Longmont Astronomical Society

June 2025

NGC 3521
by M. J. Post

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Next LAS Meeting Thursday June 19

"Amateur Observations of Jupiter's Clouds, Hazes, and Composition" by Dr. Steven Hill

Summary

Jupiter displays multiple colorful cloud types, with regional variations that change over time. For more than a century amateurs have observed and tracked these features, first visually, and now with sophisticated color cameras. These observations have provided the basis for understanding the circulation and wind patterns of the atmosphere, along with periodic regional and global upheavals. Amateurs now peer into the near-infrared (NIR), including the 889 nm methane band, and near ultraviolet (NUV) revealing details of upper-level hazes. Use of other methane filters can probe different cloud levels below the hazes. My recent work has added another twist: the ability to detect not just cloud height, but ammonia concentration. The question arises: How can amateurs contribute objective measurements of Jupiter's clouds and their changes? By applying calibration to existing and new filter bands that are readily available from optical companies, amateurs can make quantitative measures of color, cloud height, and ammonia distribution. This talk provides background on Jupiter's cloud layers, then describes these low-cost, accessible observing techniques, some of the results they've generated, and how they relate to and support professional planetary research.

Bio

Steven Hill is an amateur astronomer living in Denver where he enjoys the 300 sunny days and clear nights per year we get here in Colorado. Light pollution in the city of Denver led him to focus on bright objects like the planets. He recently retired from his day job at NOAA working on space weather observations. Steve has a Ph.D. in astrophysics, which helps him in all his space-related pursuits. With this background he likes to push the boundaries of what can be accomplished with his backyard telescope equipment. These factors all came together, leading him to investigate ammonia on Jupiter.

The meeting will be at the First Evangelical Lutheran Church, 803 Third Avenue, Longmont, CO 80501. If you cannot attend the in-person meeting, it will be available on Zoom. Video of the meeting will be available on the LAS member portal website https://members.longmontastro.org on Friday after the presentation.

About LAS

The Longmont Astronomical Society Newsletter ISSN 2641-8886 (web) and ISSN 2641-8908 (print) is published monthly by the Longmont Astronomical Society, P. O. Box 806, Longmont, Colorado. Newsletter Editor is Vern Raben. Our website URL is https://www.longmontastro.org and the webmaster is Mike Hotka. The Longmont Astronomical Society is a 501 c(3), non-profit corporation which was established in 1987.

The Longmont Astronomical Society is affiliated with the Astronomical League (https://www.astroleague.org). The Astronomical League is an umbrella organization of amateur astronomy societies in the United States.

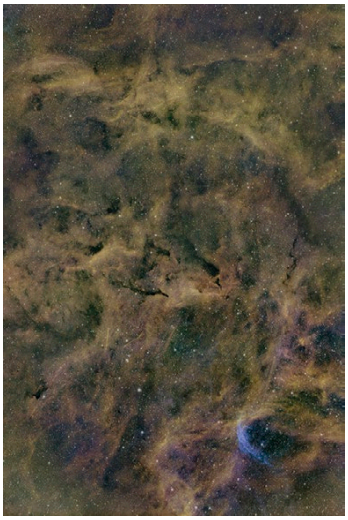
Contents

Front Cover: NGC 3521 by M. J. Post

This classic example of a flocculent galaxy, in addition to its discontinuous arms, has a huge and asymmetric halo. It lies about 40 M.l.y away from us nearly on the celestial equator (DEC = 0 deg). Dust lanes are massive and pervasive. Its official designation is NGC 3521, discovered by William Herschel in 1784.

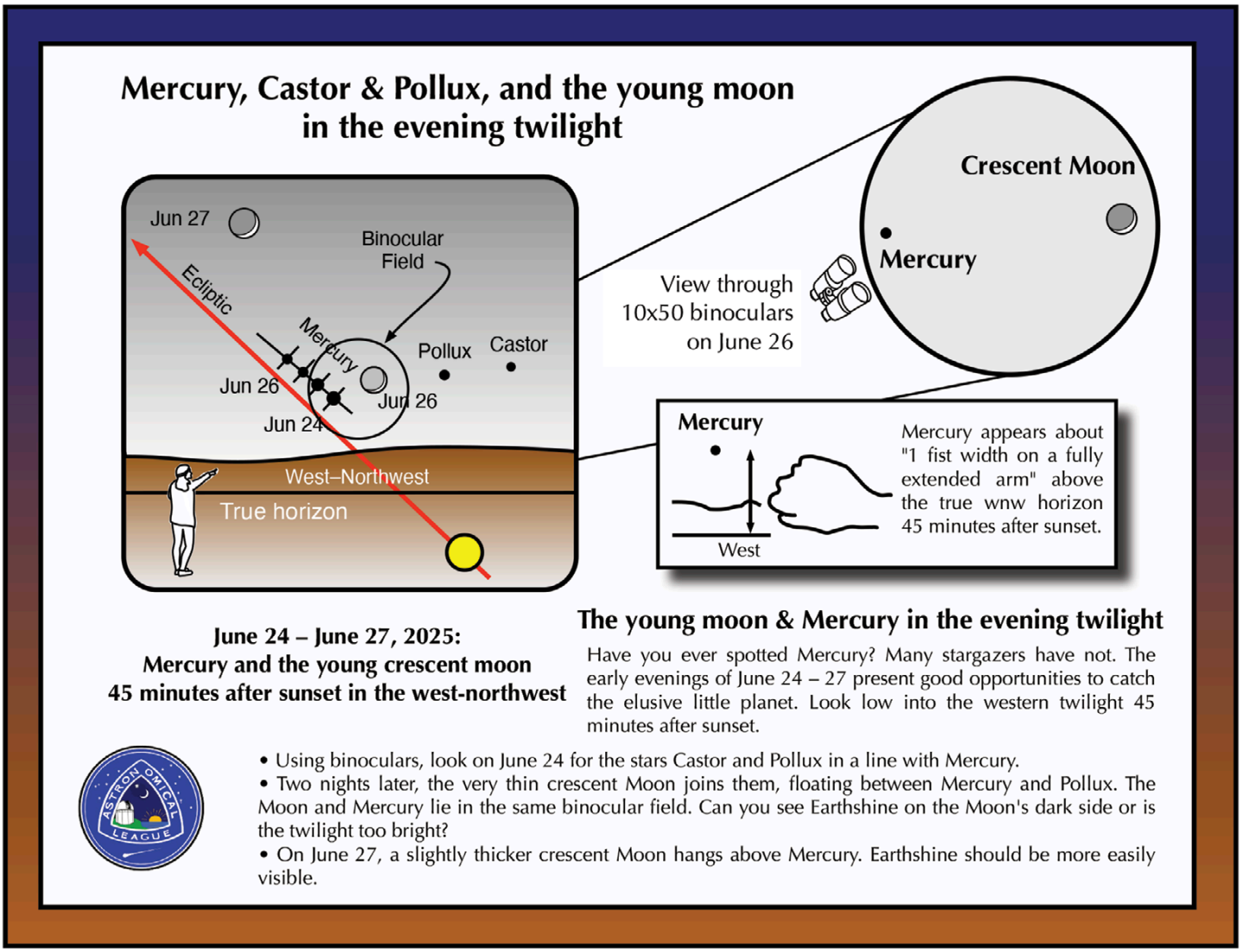
This galaxy was on my "clean-up" list. I collected data for it over the course of three years (2023-25) and finally pulled together 37 five-minute sub frames for this final result. I rotated the image 90 deg clockwise to match others' renditions, including Hubble's. It is indeed much more appealing in this orientation, vs. how it actually lies in the sky.

Back Cover: East of Sh 2-101 by Stephen Garretson



The Tulip Nebula would be just out of the frame at the top of this FOV. The Ha version [naturally] shows more of the beautiful structure which Cygnus is famous for. Data was captured over two nights, Ha all one session using both scopes, SII and OII captured in a second session with each scope dedicated to one filter.

[48] 300s guided Ha subs
[36] 300s guided OIII subs
[36] 300s guided SII subs
Total integration: 10 hours
Borg FL 107 6 element f/3.9; William Optics Star 71 Gen II f/4.9 Petzval Astro graph; Chroma 3nm filters



Planets in June

Mercury

Mercury becomes visible in the evening sky from June 14 to June 29. Optimum time to view is around 9:35 to 9:45 pm in the WNW. On the 14th it will be -0.6 magnitude in brightness and 5.8 arc sec across; by the 29th it dims to +0.3 magnitude and 7.5 arc sec across.

Venus

Best time to view Venus is about 5:10 am in the eastern sky. It is easy to find as it will be the brightest object visible at magnitude -4.2 . The disk decreases from 23 arc sec across on June 1 to 18 arc sec across by month end.

Mars

Mars is visible in the west after sunset. It is magnitude +1.3 magnitude on the 1st and dims to 1.5 magnitude by the 30th. The disc decreases from 5.5 arc sec to 4.8 arc sec in apparent size this month.

Jupiter

Jupiter is not visible this month; it will reappear in the morning sky about mid July.

Saturn

Saturn is visible in the morning sky It is magnitude 1.0 in brightness and about 17 arc sec across.

Uranus

Uranus is not visible this month.

Neptune

Neptune is visible in the morning sky in constellation Pisces. It magnitude 7.9 in brightness and the disk is 2.2 arc sec across.

Lunar Phases in June

- First Quarter June 2 at 9:42 pm
- Full Moon June 11 at 1:45 am
- Third Quarter on June 18 at 1:20 pm
- New Moon June 25 at 4:33 am

Meteor Showers in June

There are no major meteor showers in June.

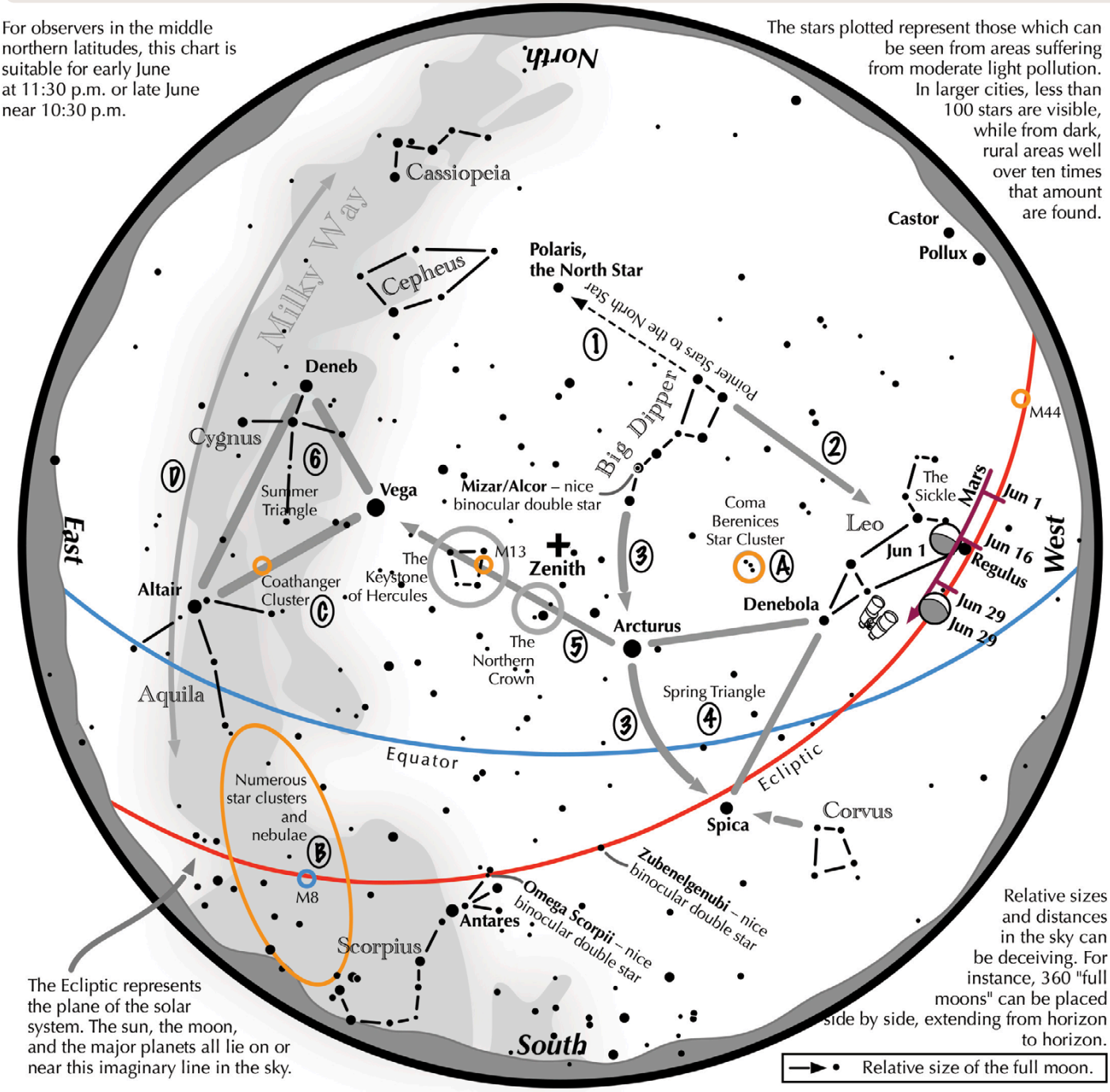
Comets in June

There aren't any comets brighter than magnitude +14 this month.

