Longmont Astronomical Society
October 2018 Newsletter

Image Credit:
Sharpless 2-190
Heart Nebula
by M.J. Post
Next LAS Meeting
Thurs. October 18
7:00 pm

There will again be two member presentations at the next meeting.

Light Pollution Filter Usage with a OSC Camera from a Light Polluted site by Eddie Hunnell

Eddie will compare different filters using representative galaxy and nebula from a light polluted site.

“All Sky Camera Control System” by Vern Raben.

Vern will again try to give a presentation about a design for an all sky camera. Basic idea is to use a Raspberry Pi3 processor to capture and transmit images to the LAS website. Vern will demonstrate camera control utilizing publish/subscribe messaging. The control messages are transmitted using web socket protocol which may be used with normal web server connections. This technology enables the camera to be securely controlled locally or remotely using web browsers, cell phone apps, or desktop programs.

The meeting will be at the IHOP Restaurant, 2040 Ken Pratt Boulevard, Longmont. Please join us for coffee, dinner, or just desert around 6 pm; the general meeting and presentations will begin at 7 pm.

Other Upcoming Events

Saturday October 13th
7:30 pm

Star party for Boy Scout Chapter 190 at Sandstone Ranch Visitors Center in the upper parking lot.

Cover Images

The front cover image this month is NGC 896 aka Sharpless 2-190, the “Heart Nebula”, by M. J. Post. M. J. used fourteen 5-min subs for the H-alpha image and sixteen 5-min subs for the RGB image for a total on-target time of 2.5 hours. The Heart Nebula was discovered by William Herschell in 1787.

The back cover this month is IC 1848 the “Soul Nebula” by Stephen Garretson. Stephen used a William Optics FLT 132 APO Refractor with a William Optics Flat 7 reducer (this produces F5.6). Camera was a ZWO 1600 MM Cooled camera, Star light Xpress USB filter wheel, and a Paramount MyT mount. Processed with PixInsight. Filters used were Baader 35 nm H-alpha filter, Baader 8.5 nm OIII filter, and Baader 8nm SII filter. Total of 8 hours integration time.

ZW Optical ASI 1600 MM monochrome cooled camera
From the Newsletter archives:

October 2008

LAS president Vern Raben wasn’t able to get a speaker for October meeting so he will give a presentation about the software tools and techniques he uses to produce the weekly “Sky this Week” videos.

The Longmont Astronomy Club is requesting a special use permit from the U. S. Forest Service for a night sky observing area at the Crow Valley Recreation Area near Briggsdale, CO. (Editor note, sadly this happened as new house put in 3 yard lights which made the park unusable for astronomy).

October 1998

An update on the club’s 10 inch scope was given by Thom Peck. Thom stated that the scope would be completed by the next public star party. Our congratulations go to Thom on his new position in Arizona at the Optical Sciences Center at the University of Arizona.

October 1988

Saturday October 1st was the astronomy display at the Twin Peaks mall with two new members signing up and a good public response and club turnout. That same evening there was a public star party at Jim Hamm Nature Area that same evening, again with a good turnout.

Renew your membership or become a member at https://www.longmontastro.org/membership

The Longmont Astronomical Society is 501 c(3), non-profit corporation which was established in 1987. The Longmont Astronomical Society’s main goal is to promote local amateur astronomy. This is accomplished through regular monthly meetings, star parties and public observing sessions.

Regular meetings are held every month (except December) on the third Thursday. The current location is at the IHop Restaurant, 2040 Ken Pratt Boulevard in Longmont. Meetings are open to the public and begin at 7:00 PM. A group of us have dinner at the IHop before the meeting around 6 pm.

A broad spectrum of topics is covered at the meetings and include such things as deep sky observing, planetary imaging, narrow band imaging, equipment discussions and demonstrations just to name a few. These subjects are presented by both club members as well as special guests who are professional astronomers or experts in a particular field.
October Solar System Highlights

Moon

Third quarter: Oct. 2 at 3:47 am
New moon: Oct. 8 at 9:48 pm
First quarter: Oct. 16 at 12:03 pm
Full moon: Oct. 24 at 10:46 am
Third quarter: Oct. 30 at 10:41 am

Mercury

Mercury is not visible this month.

Venus

Venus is not visible this month.

Mars

Mars is visible in the evening sky in constellation Capricornus. It decreases in brightness from magnitude -1.3 to -0.6 this month; its disk decreases in apparent size from 16 to 12 arc sec across.

Jupiter

Best time to view Jupiter is shortly after sunset in the constellation Libra. Is magnitude -1.8 in brightness; the disc decreases from 33 arc sec to 31 arc sec across this month.

Saturn

View Saturn in early evening after sunset in the constellation Sagittarius; it about magnitude 0.6 in brightness; its disk is 16 arc sec across.

Neptune

Neptune may be seen about 10-11 pm in constellation Aquarius; it is magnitude 7.8 and brightness and its disk is 2.3 arc seconds across.

