Longmont Astronomical Society
September 2018 Newsletter

Image Credit:
Sharpless 2-171
by David Elmore
Next LAS Meeting  
September 20  
7:00 pm

There will be two member presentations at the next meeting. “Comparison of Focal Length, Filters and Processing” by Dr. David Elmore. We have seen many artful images of deep sky objects posted by Longmont Astronomical Society members. Often we image the same target but with telescopes of different focal length, different optical filters, and then use different processing. Concentrating on images of the Cygnus region I will present examples and discuss what make the images different.

“All Sky Camera Control System” by Vern Raben. Our new camera will contain its own 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 websocket 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

Friday September 7th  
7:15 to 9:15 pm

Boulder County Parks and Open Space Explore Program. “Astronomy: Modern Reflections” presentation by Deborah Price followed by telescope viewing from 8 to 9:15 pm.

Following the public star party we will have a astro-photography workshop focusing on solar system imaging.

Thursday September 13  
6:30 to 8:00 pm

Broomfield Library and Westminster Public Library are sponsoring “Bright Ideas: Cosmic Quest” at the Broomfield Library auditorium. It will be a night of exploration that reaches beyond everyone’s borders. Spend an evening with Colorado School of Mines professor and TED talk presenter Dr. Angel Abbud-Madrid, as he discusses the surprising possibilities in space exploration and discovery.

Angel Abbud-Madrid is the Director of the Center for Space Resources at the Colorado School of Mines, where he leads a research program focused on the human and robotic exploration of space and the utilization of its resources. He has more than 25 years of experience conducting experiments in NASA’s low-gravity facilities, such as drop towers, parabolic-flight aircraft, the Space Shuttle, and the International Space Station. He is also the Director of the CSM Space and Planetary Science and Engineering Area of Special Interest and CSM’s Affiliate Director of the Colorado Space Grant Consortium, as well as faculty advisor of the CSM AIAA student chapter, Astronomy Club, and Rocket Club.

We have been invited to set up a display table in the lobby of the auditorium (volunteers needed). The talk may be seen on TV monitors in the lobby. You may sign up for free tickets at https://www.broomfield.org/BrightIdeas

Image Credit: “Rabbit Mountain” by Boulder County Parks and Open Space
This month’s front cover image is David Elmore’s image of Sharpless 2-171 aka NGC 7822. This marvelous emission nebula is in constellation Cepheus. David used a Vixen VSD 100 with F/3.0 focal reducer and a ZWO ASI1600MM Pro. Twenty-five 8-minute exposures per wavelength or 50 total used to produce the image. The field of view is 3.2° wide by 2.4° high. It is processed as an HOO image with Hydrogen-alpha as red and Oxygen III as blue and green. Images taken at Fort Robinson, Nebraska on night of August 12/13.

This month’s back cover image is Tally O’Donnell’s image of Messier 31, the great Andromeda Galaxy.

At 4 in the morning Tally noticed that Andromeda was straight overhead and took three five minute subs in monochrome for this photo. Images were taken with a Stellarvue 130 refractor and an Atik 16200 camera, with no darks or flats straight off the camera. Tally was also at Fort Robinson.

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.
September Solar System Highlights

Moon

- Third quarter: September 2 at 8:39 pm
- New moon: September 9 at 12:03 pm
- First quarter: September 16 at 5:16 pm
- Full moon: September 24 26 at 8:54 pm

Mercury

Mercury is only visible a for a day or two with the unaided eyes as September begins. With a telescope its visible until about mid month.

Venus

Venus is visible in the evening sky in constellation Virgo. It increases in brightness from around magnitude -4.4 to 4.6 and its disk is increases from 29 arc sec across to 49 arc sec this month.

Mars

Mars is visible in the evening sky in constellation Capricornus; It decreases in brightness from magnitude -2.1 to -1.2 this month; its disk decreases in apparent size from 21 to 15 arc sec across.

Jupiter

Best time to view Jupiter is early evening in the constellation Libra. It decreases in brightness from -2 magnitude to -1.8 magnitude this month; the disc decreases from 35 arc sec to 32 arc sec across.

Saturn

View Saturn around 9 pm in the constellation Sagittarius; it about magnitude 0.4 in brightness; its disk is 17 arc sec across.

Uranus

Uranus can be seen about 3 am in constellation Aries. It magnitude 5.7 in brightness and its disk is 3.6 arc sec across.