Early evening objects for June

- Abel 39 planetary neb in Hercules, mag 13.7
- M64, "Black Eye" spiral galaxy in Coma Berenices, mag 9.3
- NGC 6572, "Blue Racquetball" planetary nebula in Ophiuchus, mag 8
- NGC 4490, "Cocoon" spiral galaxy in Canes Venatici, mag 9.8
- M13, "Hercules" globular cluster in Hercules, mag 5.8
- NGC 4657, "Hockey Stick" spiral galaxy in Canes Venatici, mag 9.8
- M3 globular cluster in Canes Venatici, mag 6.3
- M106 spiral galaxy in Canes Venatici, mag 9.1
- NGC 4236, barred spiral galaxy in Draca, mag 10.1
- NGC 5529, spiral galaxy in Bootes, mag 12.7
- NGC 5775, spiral galaxy in Virgo, mag 12.2
- NGC 6207, spiral galaxy in Hercules, mag 11.9
- M101, "Pinwheel" spiral galaxy in Ursa Major, mag 8.4
- M57, "Ring" planetary nebula in Lyra, mag 9.4
- NGC 6240, "Starfish" peculiar galaxy in Ophiuchus, mag 13.8
- M63, "Sunflower" spiral galaxy in Canes Venatici, mag 9.3
- NGC 6210, "Turtle" planetary nebula in Hercules, mag 12.7
- NGC 4631, "Whale" spiral galaxy in Canes Venatici, mag 9.5
- M51, "Whirlpool" spiral galaxy in Canes Venatici, mag 8.7

Navigating the mid-June Night Sky by John Goss



Navigating the June 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. Draw another line in the opposite direction. It strikes the constellation Leo high in the west.
3. Follow the arc of the Dipper's handle. It first intersects Arcturus, the brightest star in the June evening sky, then Spica.
4. Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
5. 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.
6. High in the east are the three bright stars of the Summer Triangle: Vega, Altair, and Deneb.

Binocular Highlights

A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
B: Between the bright stars of 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.

Astronomical League *www.astroleague.org/outreach; duplication is allowed and encouraged for all free distribution.*

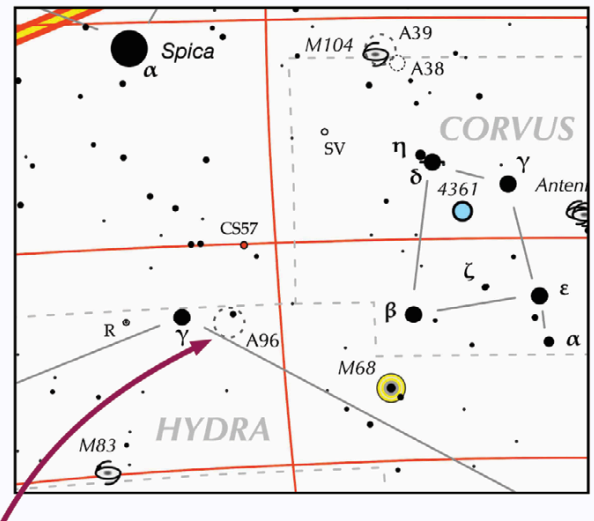
Seahorse Asterism

On the Astronomical League's Asterism list as no. 96

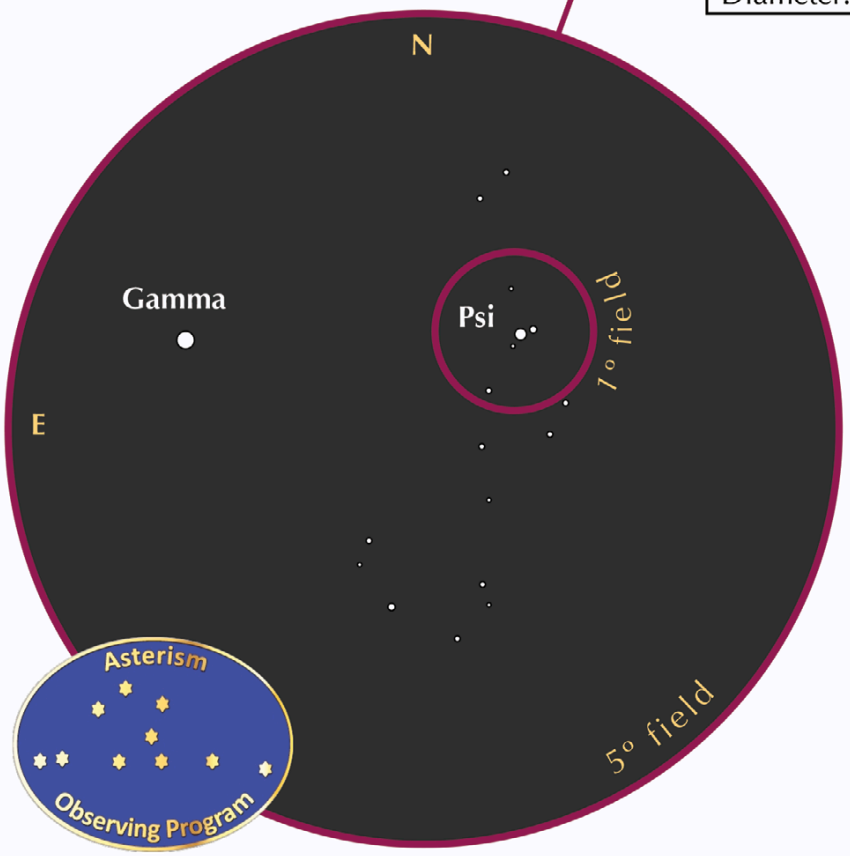
How to find the Seahorse ...

1. 10º south of Spica lies 3rd magnitude Gamma Hydrae. (10º is the angular width of your fist on your outstretched arm.)
2. Place Gamma at the center of the finder (or binocular) field.
3. At the west edge of the finder (or binocular) field lies the 4.9 magnitude Psi Hydrae.
4. Aim the finder (or binoculars) at Psi.
5. Follow the string of 7th, 8th, and 9th magnitude stars as it roughly traces the outline of a seahorse.

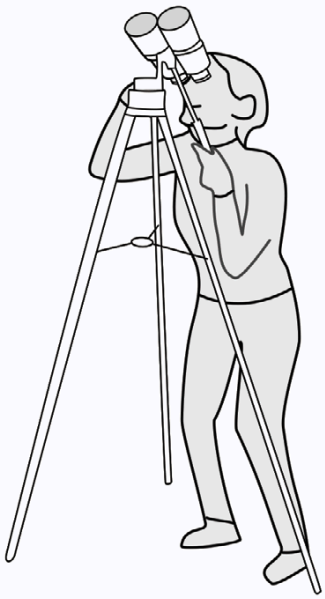
To see it through a finderscope or binoculars, clear, dark skies are a must!



96 Asterism: Seahorse
Magnitudes: 4.9 – 9.6
Diameter: 15 x 90 arc–minutes



Use a tripod to help bring in the asterism's 7th, 8th, and 9th magnitude stars.



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LAS Meeting Notes for May 15 by Eileen Hall-McKim

I. Introduction

The May LAS monthly meeting was held in-person and by zoom on May 15th at the Longmont Lutheran Church, 803 Third Ave. President, Vern Raben began the meeting with self-introductions of members attending in person and on-line. Fourteen members attended in person, 3 attended on-line.

II. Main Presentation

Our meeting tonight is a forum for LAS members to discuss topics, make presentations of astronomy subjects they find of interest or projects they are currently working on. Tonight there are three presentations:

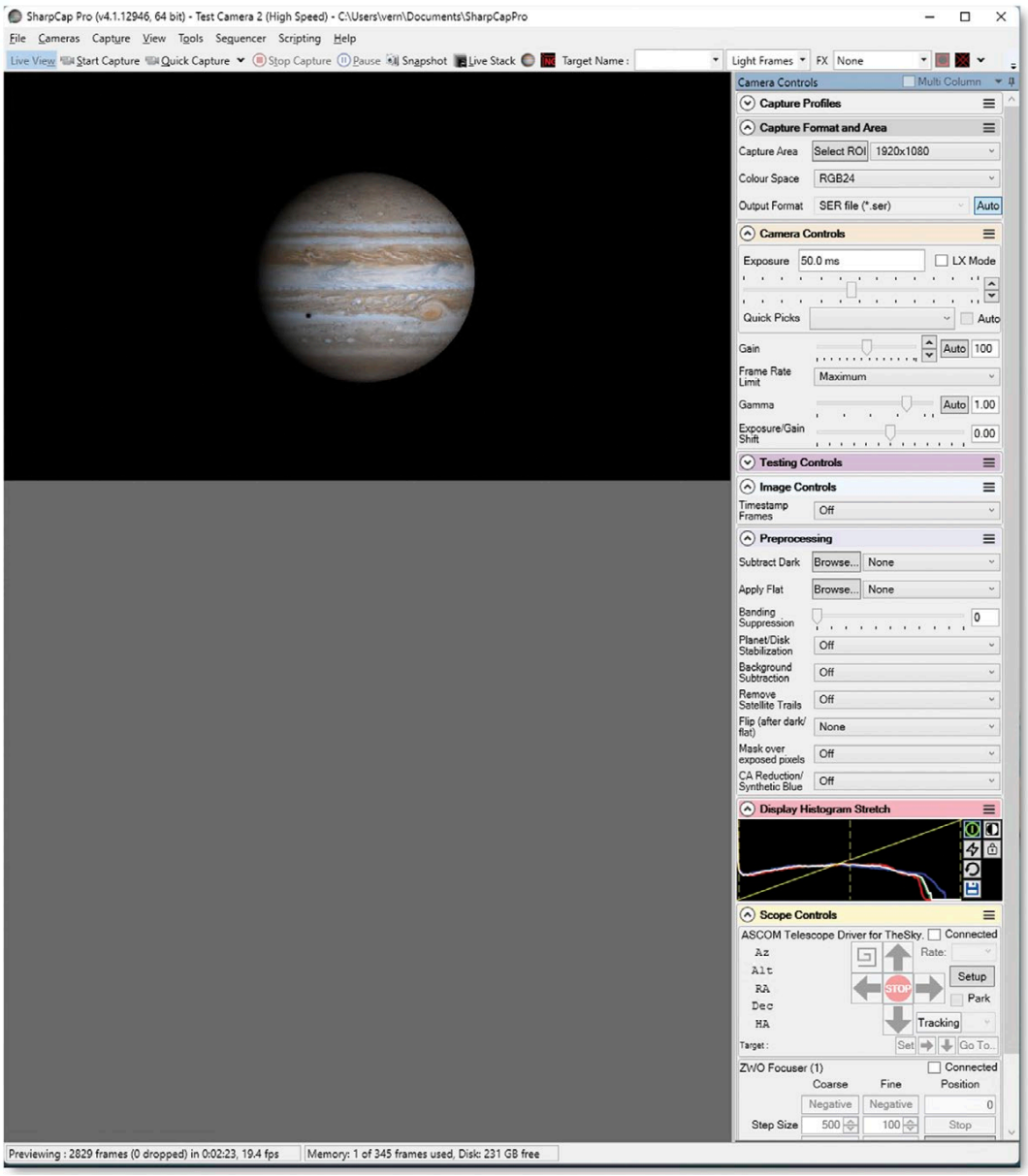
- Vern Raben "Telescope Imaging Tools: SharpCap and N.I.N.A.(Night Time Imaging N Astronomy)"
- David Elmore "Images of Integrated Flux Nebula"
- Eileen Hall-McKim "First Images of Asteroid Donaldjohnson Flyby from Lucy Spacecraft"

