Longmont Astronomical Society

October 2024

Heart Nebula (detail)
by Stephen Garretson

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Next LAS Meeting October 17 at 7 pm

"Active Solar Cycle 25: What You Want to Know!" by Shawn Dawl, SWPC

Summary

Inform about space weather risks and hazards, and provide it in an informative and contextual context. Discuss the highly active Solar Cycle 25 and how the cycle continues to be quite prolific. Relate primary solar storms of concern and potential impacts to our society and the technology we rely upon. Describe the historical May 2024 G5 (Extreme) geomagnetic storm, its effects and impacts, and what was accomplished by SWPC to make this extreme solar storm the most successfully mitigated in history. Provide a background of other historical space weather events from the past and how they could be majorly impactful today for what is historically possible, yet overdue. Relate this complex and little understood natural hazard to help attendees understand the Space Weather Prediction Center's role and operational support in this realm. Finally, discussion throughout will focus on sunspots, space weather activity/storms of interest, what they are, what they mean, and how they are associated with each other. A side goal will be to give attendees a better understanding of the solar wind, changes, and other influencers and what that means for auroral viewing potential.

Biography

Mr. Shawn Dahl is a U.S. Air Force (USAF) retiree (22 years) where he spent most of his career in the field of meteorology and space weather. He retired from active duty in 2007 and held several meteorological forecasting positions with the USAF and the NWS until 2015, when he was hired as a physical scientist and senior space weather forecaster by the Space Weather Prediction Center (SWPC). He was selected as SWPC's first Service Coordinator in August of 2023 and now leads Impact-based Decision Support Services (IDSS) issues, relations, and products. He also leads education/outreach initiatives and efforts, and conducts many customer and partner interactions on behalf of SWPC - to include working with the press/media, broadcast meteorologists, and the emergency management community.

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. Shawn will present via Zoom. Video of the meeting will be available on the LAS member portal website https://members.longmontastro.org a couple days 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 Sarah Davis. 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

Planets in October

Mercury

Mercury is not visible this month.

Venus

Venus is visible low in the WSW soon after sunset; it is -4 magnitude in apparent brightness and 13 arc sec across.

Mars

Mars brightens from +0.5 to +0.1 this month and increases in apparent size from 7.6 to 9.3 arc sec across. Optimum time to view is around 5:30 am high up in the south at that time. Its closest approach to earth is on Jan 12 and opposition is Jan 15.

Jupiter

Jupiter is around -2.6 magnitude in brightness; it increases in apparent size from -42 arc sec across to 46 arc sec during this month. Opposition with Earth is on Dec. 7th. The following is a list of best times to observe its Great Red Spot at mid disk this month:

- Oct 2 at 5:44 am altitude 74°
- Oct 3 at 1:35 am alt 39°
- Oct 5 at 3:14 am alt 59°
- Oct 7 at 4:52 am alt 73°
- Oct 8 at 12:43 am alt 33°
- Oct 9 at 6:30 am alt 67°
- Oct 10 at 2:22 am alt 53°
- Oct 12 at 4:00 am alt 70°
- Oct 12 at 11:51 pm alt 26°
- Oct 14 at 5:38 am alt 71°
- Oct 15 at 1:29 am alt 47°
- Oct 17 at 3:08 am alt 66°
- Oct 17 at 10:59 pm alt 20°
- Oct 19 at 4:46 am alt 73°
- Oct 20 at 12:37 am alt 41°
- Oct 21 at 6:24 am alt 60°
- Oct 22 at 2:15 am alt 60°
- Oct 24 at 3:53 am alt 74°
- Oct 24 at 11:45 pm alt 34°
- Oct 26 at 5:32 am alt 65°
- Oct 27 at 1:23 am alt 55°
- Oct 29 at 3:01 am alt 71°
- Oct 29 at 10:52 pm alt 28°
- Oct 31 at 4:39 am alt 70°
- Nov 1 at 12:30 am alt 49°

Saturn

Saturn is +0.7 magnitude in brightness and 19 arc sec across this month.

Uranus

Uranus is 5.6 magnitude and 3.7 arc sec across.

Neptune

Neptune is 7.8 magnitude and 2.3 arc sec across.