Neptune

View Neptune about 12:30 am in constellation Aquarius; it is magnitude 7.8 and brightness and its disk is 2.3 arc seconds across.
Comet 21P (Giacobini-Zinner) is in constellation Auriga early this month; it moves to Gemini on the 13th; then into Orion on the 16th; and then back to Gemini on 19th; and then to Monoceros on Sept. 22nd. It is currently magnitude 7.1 and will dim to about magnitude 7.8 in brightness by month end. Its coma is about 7.1 arc minutes across.
Comet C/2016 R2 (PANSTARRS) is currently magnitude 10.5 in brightness; it is expected to dim to magnitude 10.8 by end of the month. It begins the month in constellation Ursa Major and then moves to Cannes Venatici on Sept 26. Its coma is 7 arc min across.
Comet 38P Stephen-Oterma is currently magnitude 9.8 in brightness. It is expected to increase in brightness to magnitude 7.9 by the end of the month. Its coma increases from 5.5 arc min to 7.4 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.
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.

It 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.
Overhead Night Sky on September 15th at 10:00 pm mdt
For observers in the middle northern latitudes, this chart is suitable for early Sept. at 10:00 p.m. and late Sept. at 9:00 p.m.

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 mid September 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 September evening sky.
3. Nearly overhead shines a star of similar brightness as Arcturus, Vega. Draw a line from Arcturus to Vega. It first meets “The Northern Crown.” A dark sky is needed to see these two dim stellar configurations.
4. The stars of the summer triangle, Vega, Altair, and Deneb, shine overhead.
5. The westernmost two stars of the Great Square, which lies high in the east, point south to Fomalhaut. The southernmost two stars point west to Altair.

Binocular Highlights:
A: On the western side of the Keystone glows the Great Hercules Cluster.
B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
C: 40% of the way between Altair and Vega, twinkles the ‘Coathanger,’ a group of stars outlining a coathanger.
D: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.
E: The three westernmost stars of Cassiopeia’s “W” point south to M31, the Andromeda Galaxy, a “fuzzy” oval.
August 16, 2018 LAS Meeting Notes by Vern Raben

Longmont Astronomical Society
Meeting August 16, 2018 at 1900
2040 Ken Pratt Boulevard
Longmont, CO
Vern Raben, President, opens and moderates:

Announcements
- Star party for Boulder County Parks and Open Space on Friday, September 7th at Rabbit Mountain. Vern asked if anyone would like to have imaging workshop following the public event. Consensus was yes. Vern is to submit the necessary paperwork to Boulder County.
- Thursday September 13th, “Bright Ideas Cosmic Quest” in Broomfield library auditorium. Event sponsored by Broomfield and Westminster libraries. There are to be a couple speakers from School of Mines and Ball Aerospace. LAS was invited to have a table outside the lobby. Basic idea is to let folks know what we do.
- Next meeting is Thursday September 20. David Elmore will compare images of the same object taken with different filters, focal lengths, and processing.

Presentation by Jim Elkins on 2017 Solar Eclipse Balloon Photography Project

The objective of the project was to photograph the August 2017 total solar eclipse shadow from a high altitude (75 thousand feet) balloon. The project was privately funded by the team members. There were three cameras on board: a GoPro, and Canon, and a 360 degree camera.

One of balloon team, Patrick Cullis created a video showing the launch and some of the photos taken during the flight and from the ground. See [http://www.patrickcullis.com](http://www.patrickcullis.com)

The team had single radio on the balloon which sent back its GPS position. On the way down the battery died or the balloon was low enough that the signal was blocked by mountains. In any event the team lost contact with the balloon.

They predicted the location of where the balloon from its last known position and wind data.

Patrick searched for it that August but was unable to locate it.
The following June (2018) he was able to find it and cameras and images were recovered. Camera was smashed on impact and had water damage. As it turned out the balloon was found within 61 meters of where predicted.

Anyway it was a fun project and Jim would certain try it again.

It would have been better to have the cameras on a glider with balloon used to reach altitude. With the glider you at least have some control. They couldn’t use glider for the 2017 eclipse project as the flight path was over national forest lands.

**Presentation by Gary Garzone on the August 10-12 trip to Fort Robinson, Nebraska**

Gary and Carol drove to Fort Robinson, NE on Thursday (August 9th) just before the annual Perseid meteor shower that weekend. Several of us selected sites in southeastern part of the RV campground so that we would have mostly unobstructed views to the south. Buttes were visible in distance; nicely watered mowed lawns; very pretty spot! Vern & Vi, Marty, David, and Tally stayed in cabins which were quite nice but a bit strange. Cabins are actually army officer quarters from 1890s which have retrofitted with water and electric by tacking to the walls.

