Super Moon St. Louis Style
Steve Shubert
December Calendar

Social
December 1 – 7-9pm Beginner Meeting @ Weldon Springs Interpretive Center, 7295 HWY 94 South, St. Charles, MO 63304

December 10 – Monthly Meeting @ Weldon Springs Interpretive Center, 7295 HWY 94 South, St. Charles, MO 63304 5:30 pm, social hour followed by dinner and meeting. The Shubert’s will bring ham for the entree. Complimentary dishes and desserts are welcome.

December 20 - 7pm DigitalSIG Astrophoto group meeting Weldon Spring, 7295 Highway 94 South, St. Charles, MO 63304.

December 28 - 7pm DIY-ATM group meeting Weldon Spring, 7295 Highway 94 South, St. Charles, MO 63304.

December 2, 9, 16, 23, 30 - 7 pm start times Broemmelsiek Park Public viewing, weather permitting.

Astronomical
For the early risers, Jupiter is climbing into the 5am skies high enough to grab a scope and see the Red Spot.
A newsletter is only as interesting as the material sent in by contributors.

Would you like earn the eternal gratitude of your fellow club members and intergalactic recognition in our newsletter? Send a note to your friendly editor on any astronomy related subject at newsletter@asemonline.org I’ll get it posted in the monthly newsletter.

Your editor at large (not large editor),

Jim Curry
Greetings!

The holiday season is upon us, and it sure seems busy this year. The sun sets early and we can get in some weeknight observing without getting to bed too late! Just remember, it will get colder in January.

I'm very glad to report that the new C-14 is in-place and operational. Kudos to all who helped but especially to Ed White and Carl Turek. See the installation report in this newsletter.

Our second year in the Library Telescope program (see summary in this newsletter provided by Chuck Simms) was again very productive. This Outreach form is quite probably our 2nd most attended (after FNOH, and perhaps barely before 'road-trip' outreach). We are doing a very good thing here. Much thanks to Chuck Simms and to all who helped out this year at both Library Star Parties as well as the Telescope Builds.

As a club, we will need to soon start doing 'active' planning on our mission goals for the 2017 total solar eclipse. At some point, we will need some folks to actually commit where they plan to be, if helping out. Lots of communities and schools around us will be wanting our help. A small committee to coordinate our local efforts might be appropriate. Would anyone like to chair this short-term effort? This event will be our single biggest Outreach effort in all of 2017 for sure.

ASEM calendars are still for sale. So far 29 of 50 have been pre-sold. I hope to have these in-hand for distribution at our December meeting, and would like to have them sold-out at that time as well.

I have decided to continue 'selling' ASEM solar eclipse glasses to members out of existing inventory at the same rate. That's $0.30 ea. for 100 ($30.00), which is only a few pennies over ASEM cost. I'll bring 'the box' to the December meeting again. I may place yet another 3000+ order (perhaps with different graphics, for fun) in early February when funds are available.

I hope everyone gets all the astronomical goodies that you have on your Christmas lists! Looking forward to this months' meeting. We will be starting a half-hour early for this Christmas-oriented meeting (so 5:30 drinks and snacks/food, 7pm for meeting). See you there!
Hope to see you at the meeting!

Jim Twellman
Executive Director
Alliance for Astronomy (dba Astronomical Society of Eastern MO)
It is getting near the time that a schedule for 2017 is being developed. If there are any topics you’d like to see for 2017 Beginner Meetings send them to sboerner@charter.net.

**December** Secrets to successful winter observing  
(keeping warm, predicting weather)

You don’t have to be a beginner to come to the meetings. Many an old pro will admit that there is always more to learn. There is always time to address issues and questions.

ASEM Beginner Meetings are scheduled for the first Thursday evening every month in the Weldon Spring Center Meeting room at 7:00 p.m.
2017 ASEM Calendar-Update from Oz

Update. The calendars are now "in". We will for sure have them at the (December) meeting.

JT
Broemmelsiek Reports!
Submitted by our Star Party Animal, Amy White

For the **November 11**, Friday Night Open House at Broemmelsiek Park, we had 63 clicked on the clicker. Around 35 of these were with a Girl Scout group that showed up at 6pm. I know this because I got to the park at 5:45, going early tonight just on a hunch. Sat in the car and enjoyed some peace and quiet for a few minutes.

Ed and I entertained the bunch with the JB, our Astroscan, and Moon filters. Eventually it cleared up a bit, but with the almost-super Moonlight, our deep sky friends were so washed out. M15 was impossible, as it was too close to the almost-super Moon. Albireo, M57, and some clusters were available for viewing. Mars was just an orange dot in the thin clouds that refused to disappear completely.