Meteors Showers

The annual Draconid meteor shower peaks night of October 8. Draconids is a minor shower caused by debris of comet 21P. The Orionid meteor shower begins about the end of September and ends in late November. The peak night is October 21-22 but unfortunately the moon won't set until about 5 am -- about 45 minutes before astronomical twilight ends. Orionid meteor shower is caused by debris from comet 1P Halley.
Comet 21P (Giocobini-Zinner) is in constellation Monoceros as the month begins. It moves into constellation Canis Major on October 10th. It is currently magnitude 7.6 and will dim to about magnitude 9.6 in brightness by month end. Its coma decreases from about 3 arc minutes across to 2 arc minutes by the end of this month. Its orbital period is 6.6 years.

Image credit: “Comet 21P Giacobini-Zinner” by Gary Garzone

Chart created with SkyTools3
Comet C/2016 R2 (PANSTARRS) is currently magnitude 10.7 in brightness; it is expected to dim to magnitude 11 by end of the month. Its coma is 6.9 arc min across. It is located in constellation Canes Venatici all this month.

The comet was discovered by the PANSTARRS telescope about two years ago on September 7. PANSTARRS consist of two 1.8 meter Ritchey-Chreiten telescopes located at the summit of Haleakalā on Maui, Hawaii.

PANSTARRS project is a collaboration between Univ. of Hawaii, MIT Lincoln Labs and the Maui HPCC. Construction of the telescopes was funded by the U.S. Air Force.

Image Credit: “Comet C2016 R2 PANSTARRS on Jan 26” by MJ Post

Chart created with SkyTools3
Comet 38P Stephen-Oterma is now located in constellation Orion; it moves to constellation Gemini on October 12. The comet is magnitude 8.1 in brightness. It is expected to increase in brightness to magnitude 6.8 by the end of the month. Its coma increases from 7.1 arc min to 9.3 arc min across.

It was discovered by Jerome Coggia at the Marseilles Observatory in January 1867 but it was named for the observatory director, E.J.M Stephan, who accurately calculated its orbit. Its orbital period is 38 years.
Comet 64P Swift-Gehrels is now about magnitude 12.1 in brightness as of the first of September and is in the constellation Pisces. It moves to the constellation Andromeda on the 3rd of September. It will make its closest approach to Earth on October 28th. It is expected to reach magnitude 9 in brightness in November.

Comet 64P Swift-Gehrels was discovered in 1889 by Lewis Swift at the Warner Observatory in Rochester, NY. It was re-discovered by Tom Gehrels at the Palomar Observatory, California in February 1973.

Comet 64P Swift-Gehrels may be found in constellation Andromeda all this month. It is currently magnitude 10.3 in brightness; it expected to get to magnitude 9.7 by end of this month. Its coma is about 2 arc min across. It will be near the Andromeda galaxy on October 28th when it will be at its closest approach to earth.

Comet 64P Swift-Gehrels was discovered by Lewis Swift in 1889 at the Warner Observatory in Rochester, New York. It was re-discovered in 1973 by Tom Gehrels at the Palomar Observatory.

Its orbital period is 9.23 years.
Navigating the October Night Sky

The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.

Navigating the October night sky: Simply start with what you know or with what you can easily find.

1. Extend a line north from the two stars at the tip of the Big Dipper’s bowl. It passes by Polaris, the North Star.
2. Follow the arc of the Dipper’s handle. It intersects Arcturus, the brightest star in the early October evening sky.
3. To the northeast of Arcturus shines another star of the same brightness, Vega. Draw a line from Arcturus to Vega. It first meets "The Northern Crown," then the "Keystone of Hercules." A dark sky is needed to see these two dim stellar configurations.
4. Nearly overhead lie the summer triangle stars of Vega, Altair, and Deneb.
5. High in the east are the four moderately bright stars of the Great Square. Its two southern stars point west to Altair. Its two western stars point south to Fomalhaut.

**Binocular Highlights**

A: On the western side of the Keystone glows the Great Hercules Cluster, a ball of 500,000 stars. B: 40% of the way between Altair and Vega, twinkles the “Coathanger,” a group of stars outlining a coathanger. C: Sweep along the Milky Way for an astounding number of fuzzy star clusters and nebulae amid many faint glows and dark bays, including the Great Rift. D: The three westernmost stars of Cassiopeia’s "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. E: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.

For observers in the middle northern latitudes, this chart is suitable for early Oct. at 9:00 p.m. and late Oct. at 8:00 p.m.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Astronomical League www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.
If you can observe only one celestial event this month, see this one:
The softly glowing band of the Milky Way stretching from the Southwestern horizon to the Zenith, then to the Northeastern horizon.

Venture outside 75–90 minutes after sunset, before brightening moonlight starts interfering on October 13, for a grand view of the Milky Way. Have binoculars ready. Carefully scan from the "Teapot" region of Sagittarius in the southwest to Perseus in the northeast. Spy star forming nebulae, star clusters, globular star clusters, dark nebulae, and many other celestial attractions.

This is the plane of the galaxy in which we live. Its soft glow is from the combined light of many billions of stars.