We saw lots of meteors. One had a ionized trail which was visible for 20 seconds.

The Fort is great place; you can go horseback riding, take a jeep tour, or ride in a hay wagon; There are a couple museums, a play house, and an indoor pool.

Gary, Carrol, Vern, and Vi took a trip to the “High Plains Homestead” which located about 16 miles north of Crawford, Nebraska. Its on gravel roads so it takes
Business Meeting
Mary Butley gave the treasurer report. One new member joined in the past month; we now have 78 members more or less. Balances of all LAS accounts were shown to members.

Vern Raben proposed that we purchase two more scope kits for the Broomfield library. In comparison to other libraries and populations they serve Broomfield should have four. Motion by Michelle to purchase; seconded; and vote to purchase them was unanimous.

Vern reported he get calls for repairs every once in while. Interesting in what is used and what not. Books are really well worn. Scopes don’t show much wear.

Marty proposed last month that we do a club calendar. Vern would like kick around the idea of doing a yearbook as well. General consensus it would be fun to do. There was a general discussion about how to organize; lots of details need to be decided.

Other Items
Wayne Green mentioned that members might be interested in checking into the Deep Space Exploration Society. The DSES current major project is restoring a 60 feet dish antenna. The dish is located at their facility near Haswell, Colorado. Optical amateur astronomers are encouraged to join them. More info on their website at http://www.dses.org

Meeting was adjourned.

Member Images for August 2018

Image Credit: “Marty’s scope and Tesla” by Gary Garzone

Swan Nebula: Ft. Robinson, Glenn Frank

“Messier 17, the Swan Nebula” by Glenn Frank

Glenn used his C9.25 Scope with Hyperstar on Celestron AVX mount with beefed up tripod, ZWO ASI 16mm camera. Windy conditions so I took only 15 sec exposures. He took 40 exposures in Ha and 40 in O3. Images stacked in Maxim DL6.; processed in PhotoShop.
“Messier 16, the Eagle Nebula in LRGB” by Marty Butley

These images were taken at Fort Robinson, Nebraska with the Takahashi as 5 minute unguided subs.
- H alpha  39 x 5 minutes
- Green    17 x 5 minutes
- Blue     12 x 5 minutes
- Luminance 11 x 3 minutes

The third image is an LRGB combination. It is interesting because for the Luminance component I used three minute subs taken with a RASA. The shorter subs helped to reduce the star size, keeping it more consistent with the other filters.
Equipment used: William Optics FLT 132 APO Refractor w/William Optics Flat7 (0.8x r/f produces f/5.6; a ZWO ASI 1600 MM Cooled at Unity Gain -20°; a Starlight Xpress USB Filter Wheel; and a Paramount MyT mount

Filters: Baader 3.5nm Ha filter, Baader 8.5nm OIII filter, Baader 8nm SII filter

Exposures: 45 240s Ha, 40 OIII 180s, and 40 SII 180s unguided subs; 7 hours integration
“Tree and Milky Way at Fort Robinson, Nebraska” by Stephen Garretson

Image from 30 second exposure with Canon T6i ISO 3200, and Samyang 14mm lens at Fort Robinson

“Stereo pair of the Sun in Calcium K” by Brian Kimball

Used Lunt B1800 Calcium module
"Messier 8, the Lagoon Nebula" by Tally O’Donnell

Equipment used was Stellarvue 130 refractor and an Atik 16200 camera, with no darks or flats straight off the camera. Paramount mount. Exposures were twenty minutes each of Ha, OIII, and SII in the Hubble pallet.
Bubble Nebula taken with Takahashi FSQ 130 on Paramount MyT mount, and FLI 16200 camera at Fort Robinson, Nebraska. Filters used were H-Alpha for red, OIII for green, and standard blue filters which is (filter combination is known has HOB). Exposures were 15x5 min with H-Alpha, 18x5 min with OIII, and 10x5 min with blue.
“Moon on August 23” by Brian Kimball

This 6 pane mosaic was taken with IStar 6 inch F/8 refractor and Imaging Source DMK 41 camera.
“NGC 281, the Pacman Nebula by M.J. Post

Shot through smoke with poor seeing with one shot color camera and h-alpha filter.

“Messier 57, the Ring Nebula” by Gary Garzone
Image Credit:
“Messier 31 Andromeda Galaxy” by Tally O’Donnell