Ryan Jones showed up with his new refractor, and helped out with FNOH duties. In addition to the Girl Scouts, we had families and older people coming for a look. Most of them only stayed for a short time, as nobody is really used to the chilly temps yet. One guy on the scene was wearing shorts and a short-sleeved polo shirt. Really dude, really? Ryan, Ed, and I left at 9:30.

Regarding Friday, **November 4**.

We had 147 on the clicker. A homeschooling group made up more than a third of this number. They arrived early and stayed for a good while. We had telescope support from ASEM guys:
Carl Turek
Rodney Riederer
Chuck Simms
Stacey Thater
Jim Oates
Jim Stenzel
Mike Scallion
Ed White and myself
We also had Rod from the Eastern Missouri Dark Sky Observers assisting the public with his new, larger aperture Dob.

Amy W
**Buford Mountain Start Party**

Members of the St. Louis Astronomical Society and the Astronomical Society of Eastern Missouri participated at a private observing field near Buford Mountain, Missouri. The event occurred over the weekend of October 28 – 30, and included Jim and Ann Trull, Mark Jones, Bill and Annalise Biermann, Jack Gillette and Bill Neubert. Participants brought telescopes ranging from 10x50 binoculars to Bill Biermann’s whopping 450 mm (18 inches) Dobsonian. We enjoyed a healthy amount of food and great conversation during the day. The skies were clear early on Friday night, and late on Saturday night allowing Mark to view 30 objects to complete his binocular deep sky list.

*Bill Biermann at the eyepiece with the constellation Orion in the background (Photo by Mark Jones)*
Jim and Ann Trull operating their Meade LX200, while Mark Jones points out objects with a laser pointer with Bill Bierman.

The Orion Nebula imaged on October 29, 2016.
Member Recognitions

By Jim Melka

Congratulations, Dan and Greg, your images published in January Sky and Telescope!
Broemmelsiek Observatory Report
By Jim Twellman

The new C-14 was installed today (Saturday Nov 19) at Broemmelsiek Park. Still need to run it thru its’ paces before public use, but it is in working order.

Carl Turek and his crew handled the pier upgrade, including security enhancements, about a week prior. This morning, the installation crew arrived around 9AM and got it installed and in working order by 11AM. Those involved were: Ed White, Carl Turek, Steve Boerner, Robert Hesemann, Jim Stenzel, Rick Steiling, and myself.
The moon was still visible and the go-to’s (and home position) were set.
It will take a while to get this scope back to what we had, on both outreach as well as astrophotography. We'll prioritize our time and budget, while keeping security foremost. This is a fantastic mount, and it will have a learning curve to get the most of it. It does appear to be inherently more user-friendly than our previous C-14.
It sure is a beauty, and I'm very glad that we now have it installed. Very anxious to get it into action soon!
Jim Twellman
Executive Director
Alliance for Astronomy (dba Astronomical Society of Eastern MO)
St. Charles Library Telescope Program
2016 Final Update
Submitted by Chuck Simms

- A total of 11 star parties between May and Nov
- 7 different branches
- 287 guests all year
  - 54 guests were the most at one event
  - 4 guests were the least at one event
  - 26 guests were the average
- 9 ASEM and 3 SLAS members volunteered
  - ASEM: Larry Campbell; Bill Fisher; Marv Stewart; Amy White; Jim Twellman; Randy Gettman; Dave Lloyd; Richard Kamp; Chuck Simms
  - SLAS: Ed Frey; Rich Heuermann; Jeff Strauss

Dateline: 11/11/16

Last night was the last Star Party of 2016 for the St. Charles Library telescope program, and we had a great turnout. Bill Fisher, Amy White, Marv Stewart, Jim Twellman and Chuck Simms where there to great, teach, and answer questions from a group of 30 plus folks inside and at least 8 more than that outside.

Bill and Chuck went through the presentation inside while Jim setup the clubs 12” dob outside and work with folks as they passed by. We had 4 of the library telescopes so at the end of the presentation Marv, Amy, Bill and Chuck could each work with a small group of people on how to use them.

The night was clear and the moon was bright and everyone had a great time outside. We were outside from 7:30 until 8:30.

I’d like to thank everyone who help this year at these events: Larry Campbell, Richard Kamp, Randy Gettman, Jim Twellman; Marv Stewart, Amy White, Bill Fisher, Dave Lloyd, Ed Frey, Rich Heuermann, and Jeff Strauss.

Chuck
November’s meeting was led by Mike Pusatera who discussed Phd 2. Phd 2 is a free auto guiding program. If you haven’t tried it in a while, it is definitely worth a second (or first) look.