"Telescope Image Capture Tools: SharpCap and N.I.N.A.(Night Time Imaging N Astronomy)" by Vern Raben

Sharpcap

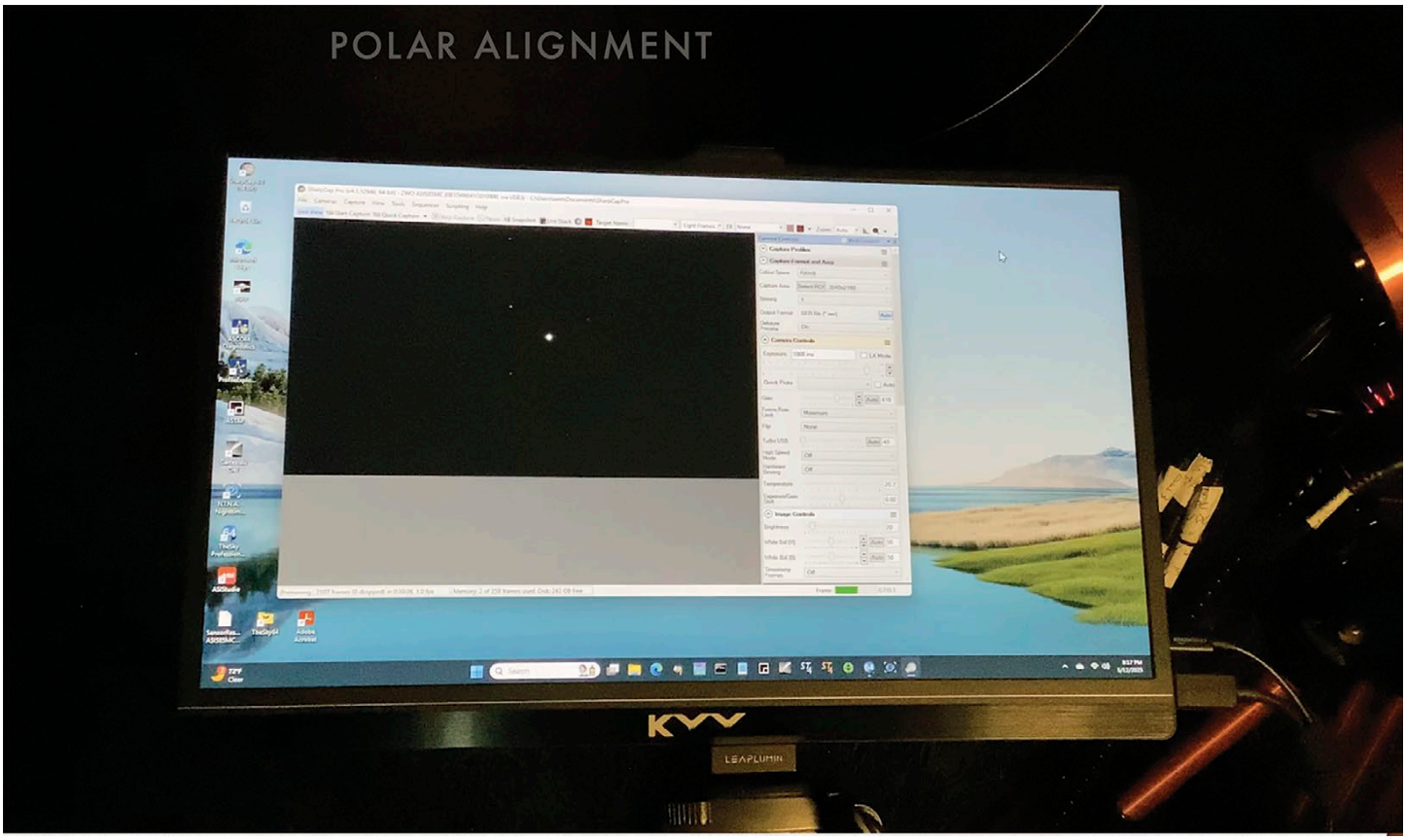
SharpCap is an image capture tool which supports a wide range of astronomy cameras, telescope mounts, and focusers.

- Sharpcap may be downloaded from www.sharpcap.co.uk
- It is widely used by planetary and EAA imagers
- Live stacking tool for viewing deep sky objects and solar/lunar/planetary imaging
- Excellent polar alignment tool
- Focus assist tool
- Built in plate solving and annotation - very impressive as it is built in to the application and is very fast
- Many other features



Sharpcap's graphical user interface

Sharpcap's Polar Alignment Tool



View of field monitor connected to Intel NUC computer running Sharpcap polar alignment tool

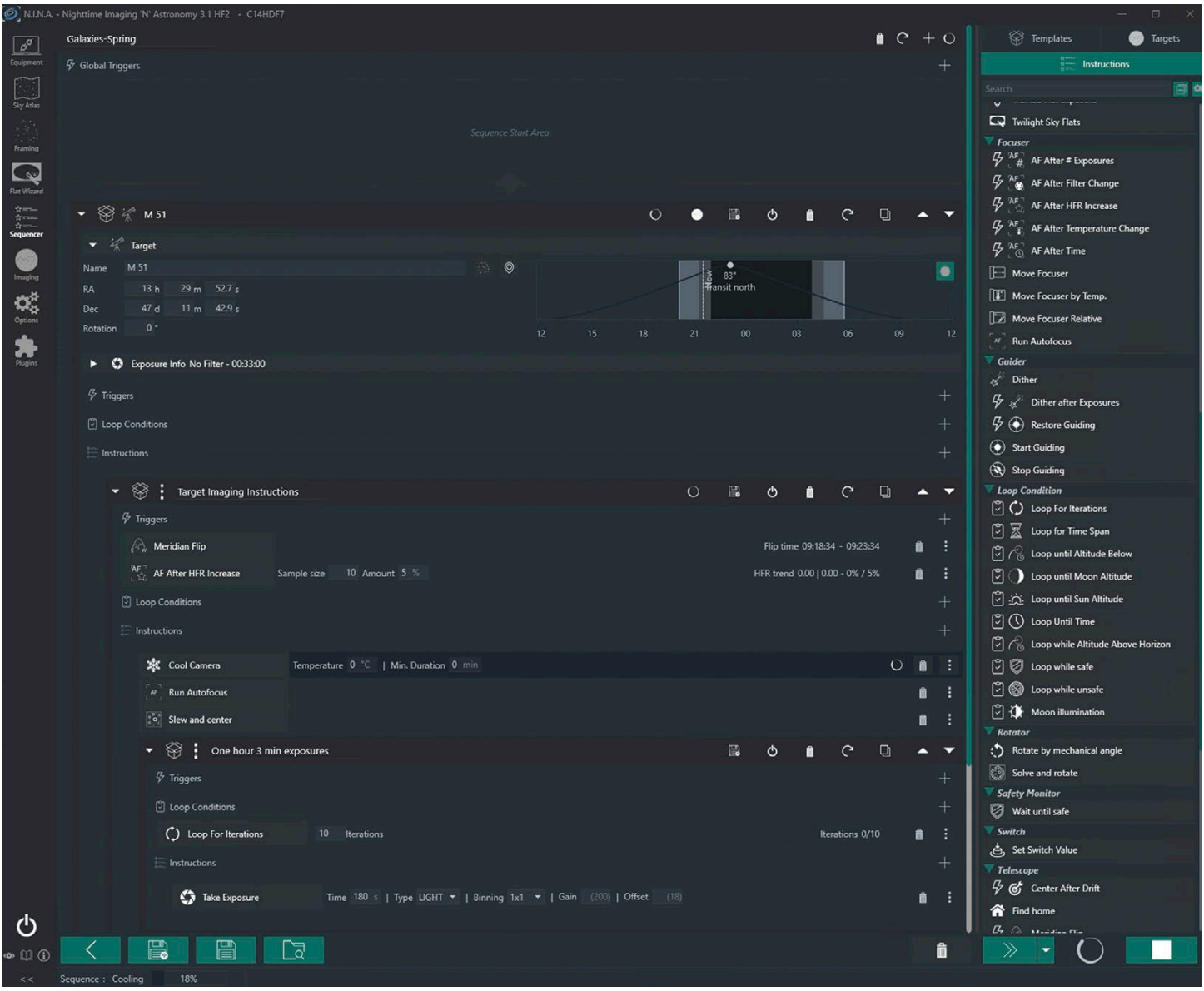
Process to polar align mount is very simple:

- Slew to Polaris to check mount orientation
- Start Sharpcap polar alignment tool
- Adjust camera exposure and gain (700ms exposure and 400 gain for equipment shown)
- Rotate RA about 90 degrees
- Adjust RA and Dec adjust knobs as described by Sharpcap (usually takes only a minute or two to align to better than an 20 arc sec)

N. I. N. A. (Night time Imaging 'n Astronomy)

N.I.N.A. is a software application that lets the imager to capture images all night and still get some sleep! It has tools for choosing, framing, focusing, centering and imaging one or multiple targets automatically. It can control numerous devices such as

- Cameras
- Telescopes
- Filter Wheels
- Focusers
- Rotators
- Switches
- Guiders
- Weather Devices
- Domes
- Safety Monitors



N. I. N. A.'s Sequence Interface

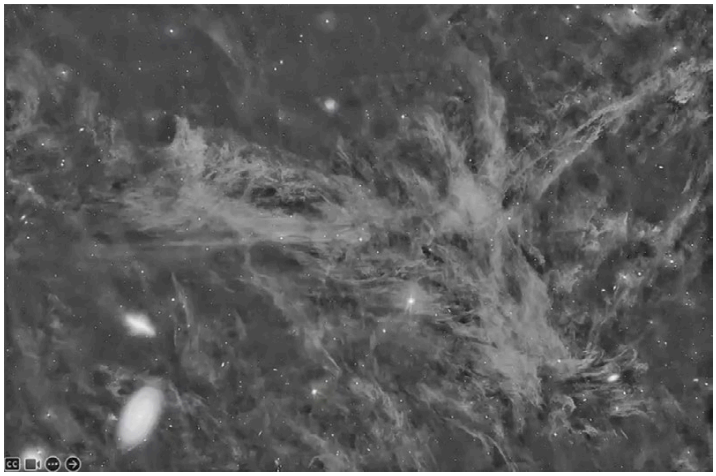
In the example script shown above, Messier 51 is the target to be imaged. Its coordinates are retrieved from the interface and a graph showing the altitude of the target during the evening is displayed.

Imaging sequence starts by cooling the camera to a specified temperature, in this case -10C. Once the camera is at that temperature it will run an auto focus routine and slew to the target's coordinates. Typically the guide routine will then be started and the main camera will take a series of exposures for the specified time interval. Once completed the guider will be stopped and it will on go to the next sequence that has been scheduled.

Several trigger conditions can be added such as changing which side of the pier the telescope is on when object crosses the meridian (meridian flipping). Other triggers such auto refocusing when the star HRF changes may be added as well. You may also start or stop a sequence based on the objects altitude above the horizon.

"Images of Integrated Flux Nebula"
by David Elmore

In a recent LAS newsletter there was an image of David's of Integrated Flux Nebula. In the galaxy there are molecular clouds. If you look at the galaxy at night you see dark clouds obscuring the stars behind them. Vern showed a picture of the California Nebula in his talk, those are clouds of gas that are excited by photons putting hydrogen atom in an excited state, then they radiate to us.

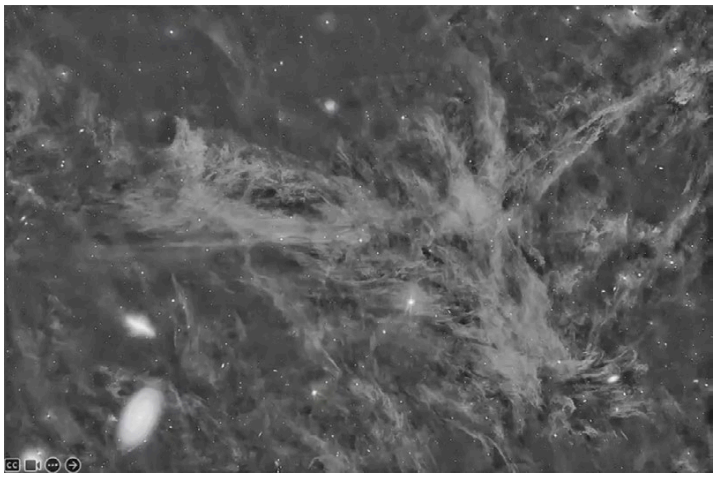


"But Integrated Flux Nebulae are different, clouds of gas that are near absolute 0, that are slightly out of the plane of the galaxy, kind of like clouds hanging over Longmont, where the cloud in the sky is illuminated by lights on the ground, in the case of the integrated flux nebula, the nebula is illuminated by light from all the stars in the galaxy that are below it".