Lunar Phases in October

New Moon:
Oct 2 at 12:51 pm

First quarter:
Sept 10 at 12:56 pm

Full Moon:
Oct 17 at 5:28 am

Third quarter:
Oct 24 at 12:04 am

Images created with NASA Scientific Visual Studio's Moon Phase and Libration Tool.
See https://svs.gsfc.nasa.gov/5187/

Showpiece Objects in October

- NGC 7000, North America Nebula in Cyg, mag 4
- M31, Andromeda Galaxy in And, mag 4.3
- NGC 1499, Colinder 380 in Oph, mag 5.5
- NGC 7293, Helix Nebula in Aqr, mag 6.3
- NGC 6992, Veil Nebula (east) in Cyg, mag 7.0
- NGC 6960, Veil Nebula (west) in Cyg, mag 7.0
- NGC 281, Pacman Nebula in Cas, mag 7.4
- NGC 253, Sculptor Galaxy in Sct, mag 7.9
- IC 5070, Pelican Nebula in Cyg, mag 8.0
- NGC 6543, Cat's Eye Nebula in Dra, mag 8.3
- NGC 7009, Saturn Nebula in Aqr, mag 8.3
- NGC 7662, Blue Snowball in And, mag 8.6
- NGC 6826, Blinking Planetary in Cyg, mag 8.8
- M57, Ring Nebula in Lyr, mag 9.4
- IC 5146, Cocoon Nebula in Cyg, mag 10.0
- NGC 6888, Crescent Nebula in Cyg, mag 10.0
- M76, Little Dumbbell Nebula in Per, mag 10.1
- NGC 40, Bowtie Nebula in Cep, mag 10.7
- NGC 7635, Bubble Nebula in Cas. mag 11
- NGC 7008, Fetus Nebula in Cyg, mag 12
- NGC 7026, Cheeseburger Nebula in Cyg, mag 12
- Hickson 92, Stephen's Quintet in Peg, mag 12
- NGC 7023, Iris Nebula in Cep
- Sh 2-155. Cave Nebula in Cep

Meteor Showers in October

The Orionid Meteor shower is a type I (major) meteor shower which peaks on night of Oct 20/21. Typically about 20 per hour may be seen. Moon rise is 8:20 pm so it will interfere most of the evening.

LAS 2024 Execs

Vern Raben, President
Hunter Morrison, Vice President
Eileen Hall-McKim, Secretary
Bruce Lamoreaux, Treasurer

LAS 2024 Board Members

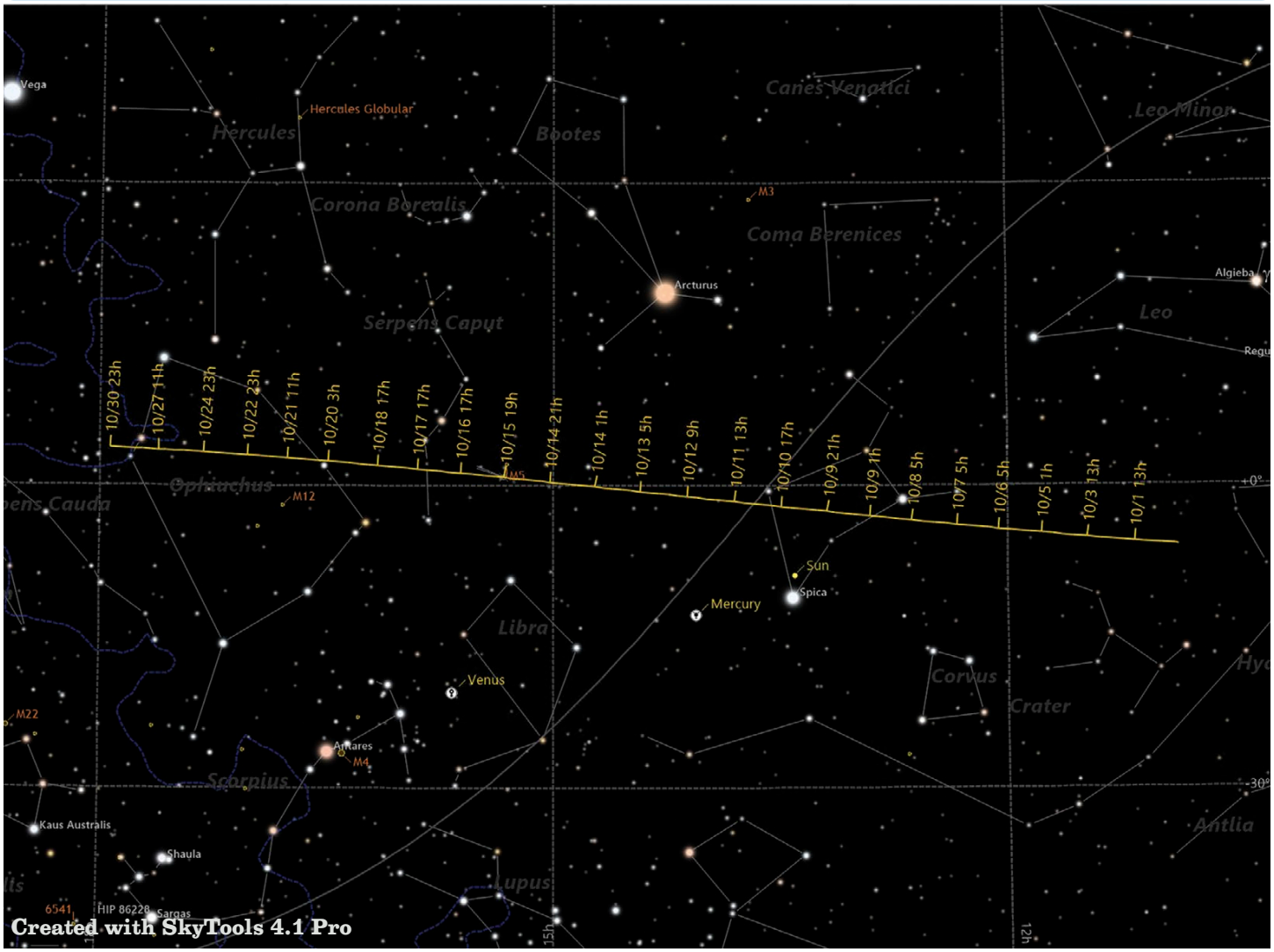
David Elmore, Gary Garzone,
Mike Hotka, Brian Kimball, and Tally O'Donnell