Phd 2 website – http://openphdguiding.org

Presentation given by Andy Galasso (one of the Phd 2 developers and an observatory partner of mine) - https://www.youtube.com/watch?v=LXFRta98rs


The December meeting will be on the 20th. Bill Neubert will give a presentation on DSLR lenses for astrophotography. We’ll also be finalizing the February 11th workshop, a possible imaging trip in February or March and other business.

IC59 & 63 in Ha – Gregg Ruppel

Show up. Bring your images and questions. We can help.

The latest Digital SIG news can always be found in the ASEM Digital SIG Yahoo Group
ASEM’s Tinkerer’s aka The DIY Crowd (Do-It-Yourself)
These guys will find solutions to problems you didn’t know you had

No notes this month 😞

But, we do have some photos from an ATM’ers workshop.

Test fitting a focuser adapter for a Zeiss OTA build. The TeleVue focuser screws right on!
Turning a brass end cap for a new 40mm brass finder
December Celestial Calendar by Dave Mitsky

Gathered by and reprint permission secured by Steve Boerner

All times, unless otherwise noted, are UT (subtract six hours and, when appropriate, one calendar day for CST)

12/1  Neptune is at eastern quadrature at 1:00; Mercury is 7.1 degrees south of the Moon at 5:00; Mercury is at its greatest heliocentric latitude south (-7.0 degrees) at 21:00
12/2  Mercury is at its greatest declination south (-25.8 degrees) for the year at 17:00
12/3  Asteroid 4 Vesta is stationary at 4:00; Venus is 5.8 degrees south of the Moon at 11:00
12/4  The earliest end of evening twilight at 40 degrees north takes place today
12/5  Mars is 2.9 degrees south-southeast of the Moon at 9:00
12/6  The Lunar X (the Purbach or Werner Cross), an X-shaped clair-obscure illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 16:36; the Moon is at the descending node at 17:37; Neptune is 0.67 degree south-southeast of the Moon, with an occultation taking place in western Europe, Iceland, Greenland, southern and eastern Canada, the United States, and Central America, at 22:00
12/7  First Quarter Moon occurs at 9:03; the earliest sunset of the year at 40 degrees north latitude occurs at 16:35
12/9  Uranus is 2.9 degrees north-northwest of the Moon at 21:00
12/10 Saturn is in conjunction with the Sun at 12:00
12/11 Mercury is at greatest eastern elongation (20.8 degrees) at 4:00
12/12 The Moon is 9.0 degrees south-southeast of the bright open cluster M45 in Taurus at 13:00; the moon is at perigee, subtending 33'20" from a distance of 358,461 kilometers (222,737 miles), at 23:29
12/13 The Moon is 0.47 degree north-northwest of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation taking place in northwest Africa, far western Europe, far southern Greenland, southern and eastern Canada, the United States, and northern Mexico, at 4:00
12/14 The peak of the Geminid meteor shower (100 to 120 per hour) occurs at 0:00; Full Moon (known as the Before Yule, Cold, Long Nights, and Oak Moon) occurs at 0:05; the Moon is 5.4 degrees south of the bright open cluster M35 in Gemini at 16:00
12/15 Asteroid 1 Ceres is stationary in right ascension at 7:00
12/17 The Moon is 3.7 degrees south of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 3:00
12/18 The Sun enters Sagittarius at 2:00; the Moon is 0.98 degree south-southwest of the first-magnitude star Regulus (Alpha Leonis), with an occultation taking place in far southern Australia and portions of Antarctica, at 18:00
12/19 The Moon is at the ascending node at 4:47; Mercury is stationary in right ascension at 7:00
12/20 Mercury is 1.9 degrees southwest of Pluto at 12:00; Mercury is at the ascending node at 23:00
12/21 Last Quarter Moon occurs at 1:56; winter solstice in the northern hemisphere occurs at 10:44
2/22  Mars (10.2 degrees heliocentric longitude) and Jupiter (190.2 degrees heliocentric longitude) are at heliocentric opposition at 6:00; the peak of the Ursid meteor shower (10 per hour) occurs at 9:00; Jupiter is 2.3 degrees south-southwest of the Moon at 18:00; the Curtiss Cross, an X-shaped clair-obscur illumination effect located between the craters Parry and Gambart, is predicted to occur at 18:27

2/24  The equation of time equals zero at 22:00

2/25  The Moon is at apogee, subtending 29'26" from a distance of 405,870 kilometers (252,196 miles), at 5:55; Mercury is at perihelion (0.31 a.u. from the Sun) at 15:00

2/27  The Moon is 3.6 degrees north of Saturn at 21:00

2/28  Jupiter is at its greatest heliocentric latitude north (1.3 degrees) at 5:00; Mercury is in inferior conjunction at 19:00

2/29  The Moon is at its southernmost declination (-18.96 degrees) of the year at 2:00; Mercury is 1.8 degrees south of the Moon at 5:00; New Moon (lunation 1163) occurs at 6:53; Uranus is stationary in right ascension at 16:00

2/31  Comet 45P/Honda–Mrkos–Pajdušáková is at perihelion (0.53 a.u. from the Sun) at 4:00

**Interesting Facts for This Month:**

Tycho Brahe, Johannes Kepler, Isaac Newton, and Arthur Eddington were born in December.