"These are really, really faint, this was 7 hours of exposure with my 400mm focal length telescope, 100mm aperture broadband, plus luminants in order to see the wonderful structure in this nebula. But more going on in the image, at lower left can see M81 and M82, gives an idea of scale of this image."

Decided to have some fun and see what could see in narrowband, interesting things show up at the bottom with M81 and M82

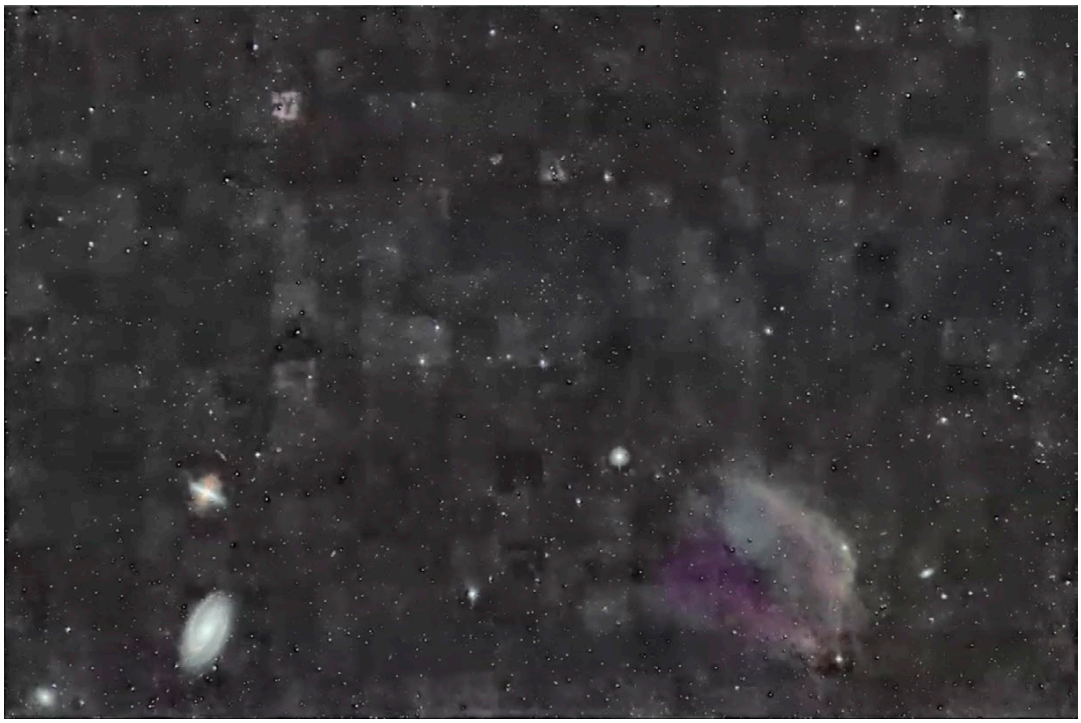
- Picked out bands for hydrogen, sulfur and oxygen
- Integrated flux nebula get a lot tighter, looking at less of continuum
- M82 is big galaxy down below, in narrowband can begin to see splotches in the galaxy which are star forming regions and it interacted with M81 at some time in the not too distant past, triggering star formation in M81, the upper one
- All that hydrogen alpha pouring out of the middle of it and that cap over the top is all part of activity from those stars, probably a whole bunch of supernovae that have blown-up in M81



- Zoomed in image of M81 and M82
- Marty Butley recently created a gorgeous image of just those two galaxies; can find them on Astrobin

- Panned more to right; start to see color, this is not just light reflected from dust out in the galaxy by integrated starlight, but something causing some emission with color to it
- This is hot, bright ultraviolet star, off the bottom of the frame that lights up the gas in the Integrated Flux Nebula in such away it excites the atoms to emit in color

In this case, took first image and subtracted it off the second one, subtracting off the integrated flux nebula brought out the nebula down on the lower right a lot more definitely and it looks like a planetary nebula.



- Seeing purple emission from it means it is a mixture of hydrogen and oxygen and planetary color table shows planetary nebulae emit a lot of hydrogen and oxygen, sulfur added in is green, made it look white
- Thought might be a new planetary nebula, David sent it off to his colleague Dana Patchick, but after researching further, found it was WPS46, just discovered 2 year ago

But David now has another candidate. "Looking in the middle at purple blob, in the middle of planetary nebula a very hot star that caused it - 72,000K, and is moving across the sky and we know how fast it is moving. The theory is it sluffed off a shell of hydrogen, then went 100,000 years, then sluffed off a shell of oxygen, will see if we can get this categorized as a new object if so, it will be PAEL4

- David Elmore and colleague Dana Patchick have discovered three other Nebulae: PAEL1, PAEL2, PAEL3; David has three other nebulae categorized EL1, El2, and EL3
- If this is categorized as new nebula will be 7 total nebulae that have been discovered in one of David Elmore's images

Lucy Spacecraft 1st Images of Asteroid Donaldjohanson Fly
by Eileen Hall-McKim

NASA has released the first images from the spacecraft "Lucy" encounter with asteroid Donaldjohanson. The encounter took place on April 20, 2025, in the main asteroid belt between Mars and Jupiter. The craft found the asteroid in a unique double-lobed shape, which, NASA said, likely formed a mere 150 mya. The spacecraft has now begun returning images that were collected as the craft flew ~660 miles (1,100 km) from Donaldjohanson.

- Lucy was launched on Oct. 16, 2021 and is on a 4 billion mile journey to explore a couple of main-belt asteroids and seven of Jupiter's Trojan asteroids
- Closest approach was ~600 miles from Donaldjohanson
- The science team conducted a series of dense observations to maximize data collection
- Data collected by Lucy's other scientific instruments, the L'Ralph color imager and infrared spectrometer and L'TES thermal infrared spectrometer will be retrieved and analyzed over next weeks

In this first set of high-resolution images returned from the spacecraft, the full asteroid is not visible as the asteroid is larger than the imager's field of view. The team analyze the remainder of the encounter data from the spacecraft; this dataset will give a more complete picture of the asteroid's overall shape.

- From a preliminary analysis of the first available images collected by the L'LORRI imager, the asteroid appears to be larger than originally estimated, about 5 mi. long and 2 mi. wide at widest point

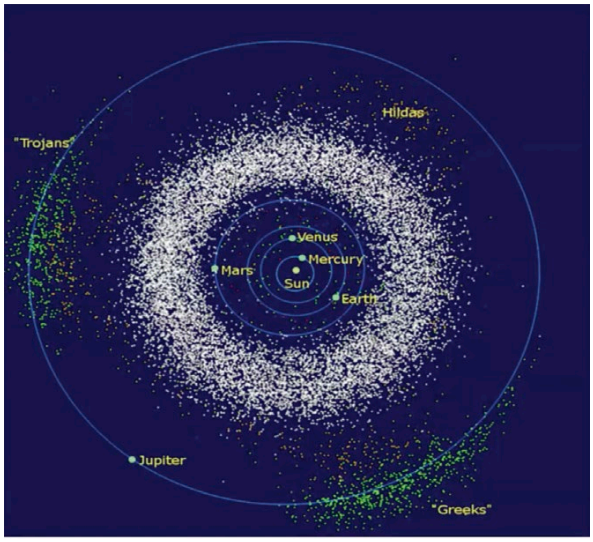
Like Lucy's first asteroid flyby target, Dinkinesh, on Nov. 1, 2023, Donaldjohanson is not a primary science target of the Lucy mission, the targets are farther out Trojan asteroids.

- As planned, the Dinkinesh flyby was a system's test for the mission, while this encounter was a full dress rehearsal, in which the team conducted a series of dense observations to maximize data collection
- The asteroid was previously observed to have large brightness variations over a 10-day period, so team not surprised when the first images showed what appeared to be an elongated contact binary (an object formed when two smaller bodies collide)
- However, the team was surprised by the odd shape of the narrow neck connecting the two lobes, which resembles two nested ice cream cones; especially interesting is ridging-like structure

Jupiter's Trojan Asteroids

Lucy spacecraft is named for a famous fossilized skeleton found in Africa in 1974, the asteroid, Donaldjohanson, is named for the paleoanthropologist best known for discovering Lucy - dating 3.2 million years old, this revolutionized our understanding of human origins and evolution.

The Trojans are primordial objects frozen in time since the birth of our solar system 4 billion years ago, effectively fossils of the planet formation process: they hold vital clues to deciphering the history of our solar system.

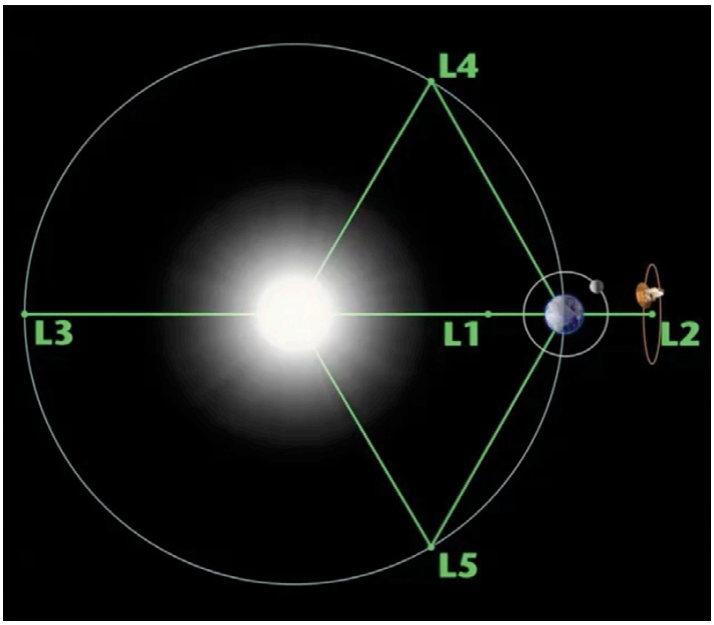


Credit: Wikipedia Commons

- We have never seen Trojan's before
- Because of proximity to Jupiter and powerful magnetic field, they are the only small body population in the solar system we do not get meteorites from

- The white "donut" represents the main asteroid belt
- Travel in two "swarms" that lead and follow Jupiter by 60°
- By convention, asteroids orbiting in front of Jupiter are named for Greek heroes of the Trojan War and likewise, asteroids trailing behind Jupiter named for the Trojan heroes

Lagrange points (credit NASA/WMAP Science Team)
Lagrange points are positions in space where objects sent there are held in place by gravitational forces. Astronomers use the name Trojans for all the asteroids collected at Jupiter's 2 stable Lagrange points. Specifically, the asteroids move in Jupiter's orbit, 60° ahead of and behind the giant planet, they are locked in this position by gravitational forces.



Lagrange Points (credit NASA/WMAP Team)

- Lucy will fly by Earth three times during the mission to get a push from its gravity, (gravity assist) making it the first spacecraft to return to the vicinity of Earth from the outer solar system
- The Lucy spacecraft will spend most of the remainder of 2025 traveling through the main asteroid belt. Lucy will encounter the mission's first main target, the Jupiter Trojan asteroid Eurybates, in August 2027

Tom Statler: NASA Program director:
"These early images of Donaldjohanson are again showing the tremendous capabilities of the Lucy spacecraft as an engine of discovery, the potential to really open a new window into the history of our solar system when Lucy gets to the Trojan asteroids is immense."

