	17:33	05:43	19:11
2/9/2009	18:08	07:18	07:20	17:34	05:42	19:12
2/10/2009	19:26	07:44	07:18	17:36	05:41	19:13
2/11/2009	20:40	08:06	07:17	17:37	05:40	19:14
2/12/2009	21:52	08:27	07:15	17:38	05:38	19:16
2/13/2009	23:02	08:49	07:14	17:40	05:37	19:17
2/14/2009		09:13	07:13	17:41	05:36	19:18
2/15/2009	00:11	09:41	07:11	17:43	05:34	19:19
2/16/2009	01:18	10:13	07:10	17:44	05:33	19:21
2/17/2009	02:22	10:52	07:08	17:45	05:32	19:22
2/18/2009	03:19	11:38	07:07	17:47	05:30	19:23
2/19/2009	04:09	12:33	07:05	17:48	05:29	19:24
2/20/2009	04:51	13:33	07:04	17:49	05:27	19:26
2/21/2009	05:26	14:37	07:02	17:51	05:26	19:27
2/22/2009	05:54	15:42	07:00	17:52	05:24	19:28
2/23/2009	06:19	16:49	06:59	17:53	05:23	19:30
2/24/2009	06:40	17:55	06:57	17:55	05:21	19:31
2/25/2009	07:00	19:03	06:55	17:56	05:20	19:32
2/26/2009	07:20	20:11	06:54	17:57	05:18	19:33
2/27/2009	07:40	21:21	06:52	17:59	05:16	19:35
2/28/2009	08:03	22:34	06:50	18:00	05:15	19:36

Other Items of Interest This Month

- All month: Venus crescent becoming thinner and brighter as Venus draws nearer to Earth
- All Month: Ceres visible in Leo in its closest approach to Earth in 150 years
- 2/13 Mercury at greatest western elongation (24°), visible in early morning
- 2/22 near dawn: Jupiter, Mercury, and Moon close together
- 2/23 Comet Lulin near Saturn
- 2/24 near dawn: Titan's shadow crosses Saturn; Jupiter, Mercury, and Mars near one another
- 2/27 Crescent Moon within 2° of Venus

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.

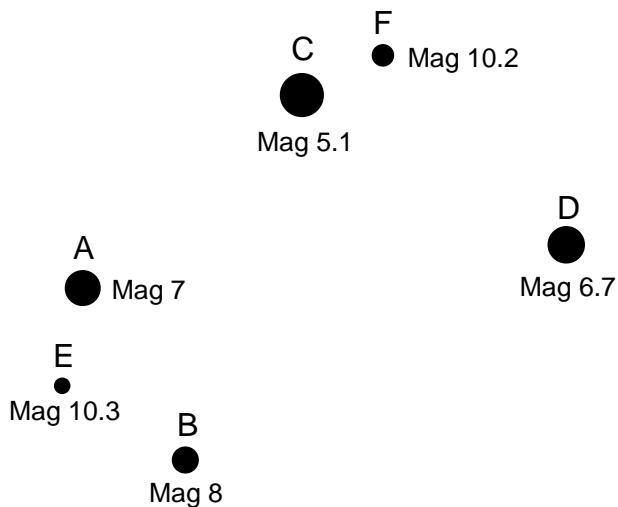
All times are for Eugene, Oregon, Latitude 44° 3' Longitude 123° 06' for listed date

Observing Highlight: The Trapezium's Extra Stars

In the middle of Orion's sword lies the Orion Nebula, one of the winter sky's most popular spectacles. Astronomers can spend hours gazing at its intricate swirls of dust and gas and peering at the cluster of four stars at its core. Due to its location at the heart of the Orion Nebula, Theta Orionis, better known as the Trapezium, is quite possibly the most famous multiple star system in the night sky. The Trapezium and the myriad companion stars embedded in the nebula around it comprise one of the youngest clusters in existence, at only 1 million years of age.

The Trapezium itself is easily visible in practically any telescope. The real fun, however, comes with larger apertures and high magnification. Then you can see the trapezium's elusive extra stars. Tucked in next to the obvious four lie two more 10th-magnitude stars that can be seen in a scope of 6 inch aperture or greater, provided the seeing is good enough to let you crank up the power sufficiently to separate them from the glare of their brighter companions.

The Trapezium's stars are labeled A through F. (There are actually G and H stars, too, but those are too dim to be seen in most amateur telescopes.) A, B, C, and D are the easy four. E is the next easiest, not because it's next brightest (it isn't) but because it's farthest from the glare of its companions. F takes patience, good seeing, high magnification, and often averted vision as well before it pops out of C's bright halo. When it does, it often shows up for only a second before ducking back into hiding. The larger the telescope, the more likely it will remain visible. In an 18" scope, all six stars are often rock steady.



The Trapezium

As long as you're in the area, look for the myriad other 9th-12th magnitude stars embedded in the nebula's glow. There are thousands of them scattered all through the Orion Nebula. Most are hidden behind the cloud that gave them birth, visible only in infrared light, but many are peeking out of their cocoons and announcing their presence in a spectrum you can see...with patience and good seeing.