Giovanni Cassini discovered the Saturnian satellite Rhea on December 23, 1672.

**Meteor Showers:**

Unfortunately, the peak of December 14th’s Geminid meteor shower coincides with Full Moon this year. The Geminids, which are associated with the Palladian asteroid, or possible cometary nucleus, 3200 Phaethon, have become the most reliable meteor shower of the year. Geminid meteors appear to originate from a radiant that’s just northwest of Castor (Alpha Geminorum). That radiant lies almost at the zenith at 2:00 a.m. local time. The Ursids, a normally minor meteor shower, peak on the morning of December 22nd. Moonlight from a waxing gibbous Moon will interfere with observing the shower. The radiant is located close to Kochab (Beta Ursa Minoris), some 15 degrees from the north celestial pole. An article on the 2016 Geminids and 2016 Ursids appears on page 48 of the December issue of Sky & Telescope. See [https://in-the-sky.org/20161214_11_100](https://in-the-sky.org/20161214_11_100) and [http://www.imo.net/calendar/2016#gem](http://www.imo.net/calendar/2016#gem) for additional information on the Geminids and [https://in-the-sky.org/20161222_11_100](https://in-the-sky.org/20161222_11_100) and [http://www.imo.net/r...endar/2016/#urs](http://www.imo.net/r...endar/2016/#urs) for more on the Ursids.

**Earth Orbiting Satellites:**

Information on Iridium satellite flares and passes of the ISS, the Tiangong-1, the X-37B, the HST, and other satellites can be found at [http://www.heavens-above.com/](http://www.heavens-above.com/)

**The Moon:**

The Moon is 1.5 days old, is illuminated 2.1%, subtends 29.52 arc minutes, and is located in Ophiuchus on December 1st at 0:00 UT. Large tides will take place on December 13th through December 16th. Full Moon occurs on December 14th. Due to the position of the ecliptic, the Moon reaches its highest point in the sky for the year in December. It attains its greatest northern declination (+18.9 degrees) for the month on December 15th and its greatest southern declinations (-18.9 degrees) on December 2nd and (-18.9 degrees) on December 29th. Longitudinal libration is at a maximum of +7.5 degrees on December 19th and a minimum of -7.1 degrees on December 7th. Latitudinal libration is at a maximum of +6.5 degrees on December 13th and a minimum of -6.6 degrees on December 27th. The Moon occults Neptune.
on December 6th, the first-magnitude star Aldebaran on December 13th, and the first-magnitude star Regulus on December 18th from certain parts of the world. New Moon occurs on December 29th. Consult http://www.lunar-occ...ota/iotandx.htm for more on these events. Visit http://saberdoesthes...does-the-stars/ for tips on spotting extreme crescent Moons and http://www.curtrenz.com/moon.html for Full Moon data. Times and dates for the lunar crater light rays predicted to occur this month are available at http://www.lunar-occ...o/rays/rays.htm

The Sun:
The Sun is located in Ophiuchus, a non-traditional constellation of the zodiac, on December 1st. Sol enters Sagittarius on December 18th. Winter solstice for the northern hemisphere occurs when the Sun is farthest south for the year on December 21st. It is the shortest "day" of the year (9 hours and 20 minutes at latitude 40 degrees north).

Planets:
Brightness, apparent size, illumination, distance from the Earth in astronomical units (a.u.), and location data for the planets and Pluto on December 1st:
- Mercury (mag -0.5, 5.5", 83% illuminated, 1.22 a.u., Sagittarius),
- Venus (mag -4.2, 16.8", 69% illuminated, 0.99 a.u., Sagittarius),
- Mars (mag +0.6, 6.5", 88% illuminated, 1.44 a.u., Capricornus),
- Jupiter (mag -1.8, 32.9", 99% illuminated, 6.00 a.u., Virgo),
- Saturn (mag +0.5, 15.1", 100% illuminated, 11.02 a.u., Ophiuchus),
- Uranus (mag +5.8, 3.6", 100% illuminated, 19.49 a.u. on December 16th, Pisces),
- Neptune (mag +7.9, 2.3", 100% illuminated, 30.19 a.u. on December 16th, Aquarius),
- Pluto (mag +14.3, 0.1", 100% illuminated, 34.14 a.u. on December 16th, Sagittarius).