Appointed Positions 2024

Sarah Detty, Webmaster
Bruce Lamoreaux, Library Telescope Coordinator
Bill Tschumy, Public Outreach Coordinator

Vern Raben, Newsletter Editor
Eileen Hall-McKim, Newsletter Archives

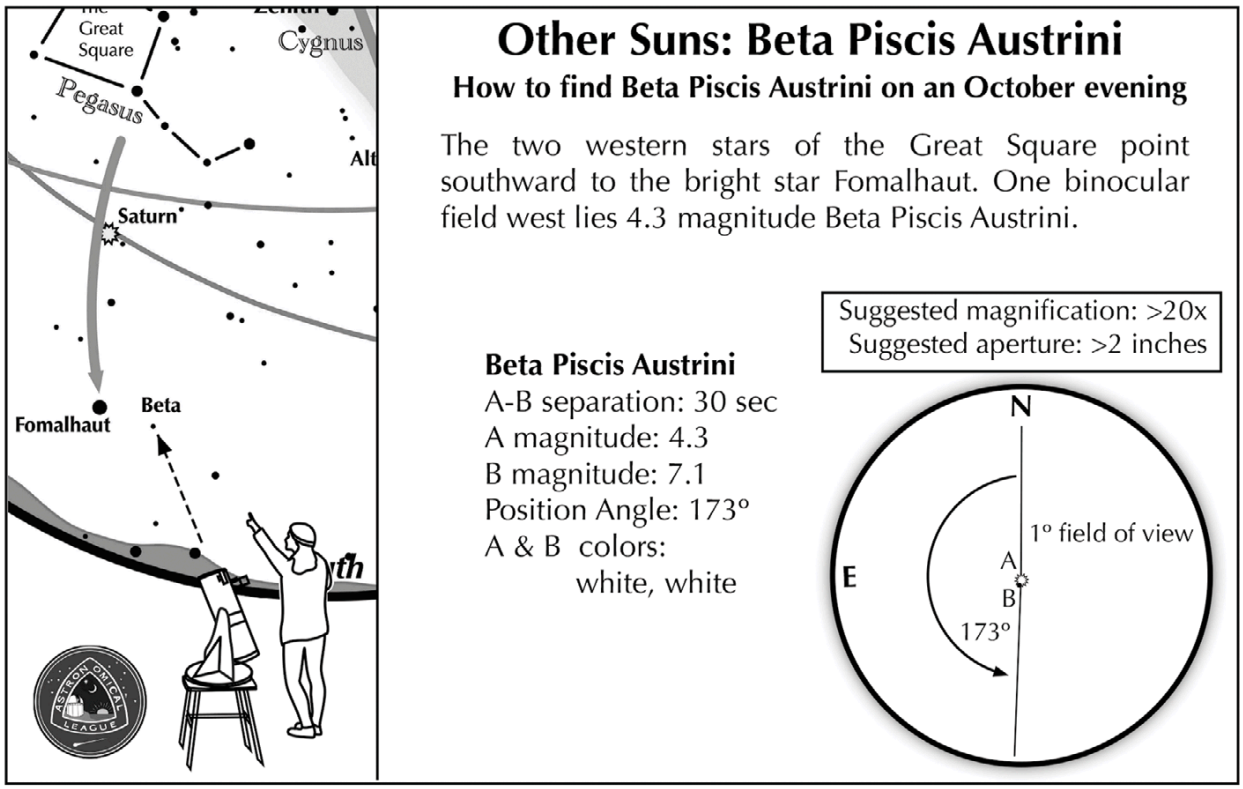
Comet C/2023 A3 (Tsuchinshan - ATLAS) in October