Remember to follow Mars moving eastward across Capricornus.

September 20, 2018 LAS Meeting Notes by Vern Raben

Longmont Astronomical Society Meeting
September 20, 2018 at 7 pm
2040 Ken Pratt Boulevard
Longmont, CO

Vern Raben, President, opens and moderates:

Announcements
Boy scout group star party 7:30 pm at Sandstone Ranch Visitor Center parking

Member Presentations - David Elmore
David talked about some of the trade offs we make when imaging a particular object such as focal length of the telescope, size of camera's sensor, and filters used. He defined a 1X sensor as a full frame sensor which is same size as the old 35mm SLR cameras; the full frame sensor size is 36mm wide by 24mm high. For example if a camera sensor is half that size then the image scale would be 2x. Also if you double the focal length your image scale is also 2X. David then showed some member images of the North American Nebula in Cygnus taken with different focal lengths and sensor sizes.

Hydrogen alpha (656 nm) fil-
ter tends to bring out hydrogen emissions; Oxygen III (501 nm) for ionized Oxygen; SII to bring out ionized sulfur emissions.

How the narrow band filters are mapped to red, green, and blue for presentation is mostly artistic. When SII is used for red, Hα for green and OIII for blue it is referred to as the Hubble palette. Another popular combination is H-alpha for red, OIII for both green and blue which is known as HOO palette. When H-alpha is mapped to red, OIII to green and SII to blue this is called the HOS palette.

David then showed member images with various palettes of narrow band filters.

However the main control is by how the images are processed. At night the images are stacked and enhanced whereas this not done in the daytime.

New LAS camera will use Raspberry Pi3 to control a USB camera. Commands and data will be sent to and from the LAS server using websockets. The control interface will use the ReactJs library developed by Facebook.

**Business meeting**

Marty Butley, LAS treasurer, discussed various LAS accounts and balances. Currently there are 85 LAS members.

Vern asked the group to guess how many current members were in the club 10 years ago. Most thought 35% to 75%; actual number is about 22%. LAS has about a 10% churn rate each year and a growth rate slightly more than that.

Vern Raben, LAS president, discussed the telescope program. Up until this month we’ve received 2-3 calls a year. Problems typically are broken partitions in the totes, finders turned around, or dead batteries. Recently though we received a request to repair this:

Bruce Lamareaux did great job constructing a new base and re-assembling the broken scope.

Proposed LAS calendar and year book project was discussed next. Vern will write another email to the membership explaining the project and asking for volunteers for specific tasks. Marty suggested that we needed a website to store images and information. Vern is to set that up. Meeting was adjourned.

**Member presentation - Vern Raben**

Vern apologized for not being ready with his presentation on all sky camera control. He will give the presentation at a future meeting.

He briefly explained that LAS first placed an all sky camera on a NOAA tower located on Niwot Ridge about 8 years ago. It ran there for almost a year and then another camera was purchased. That camera has been located on the roof at Vern & Vi’s house for the past 7 years.

Although the camera has been working fine it is time to upgrade it with higher resolution and better controls. The camera currently being used has automatic shutter to roughly control exposures.

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Bruce Lamareaux did great job constructing a new base and re-assembling the broken scope.

Alone in the night
On a dark hill
With pines around me
Spicy and still,

And a heaven full of stars
Over my head
White and topaz
And misty red;

Myriads with beating
Hearts of fire
The aeons
Cannot vex or tire;

Up the dome of heaven
Like a great hill
I watch them marching
Stately and still.

And I know that I
Am honored to be
Witness
Of so much majesty.

*Sara Teasdale*
Happy Halloween!!

Image credit: “Eastern Veil” by Eddie Hunnell

Image Credit: “Pumpkin Kids” by Vi Raben
Image credit: “Messier 13 Great Globular Cluster in Hercules” by Jim Pollock

Image credit: “Comet 21P Giacobini-Zimmer on September 8” by Paul Robinson
Image credit: “Sun in Calcium K September 11” by Brian Kimball

Image credit: “NGC 891 Edge-On Galaxy” by Gary Garzone
Image credit: “North American Nebula” by David Elmore

Image credit: “Messier 16, the Eagle Nebula” by Stephen Garretson
The Pelican Nebula, IC 5070, is a large emission nebula in the constellation Cygnus. It is located northeast of the first magnitude star Deneb and just off the east coast of NGC 7000, the North American Nebula.

Images were acquired with a Takahashi FSQ130 scope, a Paramount MyT mount, and FLI 16200 camera with 8nm H-alpha filter. Marty captured 46 unguided subs with 5 minute exposure to produce this image.

Astrophotography origins

1837 - Louis Daguerre uses silver-plated copper and silver iodide developed with warmed mercury in process which became known as the daguerreotype.

1840 - John Draper takes the first successful daguerreotype of the moon with a 20 minute exposure

1842 - G.A. Majocchi obtains a daguerreotype of a partial solar eclipse

1850 - John Whipple and William Bond take daguerreotype of the star Vega

1851 - Frederick Archer improves photographic resolution with a wet plate collodion process