During the evening, Mercury and Venus can be found in the southwest, Mars and Neptune in the south, and Uranus in the southeast. Uranus is in the west at midnight. In the morning, Jupiter and Saturn are located in the southeast.

At midmonth, Mercury is visible during evening twilight, Venus sets at 8:00 p.m. local time, Mars sets at 10:00 p.m. local time, and Jupiter rises at 2:00 a.m. local time for observers at latitude 40 degrees north.

Mercury is well placed in the early evening sky from December 1st through December 19th. The speediest planet is at its greatest heliocentric latitude south on December 1st, reaches greatest eastern elongation on December 11th, and is stationary in right ascension on December 19th. Mercury is at the ascending node on December 20th and is in inferior conjunction with the Sun on December 28th.

As the distance between Venus and the Earth decreases, Venus continues to brighten and grow in apparent size, while decreasing in the degree to which it is illuminated. The brightest planet lies 5.8 degrees south of the Moon on December 3rd. Venus leaves Sagittarius and enters Capricornus on December 12th.

Mars departs Capricornus and enters Aquarius on December 15th. The Red Planet drops below six arc seconds in apparent diameter by month’s end.

Jupiter rises at approximately 2:30 a.m. local time early in the month and at 1:00 a.m. local time at the end of December. It increases in apparent size from 32.9 arc seconds to 35.4 arc seconds this month. The gas giant lies 2.0 degrees south of the twenty-three-day-old Moon on
December 22nd. Jupiter is at its greatest heliocentric latitude north on December 28th. Ganymede emerges from Jupiter’s shadow for observers in western North America at 12:02 UT (4:02 a.m. PST) and is occulted by the planet at 13:24 UT (5:24 a.m. PST) on December 3rd. Callisto passes due north of Jupiter’s disk on the morning of December 11th. Galilean satellite transits take place on the mornings of December 14th (Ganymede followed later by Io) and December 17th (Europa). Click on http://www.skyandtel...watching-tools/ or consult page 50 of the December issue of Sky & Telescope to determine transit times of the central meridian by the Great Red Spot. Data on Galilean satellite positions and events is available online at http://www.skyandtel...watching-tools/ and http://www.nakedeyep...er.htm#jupmoons and on page 51 of the December issue of Sky & Telescope.

Saturn is in conjunction with the Sun on December 10th and consequently is not visible until the very end of the month. It rises almost 90 minutes before sunrise on December 31st.

Uranus (magnitude +5.8) is located less than one degree east of the fifth-magnitude star Zeta Piscium for the entire month. It sets after midnight. The planet is positioned 52 arc minutes from the star on December 1st and just 35 arc minutes from it by the end of the month. It lies 2.9 degrees north-northwest of the Moon on December 9th. Uranus is stationary on December 29th and resumes direct or prograde (eastern) motion on the same day.

Neptune sets in the late evening. The ice giant is at eastern quadrature on December 1st and is occulted by the Moon on December 6th. Neptune (magnitude +7.9, 2.2 arc seconds in apparent diameter) and Mars (magnitude +0.9, 5.7 arc seconds in apparent diameter) undergo a historically close conjunction in Aquarius on December 31st. The two planets will be 9.8 arc minutes apart for observers on the East Coast and just 1.3 arc minutes for observers in Hawaii one hour prior to the time that they set. It will be the closest the two planets have been in more than 700 years.

See http://www.curtrenz.com/uranep.html for additional information on Uranus and Neptune.

Finder charts for Uranus and Neptune appear on page 50 of the October issue of Sky & Telescope. A finder chart for Uranus also appears on page 49 of the December issue of Sky & Telescope. Online finder charts for the two planets can be found at http://www.nakedeyep....com/uranus.htm and http://www.nakedeyep...com/neptune.htm and also at http://www.skyandtel...6_Finders.pdf

Click on http://www.skyandtel...watching-tools/ for JavaScript utilities that will illustrate the positions of the five brightest satellites of Uranus and the position of Triton, Neptune’s brightest satellite.

The dwarf planet Pluto will not be visible again until next year.