For people with go-to scopes, "Orion Nebula" will probably center your scope on the Trapezium. If not, go to RA: 5 35' 17" and Dec: -5 23' 27"

Return of the 10" Pumpkin

By Tony Dandurand

The club's old Orange 10 Inch Dob is back. It's been rarely used in recent years, even though it's been available for loan for the asking for Club members. Scopes must hate hanging out in the Scope Lending Library night after night, month after month, never getting a chance to collect photons. I hate seeing that too, so I decided to see what could be done to get it more usable.

It did have its problems. It's pretty big, and kinda heavy (by modern standards) for a 10" F/6. Carrying it took considerable effort. Altitude motion was only fair; azimuth motion was terrible. The helical focuser would have worked — sort of — but for the scope's biggest flaw. The mount had no strength, no stiffness. Any touch, to focus or move the scope caused major big shakes for as long as a tenth of a minute. And the secondary was too small to 'see' the whole primary, making it effectively an 8.5" scope. A few problems. So, a project was born.

The first step was to replace the tall, skinny rocker box with a short stout rocker box (and new ground board) and replace the 6" bearings with big, beautiful 18" semi-circles. Formica and teflon replaced



raw wood on plastic. A new (used) secondary holder with 2.14" secondary now catches all the light from the primary, and is easy to collimate.

A good used Orion 2" focuser replaced the original. The Telrad was repositioned and aligned. Jerry dug through our storage unit and found the rings to remount the original, color coordinated orange 6x30 finder. Testing Big Orange showed a whole new level of ease of use. The shakes are gone, focusing is easy, collimation is easy and stable. The combination of Telrad & optical finder made for fun star hopping. It had become a pleasant, user friendly scope, if still pretty big, and kinda heavy.

One night, I rolled my scope out of the way to get to Big Orange, and the light

went on. WHEELS. Wheelbarrow *handles* like on my dob were out of the question — too big and over budget. But one day at Harbor Freight I found little 4" plastic wheels that worked just right. Latch this scope in upright position, grab the front of the telescope, wheel it out, unlatch, put in an eyepiece, and you're observing. Seriously, if you can store this in a garage or outdoor shed/shop, and have a driveway or patio you can roll this to, you can be observing with a *CLASSIC 10" Dob* in less time than you could go get a teeny refractor out of the house.

You have got to check this out! Out of our Lending Library* that is. Even though I have scopes of my own, I find viewing with other different scopes interesting, and part of the fun of astronomy. So — check this out. Leave your computer controlled Schmidt-Cassegrain or equatorial mounted refractor in the house some night, and check out the heavens with this old/new scope. He surely loves collecting photons again, and wants to — for you.



*Jerry, Jacob, and I are starting a project to get our Lending Library scopes on a page on our web site. Pictures, descriptions, included accessories, and other information about each scope will be included. We hope to have this available in a month or two.

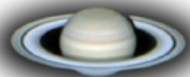
Telescope Lending Library

The EAS has several telescopes available for members to borrow. The beautiful 10" truss-tube dobsonian that Tony Dandurand built last spring is once again available, as is the newly rebuilt 10" Pumpkin. We also have several others ranging from 8-inch to 12-inch in our storage unit. If you need a scope, or if you just want to try something different for a while, the club has scopes available.

Contact Jerry Oltion (343-4758) or Sam Pitts (688-7330) to arrange to borrow one of the club's scopes.

Discounted Magazine Subscriptions

One of the benefits of EAS membership is a club discount on subscriptions to *Sky & Telescope* and *Astronomy* magazines. The clubmember rate for *Sky & Telescope* Magazine is \$32.95 for one year or \$65.95 for two years. The clubmember rate for *Astronomy* magazine is \$34 for one year or \$60 for two years. This is the rate for new subscriptions or renewals. New subscriptions have to go through the club secretary (Jerry Oltion) to qualify for the discounted rate, so contact Jerry if you want to start a new subscription. *Sky & Telescope* allows you to renew at the club rate on your own, but *Astronomy* requires renewals to go through the club secretary as well. For more information, contact Jerry at j.oltion@sff.net or 343-4758.



Giant Rockets Could Revolutionize Astronomy

from Science@NASA.gov

In the game of astronomy, size matters. To get crisp, clear images of things billions of light years away, a telescope needs to be big.

“The bigger the better,” says astronomer Harley Thronson, who leads advanced concept studies in astronomy at the Goddard Space Flight Center. And he thinks “NASA’s new Ares V rocket is going to completely change the rules of the game.”

Ares V is the rocket that will deliver NASA’s next manned lunar lander to the moon as well as all the cargo needed for a lunar base. Its roomy shroud could hold about eight school buses, and the rocket will pack enough power to boost almost 180,000 kg (396,000 lbs — about 16 or 17 school buses) into low Earth orbit. Ares V can haul six times more mass and three times the volume the space shuttle can.