Hal Levison PI Lucy Spacecraft:
"Asteroid Donaldjohanson has striking complicated geology. As we study the complex structures in detail, they will reveal important information about the building blocks and collisional processes that formed the planets in our solar system"

- Lucy Launch in Ormand Beach Florida, October 16, 2021, photo by Greg Diesel Walck Some say it was "the most beautiful launch ever seen."
- For the article of this summary out of EarthSky News and the NASA Flyby Video see: https://earthsky.org/space/lucy-spacecraft-trojan-asteroids/

Credit: Lucy Launch in Ormand Beach, FLA o Oct 16, 2021 by Greg Diesel Walck

III. Treasurer Report by Bruce Lamoreaux

Longmont
Astronomical Society

P.O. Box 806
Longmont, CO 80502-0806

LAS Treasurer's Report - Bruce Lamoreaux **5/15/2025**

Main Checking Account (xxx-1587)

Begin Balance:	$ 6,590.00	**4/2/2025**	
Deposits:	$ 70.00	Membership	
Expenses:	$ (30.00)	Bank Charges, State Fee	
Current Balance:	**$ 6,630.00**	**5/2/2025**	

2-Year Savings Account (xxx-1478) (matures 10/23/23)

Past Balance:	$ 8,260.00	**12/31/2024**
Interest:	$ 15.00	
Balance:	**$ 8,275.00**	**3/31/2025**

Telescope Fund (xxx-0165)

Past Balance:	$ 1,100.00	**3/28/2025**
Deposits:	$ -	
Expenses:	$ -	
Balance	**$ 1,100.00**	**4/29/2025**

Petty Cash

Past Balance:	$ 50.00
Deposits:	$ -
Expenses:	$ -
Balance	**$ 50.00**

Total Assets	**$ 16,055.00**	$ 45.00	Up from April

Active Membership:	**96**	
Student Membership:	**2**	
Total	**98**	Active

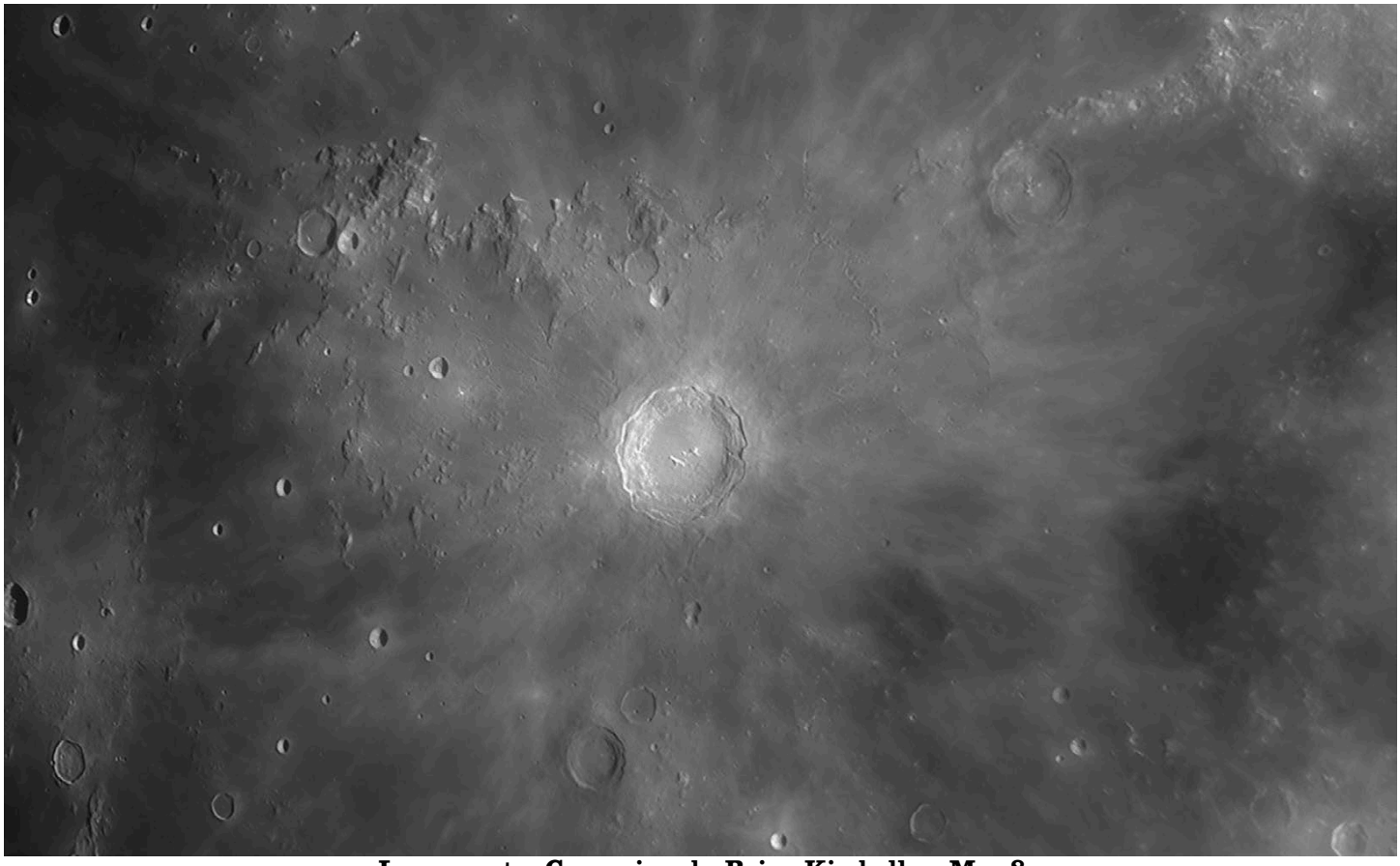
IV. New Business/Upcoming Events

Vern and Steve Albers have been working on the discord server that was discussed last meeting and it is now working. It is being set up as another option, in addition to email, to keep up with multiple comments and dialogues on different threaded topics.

- Steve sent the link to the discord server several weeks ago, let him know if still need it
- Once you get the link, it gives access, can then see different topics, such as planetary imaging, so something you can give a try and see if you like it
- Steve also uses the discord server in the same style for discussion for his Mars Panoramas he presented in April Forum, all are welcome to join that as well steven.albers@colostate.edu

Upcoming Events:

- Boulder Parks and Open Space Rabbit Mountain Star Party – Friday, May 23rd at 8:15 pm
- Next LAS meeting, Thursday, June 19th, at the Longmont 1st Evangelical Lutheran Church at 7:00 pm, the speaker will be Dr. Steven Hill

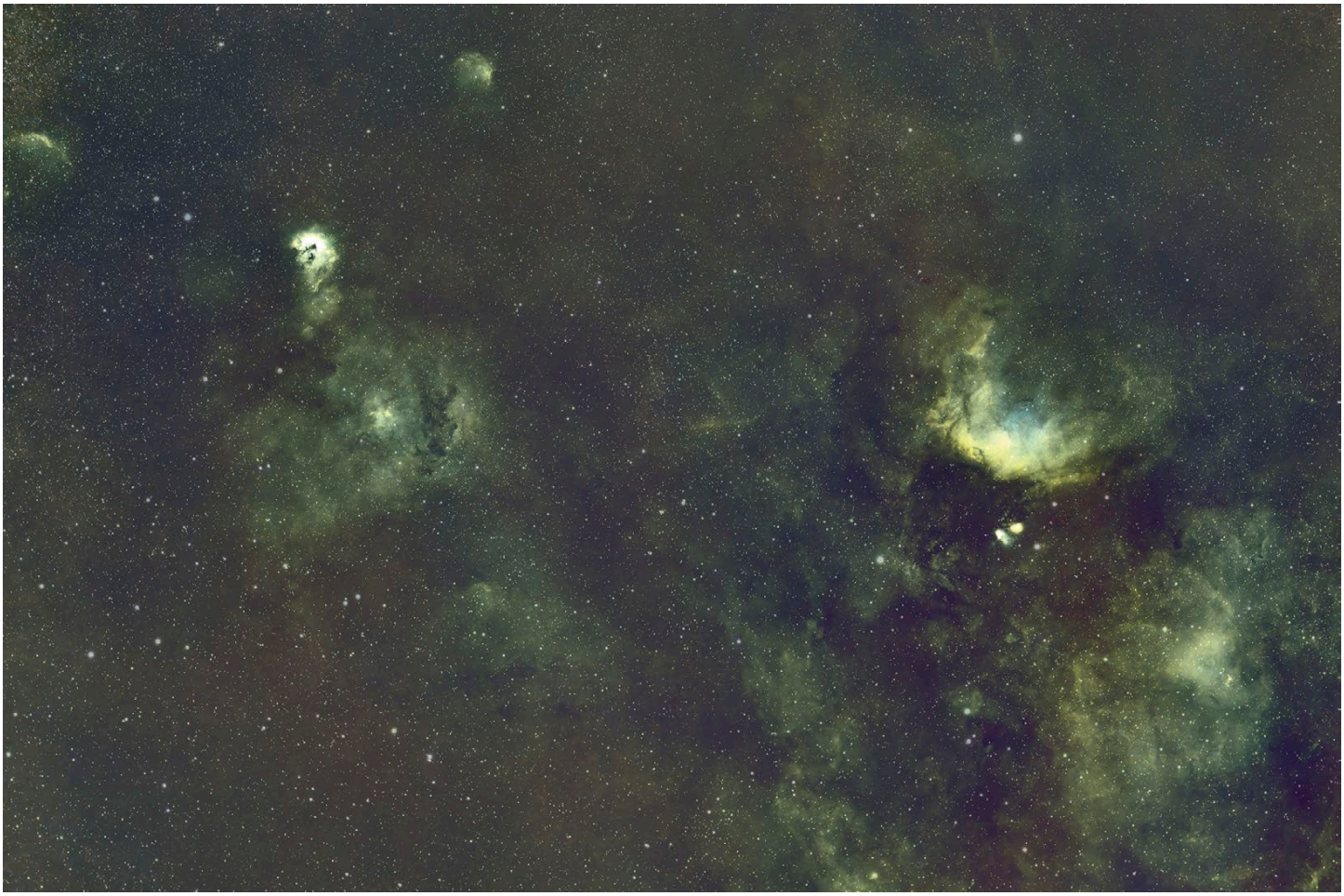


Lunar crater Copernicus by Brian Kimball on May 8

Brian captured the image of Copernicus with a 6" f8 Istar refractor, Televue 4X Powermate, and a ZWO ASI 174MM camera in average seeing.

Lunar crater Copernicus is one of the most prominent lunar features on the moon. It is 59 miles (95 km) in diameter and about 9800 feet to 13000 feet (3 to 4 km) deep. The cluster of peaks near its center are about 3200 feet (1 km) above the central floor.

It was most likely formed by a catastrophic impact about 800 million years ago -- quite recent in lunar geologic history. The impact excavated the crater and uplifted the rim. The ejecta blanket continued to flow radially outward; when the flow dissipated radial dunes were deposited. The crater walls slid inward and the center was uplifted. Some of the fluid remained molten and ran into depressions creating a crudely flat floor.



Sh2-87, 88, 89, 90,92,93 and NGC 6813 Area. Modified SHO by Stephen Garretson

Roughly east of the bright double star, Albireo, and south[-ish] a ways from Sadr lies the zone of HII nebulae. Sh2-88 is the brightest, seen ~centered in the right half of the image; 87 is in the lower right corner, and the others are arrayed across the FOV to the left. Targets in the west that were somewhat accessible a month ago are gone until well after galaxy season has ended as that part of the Milky Way doesn't rise at all now at my latitude. So I searched for something in Vulpecula or on the border of that constellation and Cygnus. I have imaged this area before but this is a different view and utilizes the three major NB filters. Capture requires getting up at OMG-thirty over repeated nights as the window starts close to 0130 - 0200 and it gets too light to shoot just before 0500. This dataset was collected over three nights, 4/29, 5/3, and 5/4; the dual scope setup helps tremendously. Cameras were rotated 40° anticlockwise to achieve this framing.

[19] guided 600s Ha subs
[19] guided 600s OIII subs
[18] guided 600s SII subs
Total integration: 9 hours 20 minutes

Borg FL 107 6 element f/3.9 APO
Primalucelab Esatto Robotic Focuser
ZWO EFW
Chroma 3nm filters
Wanderer Astro V2 Rotator
WandererBox Lite V3
Bahtinov mask modified Wanderer Astro Eclipse

William Optics Star 71 Gen II f/4.9 Petzval Astrograph
Optec TCF Leo robotic focuser
ZWO EFW
Chroma 3nm filters
Baader H-Beta filter
Wanderer Astro V2 Rotator
WandererBox Lite V3
Bahtinov mask modified Wanderer Astro Eclipse

Paramount MX+

TheSkyX, SGP, Wanderer Empire, PHD2
PixInsight, Mac OS Photos, Preview

from the Beevo Dome

LBN 251 Area by Stephen Garretson

Lynd's Bright Nebula 251 is essentially the northern lobe of IC 1318, the Gamma Cygni Nebula in Cygnus, but there's a lot more going on in this FOV. Data was captured over two nights starting ~0130 each session, with a blazingly bright Moon which was fortunately in the opposite part of the sky. Nonetheless, OIII, the weakest signal, suffered from too few exposures and I should really return and add more of that species. However, the Moon is almost full and thus conditions won't be favorable, especially for OIII for many days. Thus, I decided to go with what I have.