For more on the planets and how to locate them, see http://www.nakedeyeplanets.com/

**Comets**

Comet 45/P Honda-Mkros-Pajdušáková heads northeastward through Capricornus during the second half of the month. On December 15th, this periodic comet, which passes into the inner solar system every 5.25 years, is about 15 degrees above the horizon one hour after sunset. The ninth-magnitude globular cluster M75 in Sagittarius lies 1.5 degrees north-northwest of the comet on that date. Comet 45/P Honda-Mkros-Pajdušáková may brighten to eighth magnitude as
December winds down. Visit http://cometchasing.skyhound.com/ and http://www.aerith.net/t/future-n.html for additional information on comets that are visible this month.

**Asteroids**
The dwarf planet/asteroid 1 Ceres glides northeastward through Cetus during December. It decreases in brightness from magnitude +8.1 to magnitude +8.6 as the month progresses. Ceres lies about three degrees to the east of 42 Ceti (magnitude +5.6) during the first half of the month. Asteroid 68 Leto (magnitude +10.6) is at opposition on December 20th and 22 Kalliope (magnitude +10.0) on December 26th. Asteroid 772 Tanete occults the 8.8-magnitude star HIP 9177 in Cetus at approximately 1:30 a.m. CST on December 14th for observers from the Gulf Coast of Texas north to Winnipeg in Canada. Browse http://www.asteroido...2_37331_Map.gif or see page 51 of the December issue of Sky & Telescope for additional details. For information on this year’s bright asteroids and upcoming asteroid occultation events, consult http://www.curtrenz.com/asteroids.html and http://asteroidoccultation.com/ respectively.

A wealth of information on solar system celestial bodies is posted at http://www.curtrenz.com/astronomy.html and http://nineplanets.org/

**Deep Sky This Month**

Free star maps for this month can be downloaded at http://www.skymaps.com/downloads.html and http://www.telescope...thly-Star-Chart

The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in magnitude from +2.1 to +3.4, on December 1st, 4th, 7th, 10th, 13th, 16th, 19th, 22nd, 24th, 27th, and 30th. On December 18th (December 19th UT) and December 21st (December 22nd UT), Algol is at minimum brightness for approximately two hours and is well-placed in the first half of the night for observers in North America. Consult page 51 of the December issue of Sky & Telescope for the times of the eclipses. For more on Algol, see http://stars.astro.i.../sow/Algol.html and http://www.solstatio...rs2/algol3.htm

Information on observing some of the more prominent Messier galaxies can be found at http://www.cloudynig...ur-astronomers/

Deep-sky object list generators can be found at http://www.virtualcolony.com/sac/ and http://tonightssky.com/MainPage.php

**One hundred and five binary and multiple stars for December:**
Gamma Andromedae, 59 Andromedae, Struve 245 (Andromeda); Struve 362, Struve 374, Struve 384, Struve 390, Struve 396, Struve 400, Struve 419, Otto Struve 67 (Camelopardalis); Struve 191, Struve Iota Cassiopeiae, Struve 263, Otto Struve 50, Struve 283, Struve 284 (Cassiopeia); 61 Ceti, Struve 218, Omicron Ceti, Struve 274, Nu Ceti, h3511, 84 Ceti, h3524, Lambda Ceti, Struve 330 (Cetus); h3527, h3533, Theta Eridani, Rho Eridani, Struve 341, h3548, h3565, Tau-4 Eridani, Struve 408, Struve 411, h3589, h3601, 30 Eridani, 32 Eridani (Eridanus); h3478, h3504, Omega Fornacis, Eta-2 Fornacis, Alpha Fornacis, See 25, Xi-3 Fornacis, h3596 (Fornax); Struve 268, Struve 270, h1123, Otto Struve 44, h2155, Nu Persei, Struve 297, Struve 301, Struve 304, Eta Persei, Struve 314, Otto Struve 48, Tau Persei, Struve 331, Struve 336, Es588, Struve 352, Struve 360, Struve 369, Struve 382, Struve 388, Struve 392, Struve 410, Struve 413, Struve 425,
Otto Struve 59, Struve 426, 40 Persei, Struve 434, Struve 448, Es277, Zeta Persei, Struve 469, Epsilon Persei, Es878 (Perseus); Struve 399, Struve 406, Struve 401, Struve 422, Struve 430, Struve 427, Struve 435, 30 Tauri (Taurus); Epsilon Trianguli, Struve 219, Iota Trianguli, Struve 232, Struve 239, Struve 246, 10 Trianguli, Struve 269, h653, 15 Trianguli, Struve 285, Struve 286, Struve 310 (Triangulum)