“Imagine the kind of telescope a rocket like that could launch,” says Thronson. “It could revolutionize astronomy.”

Optical engineer Phil Stahl of the Marshall Space Flight Center offers this example: “Ares V could carry an 8-meter diameter monolithic telescope, something that we already have the technology to build. The risk would be relatively low, and there are some big cost advantages in not having to cram a large telescope into a smaller launcher.”

For comparison, he points out that Hubble is only 2.4 meters wide.

An 8-meter monolithic telescope would see things more than three times as sharply as Hubble can. More importantly, in the same amount of observing time, the larger mirror would see objects that are about 11 times fainter than Hubble sees because the 8-meter telescope has 11 times the light collecting area.

But Ares V can go yet bigger. It could transport a huge segmented telescope — one with several separate mirror panels that are folded up for transport like the James Webb Space Telescope — but three times the size!

The Space Telescope Science Institute’s Marc Postman has been planning a 16-meter segmented optical/ultraviolet telescope called ATLAST, short for Advanced Technology Large-Aperture Space Telescope. The science from an aperture its size would be spectacular.

“ATLAST would be nearly 2000 times more sensitive than the Hubble Telescope and would provide images about seven times sharper than either Hubble or James Webb,” says Postman. “It could help us find the long sought answer to a very compelling question — ‘Is there life elsewhere in the galaxy?’”

ATLAST’s superior sensitivity would allow astronomers to hugely increase their sample size of stars for observation. Then, discovery of planets hospitable to life could be just around the corner!

“With our space-based telescope, we could obtain the spectrum of Earth-mass planets orbiting a huge number of nearby [60 - 70 light years from Earth] stars,” says Postman. “We could detect any oxygen and water in the planets’ spectral signatures. ATLAST could also precisely determine the birth dates of stars in nearby galaxies, giving us an accurate description of how galaxies assemble their stars.”



The roomy shroud of the Ares V could hold about eight school buses.
Credit: NASA

This telescope could also probe the link between galaxies and black holes. Scientists know that almost all modern galaxies have supermassive black holes in their centers. “There must be a fundamental relationship between the formation of supermassive black holes and the formation of galaxies,” explains Postman, “but we don’t understand the nature of that relationship. Do black holes form first and act as seeds for the growth of galaxies around them? Or do galaxies form first and serve as incubators for supermassive black holes? A large UV/optical telescope could answer this question: If our telescope finds ancient galaxies that do not have supermassive black holes in their centers, it will mean galaxies can exist without them.”

Dan Lester of the University of Texas at Austin envisions another 16-meter telescope, this one for detecting far-infrared wavelengths.

“The far-infrared telescope is quite different from, and quite complementary to, the optical telescopes of Stahl and Postman,” says Lester. “In the far-infrared part of the spectrum, we generally aren’t looking at starlight itself, but at the glow of warm dust and gas that surrounds the stars. In the very early stages of star formation, the proto-star is surrounded by layers of dust that visible light can’t penetrate. Our telescope will allow us to see down into the innards of these giant dense clouds that are forming stars deep inside.”

Observations in the far-infrared are especially challenging. These long wavelengths are hundreds of times larger than visible light, so it’s hard to get a clear picture. “A very big telescope is necessary for good clarity at IR wavelengths,” notes Lester.

Like the telescopes of Stahl and Postman, Lester’s Single Aperture Far-Infrared Telescope (“SAFIR” for short), comes in two flavors for the Ares V: an 8-meter monolithic version and a 16-meter segmented version. Lester realized that, with an Ares V, he could launch an 8-meter telescope that didn’t need complicated folding and unfolding. “But on the other hand, if we don’t mind adding the complexity and cost of folding and still use an Ares V, we could launch a really mammoth telescope,” says Lester.

In addition to all the above telescopes, Ares V could boost an 8-meter-class X-ray telescope into space. NASA’s highly-successful Chandra X-ray Observatory has a 1 meter diameter mirror, so just imagine what an 8-meter Chandra might reveal!

Roger Brissenden of the Chandra X-ray Center is excited about the possibility of a future 8-meter-class X-ray telescope called Gen-X.

“Gen-X would be an extraordinarily powerful X-ray observatory that could open up new frontiers in astrophysics,” he says. “This telescope will observe the very first black holes, stars and galaxies, born just a few hundred million years after the Big Bang, and help us determine how these evolve with time. Right now, the study of the young universe is almost purely in the realm of theory, but with Gen-X’s extreme sensitivity (more than 1000 times that of Chandra) these early objects would be revealed.”

Indeed, Ares V flings shutters open wide on our view of the cosmos. It shakes off the shackles of mass and volume constraints from science missions and sweeps us into deep space to view “...a hundred things/ You have not dreamed of.”

“We could get incredible astronomy from this big rocket,” says Thronson, a professional dreamer. “I can’t wait.”



Even the smallest space telescope envisioned for launch onboard the Ares V would dwarf Hubble. Image credit: NASA.