[44] 300s guided Ha subs
[32] 300s guided OIII subs
[48] 300s guided SII subs
Total integration: 10 hours, 20 minutes

Borg FL 107 6 element f/3.9 APO
Primalucelab Esatto Robotic Focuser
ZWO EFW
Chroma 3nm filters
Wanderer Astro V2 Rotator
WandererBox Lite V3
Bahtinov mask modified Wanderer Astro Eclipse

William Optics Star 71 Gen II f/4.9 Petzval Astrograph
Optec TCF Leo robotic focuser
ZWO EFW
Chroma 3nm filters
Baader H-Beta filter
Wanderer Astro V2 Rotator
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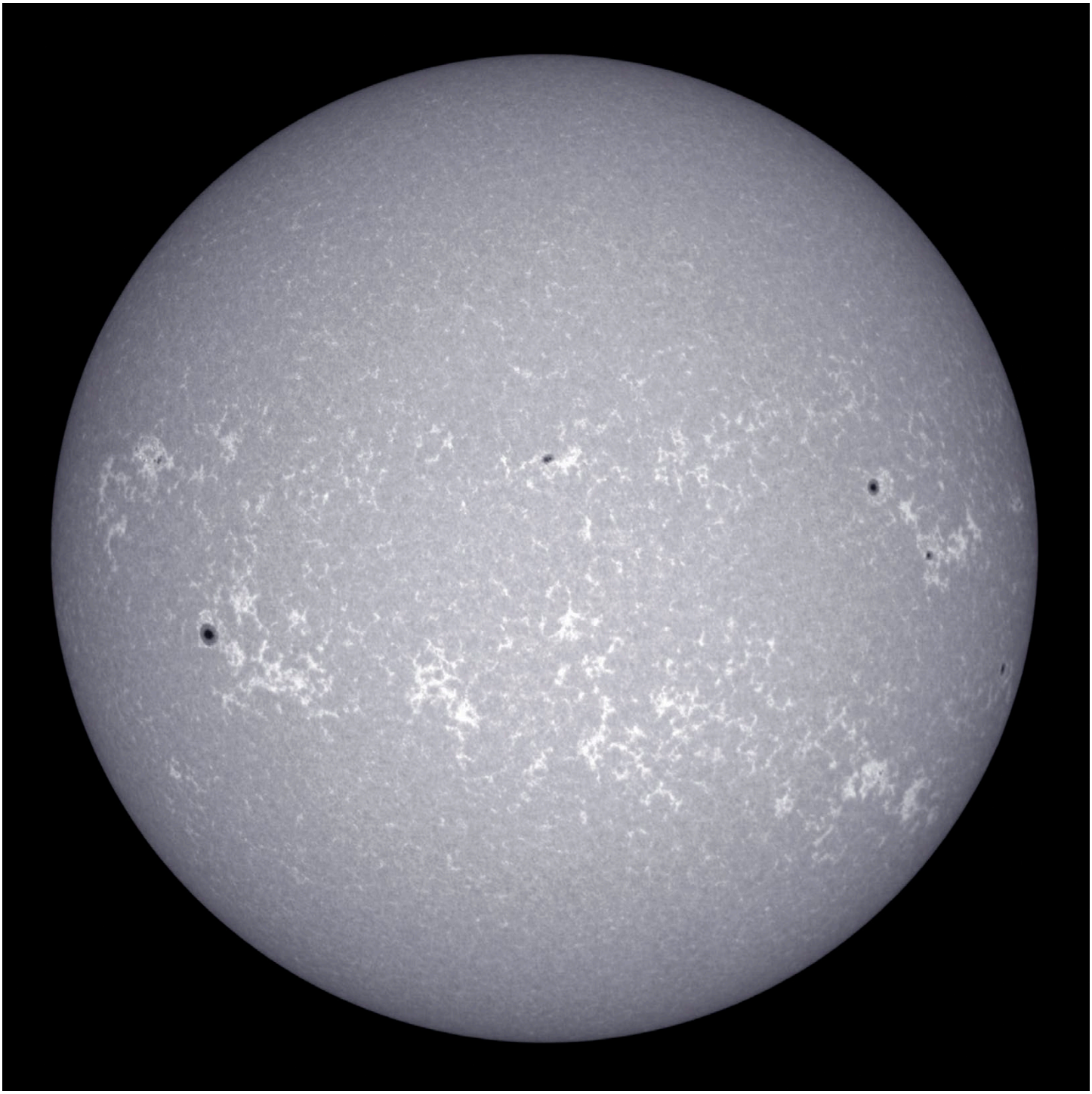
Bahtinov mask modified Wanderer Astro Eclipse

Paramount MX+

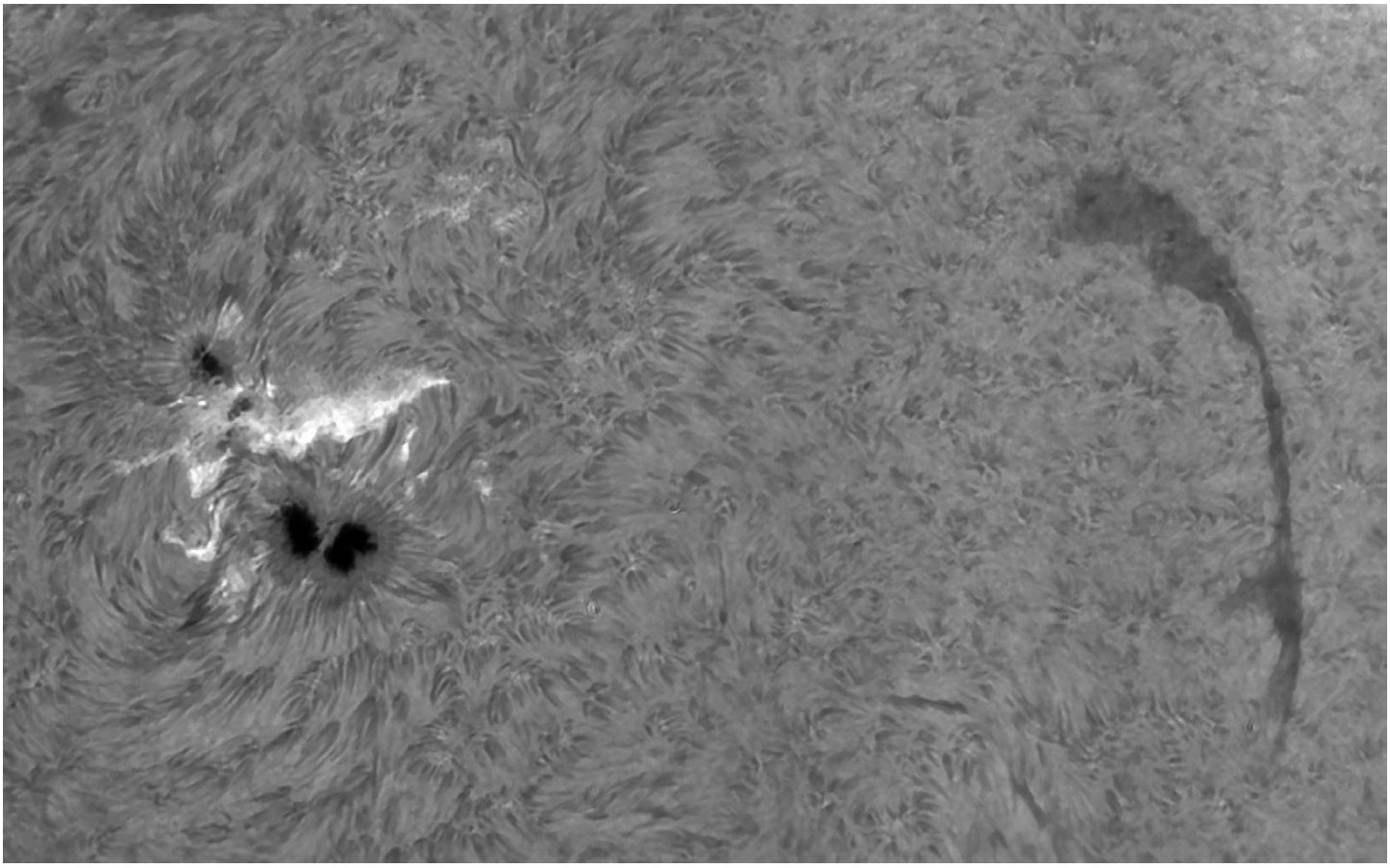
TheSkyX, SGP, Wanderer Empire, PHD2
PixInsight, Mac OS Photos, Preview
from the Beevo Dome

Reprocessed M27, Dumbbell Nebula by Eddie Hunnell

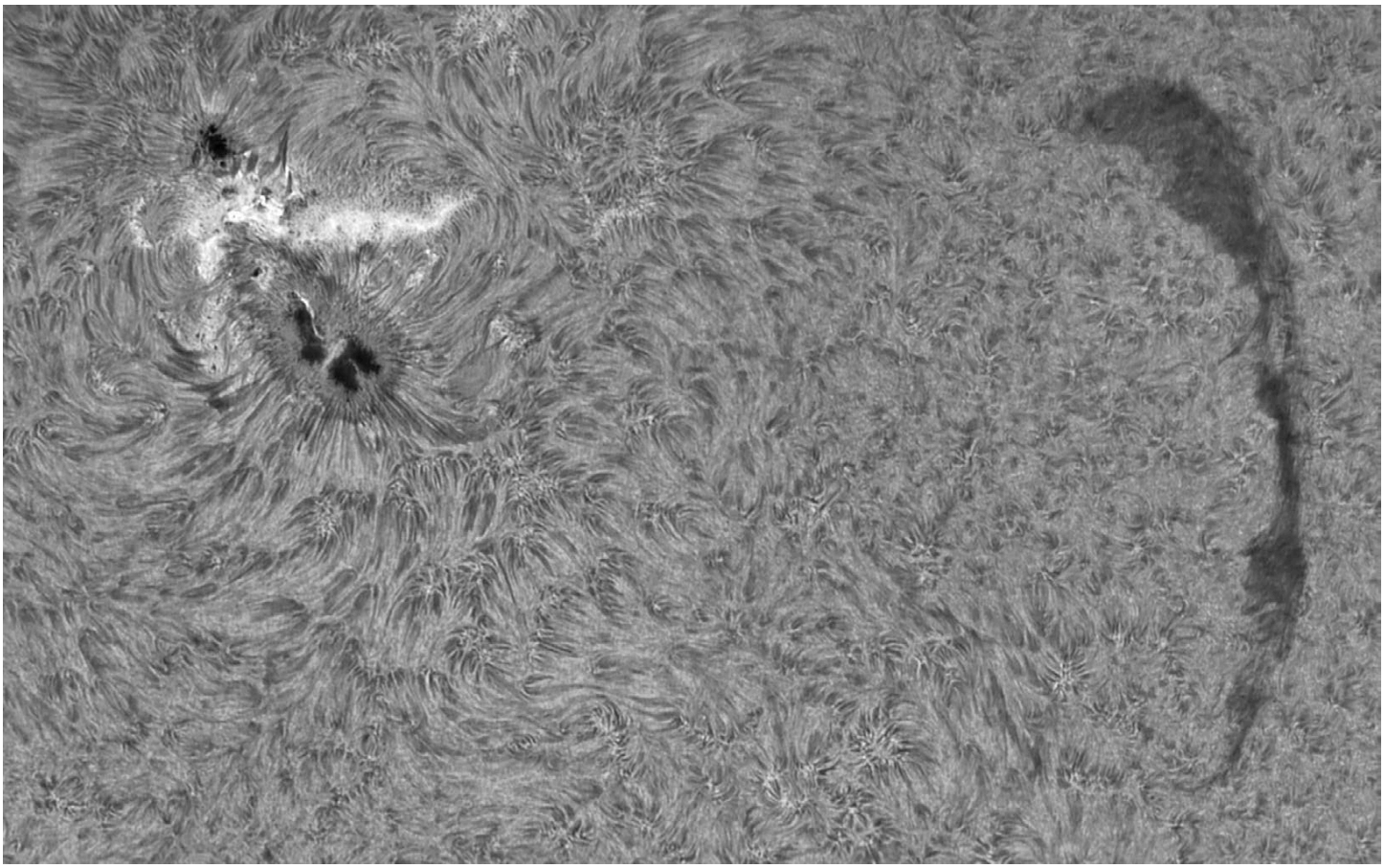
Quasar PG 1634+706 by Ellen Steiner - one of farthest visible in amateur scopes