**Notable carbon star for December:**
U Camelopardalis

**One hundred deep-sky objects for December:**
NGC 891 (Andromeda); IC 342, K6, St23, Tom 5 (Camelopardalis); Be65, IC 1848, K4, Mel15, NGC 896, NGC 1027, St2, Tr3 (Cassiopeia); M77, NGC 788, NGC 835, NGC 864, NGC 908, NGC 936, NGC 955, NGC 958, NGC 1015, NGC 1016, NGC 1022, NGC 1042, NGC 1052, NGC 1055, NGC 1087, NGC 1094 (Cetus); IC 2006, NGC 1084, NGC 1140, NGC 1187, NGC 1199, NGC 1209, NGC 1232, NGC 1291, NGC 1300, NGC 1309, NGC 1332, NGC 1337, NGC 1353, NGC 1357, NGC 1395, NGC 1400, NGC 1407, NGC 1421, NGC 1426, NGC 1440, NGC 1452, NGC 1453, NGC 1461 (Eridanus); NGC 1079, NGC 1097, NGC 1201, NGC 1292, NGC 1316 (Fornax I Galaxy Cluster), NGC 1317, NGC 1326, NGC 1344, NGC 1350, NGC 1360, NGC 1365, NGC 1371, NGC 1374, NGC 1379, NGC 1380, NGC 1381, NGC 1387, NGC 1398, NGC 1404, NGC 1406, NGC 1425 (Fornax); Bas10, Cz8, IC 351, IC 2003, K5, Mel 20, M34, NGC 869, NGC 884, NGC 957, NGC 1023, NGC 1058, NGC 1161, NGC 1245, NGC 1275 (Perseus I Galaxy Cluster), NGC 1333, NGC 1342, NGC 1444, Tr2 (Perseus); M45 (Taurus); NGC 777, NGC 784, NGC 890, NGC 925, NGC 949, NGC 959, NGC 978A/B (Triangulum)

**Top ten binocular deep-sky objects for December:**
M34, M45, Mel15, Mel20, NGC 869, NGC 884, NGC 1027, NGC 1232, St2, St23

**Top ten deep-sky objects for December:**
M34, M45, M77, NGC 869, NGC 884, NGC 891, NGC 1023, NGC 1232, NGC 1332, NGC 1360

**Challenge deep-sky object for December:**
vdB14 (Camelopardalis)

The objects listed above are located between 2:00 and 4:00 hours of right ascension.
ASEM Loaner Equipment
By Chuck Simms

12-1-16 ASEM Equipment
Here is the current equipment and who has it checked out.

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 inch scope</td>
<td>Nolan's 12:</td>
<td>Jim Twellman (8/5/2016)</td>
</tr>
<tr>
<td>Big Binoculars-25x100 Barska</td>
<td>25x100 Barska binoculars</td>
<td>Dave Lloyd (7/8/2016)</td>
</tr>
<tr>
<td>Canon T1i camera</td>
<td>Canon T1i camera</td>
<td>Chuck Simms (11/12/2016)</td>
</tr>
<tr>
<td>Celestron CG5 mount</td>
<td>mount currently being used for Lunt</td>
<td>Marv Stewart (7/9/2016)</td>
</tr>
<tr>
<td>Coronado PST</td>
<td>Personal Solar Telescope</td>
<td>Chuck Simms (11/12/2016)</td>
</tr>
<tr>
<td>Denkmeier Bino-Viewer</td>
<td>Denkmeier Bino-Viewer</td>
<td>Tom Berry (11/12/2016)</td>
</tr>
<tr>
<td>Equatorial Platform</td>
<td></td>
<td>Grant Martin (9/14/2013)</td>
</tr>
<tr>
<td>Eye-piece/Filter kit</td>
<td>various 1.25 inch eyepieces &amp; filters (O III; H Beta; UHC)</td>
<td>Chuck Simms (11/12/2016)</td>
</tr>
<tr>
<td>Lunt - Stack Filter</td>
<td>Stack filter used on Lunt Solar telescope</td>
<td>Marv Stewart (7/9/2016)</td>
</tr>
<tr>
<td>Lunt Solar Telescope</td>
<td>LS50FHa filter - 60mm</td>
<td>Marv Stewart (7/9/2016)</td>
</tr>
<tr>
<td>SBIG STL-1001 camera</td>
<td>SBIG STL-1001 camera</td>
<td>Jim Roe (12/8/2012)</td>
</tr>
<tr>
<td>Starmaster 14.5&quot; telescope</td>
<td>Starmaster 14.4 inch telescope</td>
<td>Amy White (11/xx/2015)</td>
</tr>
</tbody>
</table>

Thanks, Chuck
**WANTED:**
Wanted: 2.5x Televue Powermate 1.25”

-Mike Pusatera

**For Sale:**
1070 Cave Astrola 12.5” f/6.7. Contact Tom Kelemen, St. Louis.
**Kelemen56@gmail.com**

**For Sale:**
Fiberglass tube for 10” reflector – x Cave f/5 $40, contact Jim Curry
**jjc@structureguard.com**

**For Sales from ASEM member Dale Howard:**

Due to circumstances, I have a Celestron NextStar 8 SE telescope with a bunch of accessories that has been used maybe 10 times in the 16 months I have owned it. If you know of anyone who might be interested in buying my telescope, I would be grateful for your referral. Interested buyers could reach me at this e-mail address or the following phone numbers:

**dalehowardmvp@gmail.com**
**(636) 821-1510** (home)
**(636) 752-6433** (cellular)


This telescope was used by me to discover more than 100 asteroids but was replaced by a C-14.