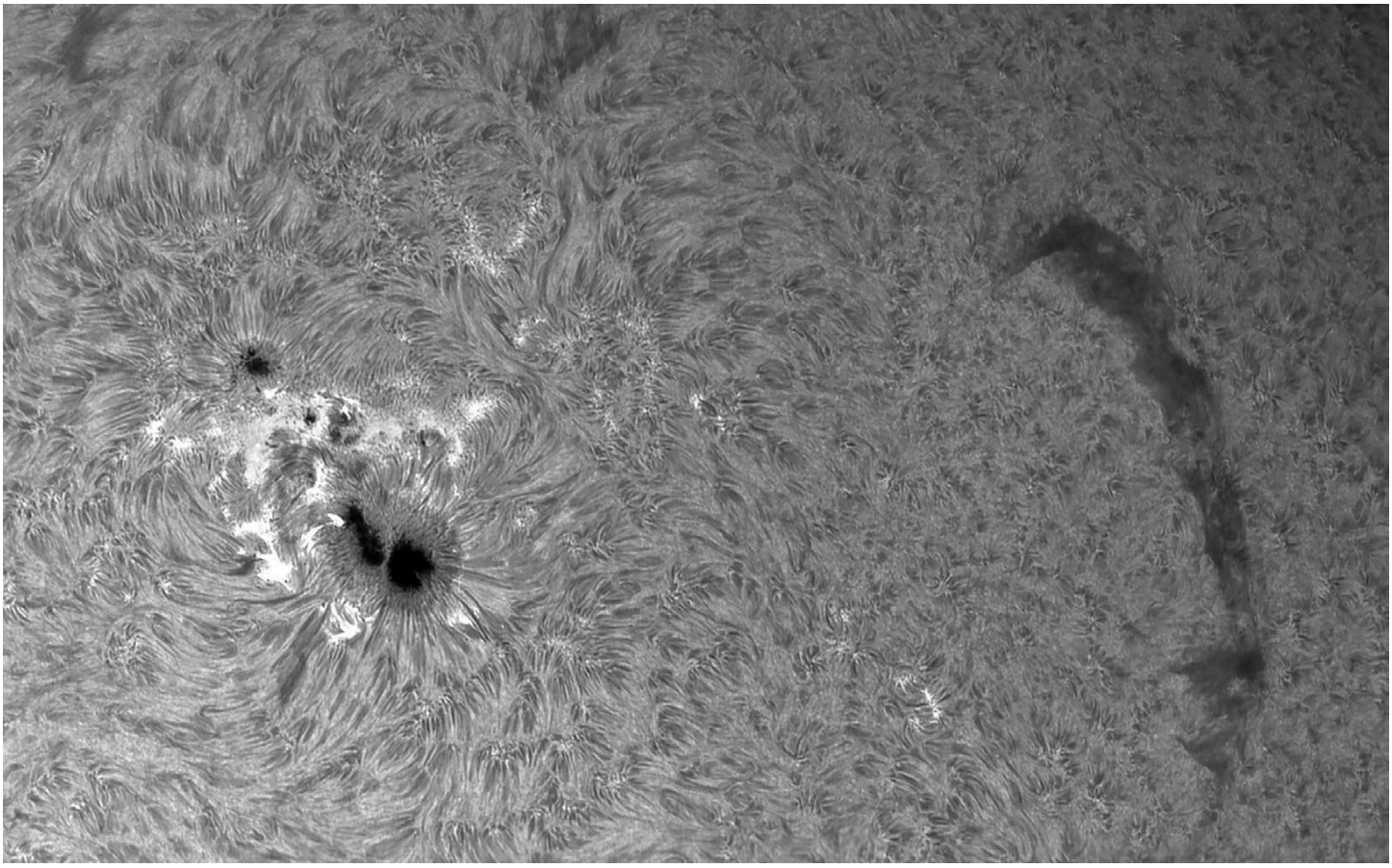
Sun in Calcium K on May 21 by Brian Kimball



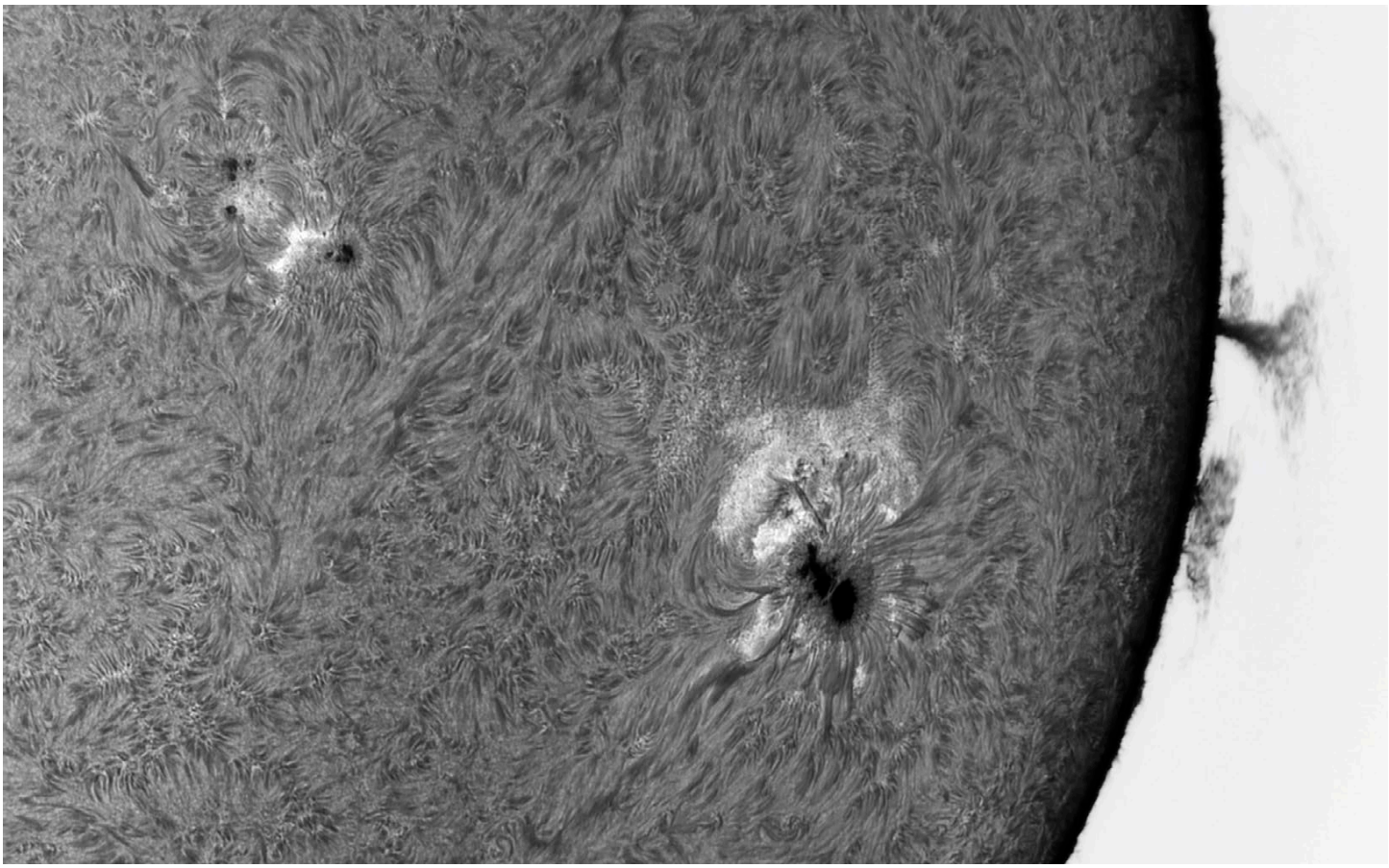
Solar active region 4079 in H-Alpha on May 2 by Brian Kimball



Solar active region 4079 in H-Alpha on May 3 by Brian Kimball

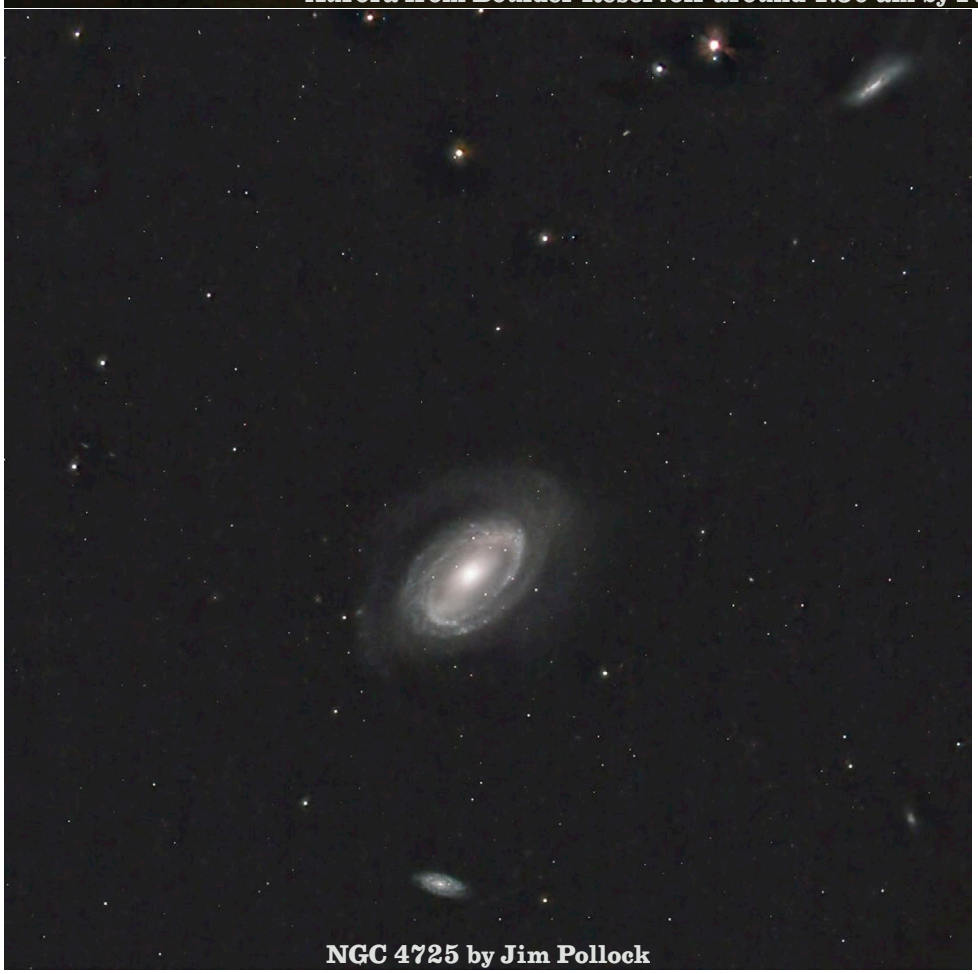


Solar active region 4079 in H-Alpha on May 4 by Brian Kimball



Solar active region 4079 in H-Alpha on May 8 by Brian Kimball

Aurora from Boulder Reservoir around 1:30 am by Paul Robinson



NGC 4725 by Jim Pollock

<--- Now that my 9.25" is in Galaxy Hunting mode (f/7 with focal reducer), I shot NGC4725 which is a fascinating galaxy.

What's really cool about this galaxy is that it has a pronounced bar across the center, and only a single spiral that spirals quite a ways!! Even to a very faint and large paint brush swath on th router extreme.

There are two other galaxies in the image, both with some nice detail! 4725 is about 41 MLY away, NGC4747 is to the upper right and also about 40 MLY away and the small and very pretty NGC4712 is directly below and center... but impressively is 6 times further away at 240 MLY.