Call Jim Roe at **636-357-7658** or email **jim.roe@asemonline.org**

Astronomik filters: LRGB + 12nm Ha, 36mm unmounted
(these are the size that fit SBIG ST/F-8300 filter wheels and others) $350 for the set
**rick.steiling@gmail.com**
ASEM Members Photography

A section for ASEM members to distribute their photographs within the Society. Whether you’re shooting digital, film or working in charcoal (hand sketching), this page(s) is for members to show us what you’ve seen and how you recorded it. Sunsets, supernovas, sundials, Stonehenge. Crepuscular rays, planetary alignments, or Markarian’s Chain. If it’s something we have to look up to see it will probably interest this crowd of inquisitive folks.

Globular Cluster M15 (NGC7078) in Pegasus
Bill Neubert
The Orion & Running Man Nebulae M42, M43 and NGC1973/5/7
Bill Neubert
Sharpless 227 in Auriga – Gregg Rupel – Animas NM
http://www.greggsastronomy.com/IMAGES/Sh2-227_HaLRGB.jpg
Barnard’s in Taurus – Gregg Ruppel – Animas NM
http://www.greggsastronomy.com/IMAGES/b7_b209_b211_LRGB.jpg
IC 405 – GREGG RUPPEL – ANIMAS NM
HTTP://WWW.GREGGSASTRONOMY.COM/IMAGES/ic405_HaLRGB.jpg
Shapless 202 – Dan Crowson – Dardenne Prairie MO
https://www.flickr.com/photos/dcrowson/30320259494/sizes/l
VDB 70 – Dan Crowson – Animas NM
https://www.flickr.com/photos/dcrowson/31217985955/sizes/l
... From Dardenne Prairie, Missouri with a 90mm Refractor

M76 – Dan Crowson – Dardenne Prairie MO
https://www.flickr.com/photos/dcrowsn/30944069231/sizes/l
… From Animas, New Mexico with a 12” RCT

M76 – Dan Crowson – Animas NM
HTTPS://WWW.FLICKR.COM/PHOTOS/DCROWSON/31058738385/SIZES/L
CALIFORNIA NEBULA (NGC 1499) – DAN CROWSON – NEW FLORENCE MO
HTTPS://WWW.FLICKR.COM/PHOTOS/DCROWSON/30321290444
Club Contacts

Membership
Membership issues can be addressed through our executive director Jim Twellman at these addresses:

Email: jtwellman@asemonline.org.
Snail mail:
Alliance for Astronomy (ASEM)
Rudder Court
Lake St. Louis, MO 63367

Committees
Comments, questions, suggestions and money (just kidding) may be sent to the following addresses:

Program@asemonline.org
Use this address to communicate with the program committee. If you have something to present at a meeting or wish to contribute and let someone else perform, send it here. Questions and/or suggestions about programming etc. Remember, they are here to help you. This is a user friendly society and we like to see members get up and share.

Equipment@asemonline.org
This address is used to find out about ASEM loaner equipment. If you find something amiss at BPark by all means report it here. If you are curious about borrowing an item, put in a request via this address.

Hospitality@asemonline.org
Got a main dish you’d like to bring to the potluck? We sure could use it AND you will be reimbursed for your expenses.

Newsletter@asemonline.org
Primary contact for the newsletter. Got an article or notice you’d like to see published? Send it here and be famous!

Outreach@asemonline.org
Special requests for groups at Broemmelsiek Park including:
• Notice of large party (more than groups of twenty)
• Request for specific requirements needed (school assignment, merit badge requirements, etc.)
• Requests for Star Party / Telescope event at another location

Webmaster@asemonline.org
Kirk Steinbruegge is now our webmaster. Shoot him anything you want posted on our Web page

Entertainment
Late breaking news and member adventures (or shenanigans as the case may be) can usually be found at STLAstronomy in yahoo groups. If you aren’t a member, you should join. Go to http://tech.groups.yahoo.com/group/STLAstronomy/ and click “Join”

Think Clear, dark skies