60 frames at 180sec for 3 hours with the 9.25" EdgeHD at f/7 and with an L=Pro filter in front of the ZWO 6200mc color camera. From the driveway.

Fairplay Star Party by Gary Garzone

MJ Post ,Tally and myself (Gary Garzone) did a star party in Fairplay for elementary school kids and their parents.

MJ did a presentation inside school and then people went outside to scopes. Total clear skies in brisk air, temps down to 31 degrees by end of session.

Jupiter, Mars, Moon, M3 and few others were the highlights.

Fun event! I love the comments from people, most never looked thru scopes before, so a thrill for all. Kids had science fair going on also, plus nature walk showing how far each planet is from each other.

They spotted a beaver on the property; nature is awesome in the high country. Great mtn views; high elevation of Fairplay makes good trip.

We stayed at MJ's log home; 10200 feet elevation very high, in Aspen grove; how cool.

Thanks MJ for putting on the star party.

NGC 5101 by M. J. Post

Here is a group that is seldom imaged from the U.S. because it lies so far south at DEC -27.5 degrees (in Hydra). The large lenticular face-on the left is NGC 5101, while the edge-on to the right is NGC 5078, with the distinctive dust lanes.

Both these galaxies are larger than our Milky Way and both are the same distance from us, about 90 M.l.y. That means they are separated by only 0.8 M.l.y (Andromeda is 2.5 M.l.y. from the Milky Way); therefore, they are experiencing a strong mutual gravitational attraction.

An even stronger attraction exists between NGC 5078 and the small spiral just to its southwest, IC 879. These two are separated by only 60 k.l.y. Our Large Magellanic Cloud is 160 k.l.y. distant.

From DSNM, CDK14 scope, lum filter, ASI 6200MC camera. 3 hours time on target. 0.8 x 0.54 field of view.

NGC 4565 by Jim Pollock

This is NGC4565 or The Needle (another of Gary Garzone's favorites). Got some good looks at it from the Texas Star Party a week ago through some neighboring Dobs as it is large and bright! It has a lovely dust lane which shows some reddish glow from the galaxy's younger forming stars behind. It also has a lovely stellar core which is just slightly lifted off the edge-on axis. There is a beautiful glow around it… albeit much less pronounced than the Sombrero.

There are 4 other galaxies within this image: NGC4562 is the smaller, dimmer edge-on orthogonal to 4565 up and to the left. There is a much more distant IC3546 (aka NGC4565B)to the upper right, checking in at 300M LY distance (compared to 4565 and 4562 both about 41M LY away). There is NGC3571 (58M LY) just below the Needle to the right... a very faint smudge. And IC3582 which appears more stellar here further down and right. It's the upper and brighter of what appears to be a pair of up & down stars.

This image shot from my driveway over Friday and Saturday nights: 60 frames of 3-min each for 3 hours total exposure, Using my 9.25" EdgeHD in galaxy hunting mode at f/7 with the focal reducer. I used the L-Pro filter and 6200mc color camera.

Hewitt 1 Super Nova Remnant (SNR) by M. J. Post

Here is an HOO rendition of an extremely faint and asymmetrical SNR I attempted to capture several weeks ago. I've invested 10.6 hours into this image so far and decided that more time isn't worth the effort. So this is my end product. Bray Falls' version is magnificently better, but he invested 129 hours!

From DSNM, 11" RASA scope 5.3 hours each H-alpha and OIII, ASI 6200MM camera.

LDN 43, Cosmic Bat by M. J. Post

Here's an object I've longed to image since it appeared as an APOD on October 27, 2024. It finally began rising in the east this past week, after midnight. Atmospheric problems kept occurring however - cirrus clouds, smoke, moon, and bad seeing to mention a few. So I ended up taking 78 five-minute sub frames with the f/7.2 CDK scope, thinking I'd have to throw out 50% of them. I also took 16 H-alpha sub frames with the f/2.2 RASA scope to highlight the HII regions.

But I couldn't decide which sub frames to discard, except for six really bad ones. So 72 sub frames ended up in the pot and I let PixInsight decide how to weight the contribution of each in the stack; later I added enhancement for the HII regions from the co-aligned RASA stack.

This is the result, turned upside-down so the Cosmic Bat appears to be flying correctly. North is down and east is to the right. Beverly Lynds' Dark Nebula 43 (LDN 43) is in the constellation of Ophiuchus approximately 1400 light years away. Field of view is about 0.8 x 0.54 degrees.

I apologize if some of the dense dark areas appear clipped. That happens when converting from 16-bit tiff imagery to 8-bit jpeg imagery.

Newsletter Archives by Eileen Hall-McKim

30 Years Ago: June 1995

At the May meeting of the LAS, guest speaker Keith Gleason announced that Sommers-Bausch Observatory (CU Boulder) would like to initiate a cooperative program with the LAS. In this program, LAS members will be allowed use of the SBO instruments (16", 18", and 24') in exchange for assisting the observatory with some miscellaneous tasks. These tasks will include items such as helping out with public nights, maintenance, etc. This program is still in its formative stage, so details are yet to be finalized and/or changed. Members that are interested in taking part in this program need to contact Bob Ross for more details. It's a great opportunity to utilize a fully equipped professional observatory for individual use!

June event: new moon star party at Deadman on the 24th

20 Years Ago: June 2005

Rocky Mountain Research Station Star Party by Julie Carmen
In attendance we had a total of 21 overnight guests on Friday and 18 overnight guests on Saturday. We had 3 visitors to our event on Friday and 7 visitors on Saturday.

Friday started nice and laid back with folks showing up and moving in while others played Astronomy Monopoly. Philippe & Rolande brought Astronomy Monopoly and that was quite entertaining. Dinner was at 6:30 pm and the presentations started at 7:40 pm. Over all the presentations were most excellent! Thank you to all of the presenters.

The sky cleared up by 9:30pm on Friday and everyone went up to the observing site. Gary's 30 inch dob blew away everyone that looked through it. Andrew, Philippe, Marc, Julie, Ray, Vern, and Josh contributed with their scopes. (Did I miss anyone?) Vern, Bill, Josh, David and others, worked with the 12" cassegrain telescope in the dome. Amazing night! We had four high school students and two grade school students that weren't as interested in observing, but had a great time playing cards and staying warm in the dorms.

THANK YOU: I want to thank the members of LAS and BASS for all of your respect to this site and help with the event. Marc and I had so much help with clean up that we were out very early. Parents, please tell your children for me that I am very happy with their attitude and good presence at the star party. As far as I can tell, we had a weekend of no accidents and no destruction on the property. For any committee member who is running an event, this is so wonderful!

10 Years Ago: June 2015

Presentation: "Weirdest Stars in the Universe" by Dr. Emily Levesque, University of Colorado
Dr. Emily Levesque is a Hubble postdoctoral fellow at the University of Colorado at Boulder. She earned a SB in physics from MIT in 2006 and a PhD in astronomy from the University of Hawaii in 2010. She won the 2014 Annie Jump Cannon prize from the American Astronomical Society and the 2012 Robert J. Trumpler award from the Astronomical Society of the Pacific for her PhD thesis on the galaxy environments and explosive deaths of massive stars. Her research is focused on improving our overall understanding of massive stars: how they evolve, how we can observe them in distant galaxies, and what we can learn from them about the cosmos.

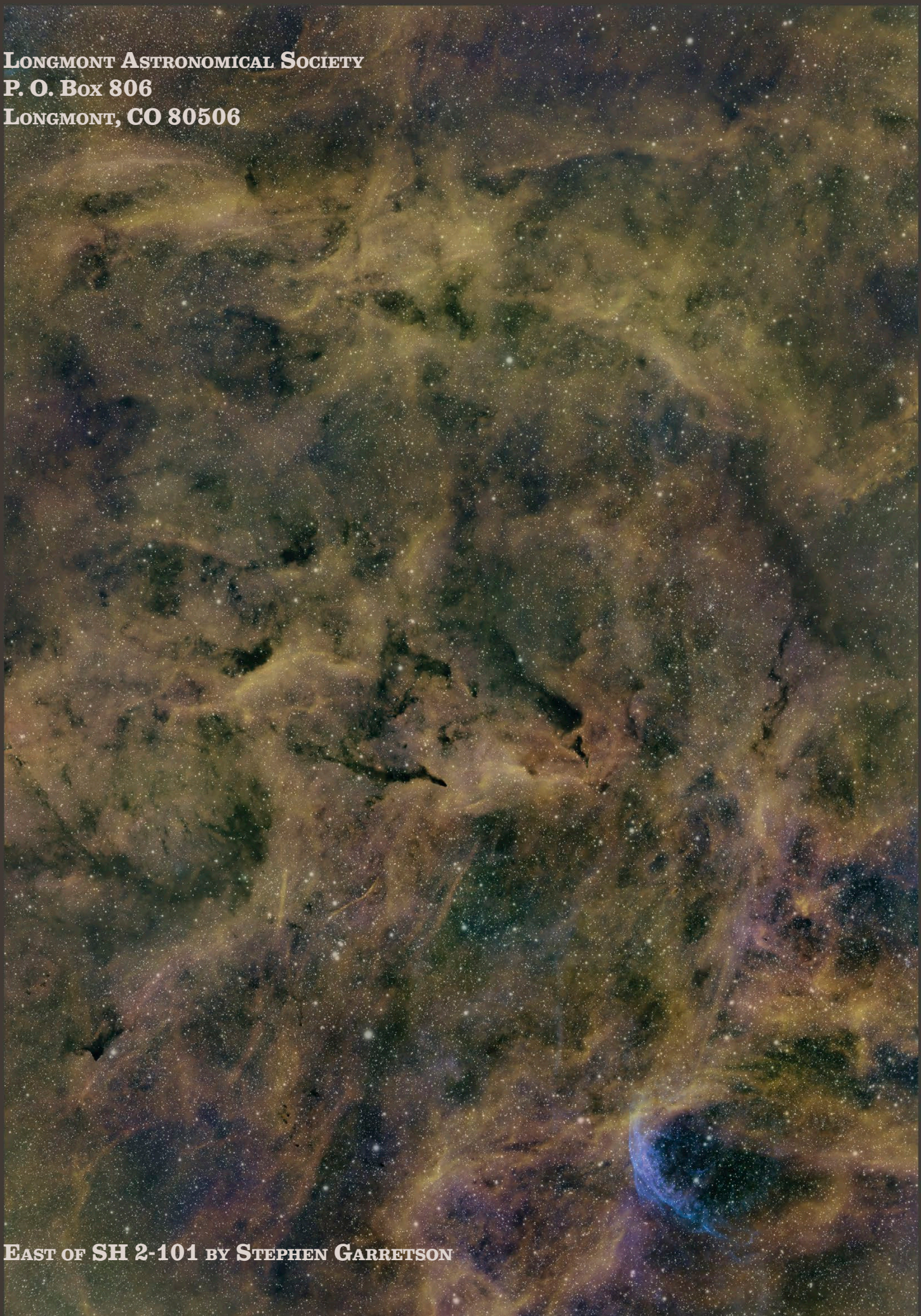
Topic: Massive stars – What we can learn from them
Most research is observational in nature but Emily's chosen tool is spectroscopy...not pretty pictures but "lines... just lines". For the reader, spectroscopy is "the measurement and analysis of electromagnetic radiation, including visible light, emanating from stars and other hot celestial objects. Spectroscopy can be used to derive many properties of distant stars and galaxies, such as their chemical composition, temperature, density, mass, distance, luminosity, and relative motion" (Wikipedia).

Casper 2017 Eclipse planning meeting
Morning meeting were logistical w/city of Casper where in an Eclipse Planning meeting all departments were represented. Aside – all hotel rooms in town already booked. Afternoon meeting was ALCON planning, only Vern and Vi from Colorado. Set prices for conference at $60 per person/$100 per couple for 4 days, tours discussed, prices for clothing items. Astronomical League talks and vendor displays all at Parkway Plaza hotel and conference center. Discussion ensued on the eclipse's path of totality, viewing locations in the path. Possibilities include locating camping or other open location in Nebraska for a stay in the eclipse path. We want to be within 5 miles of centerline. Beyond 5 miles duration of totality decreases rapidly. Discussion included 'chase' roadways in case of overcast/cloudy skies... very robust exchange of ideas that will continue.


Antares Region by Chris Fauble, June 2015


M 5 Globular Cluster by Gary Garzone

Longmont Astronomical Society
P. O. Box 806
Longmont, CO 80506



East of SH 2-101 by Stephen Garretson