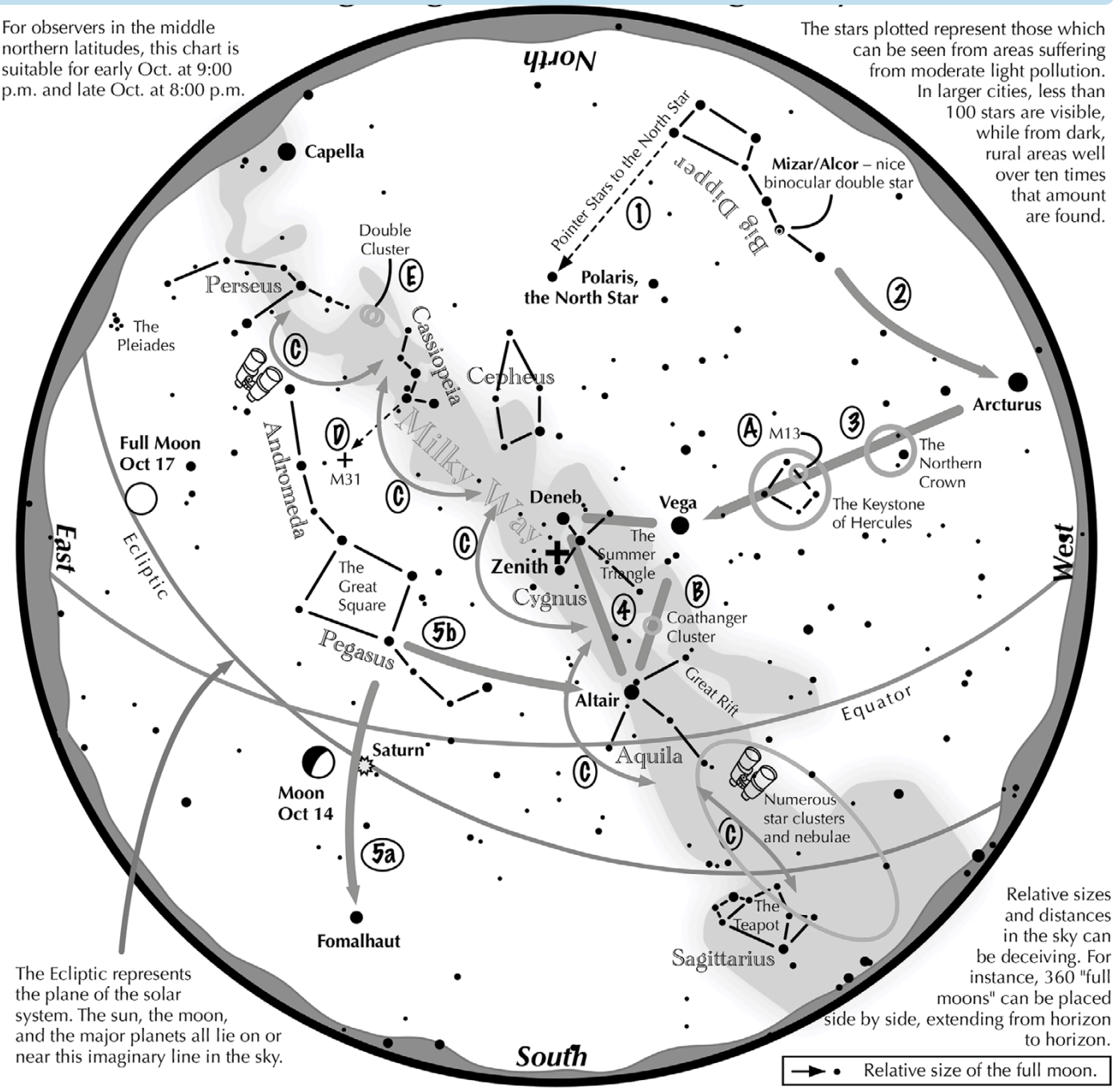
Date	Optimal time	RA	Dec	Constellation	Magnitude	Size (arc min)
Oct 1	6:09am	11h16m59.5s	-05°37'26"	Leo	1.2	4.9
Oct 7	6:23 am	12h26m28.5s	-03°56'49"	Virgo	-2.6	6.4
Oct 13	6:59 pm	14h39m29.9s	-00°21'03"	Virgo	0.4	7.2
Oct 19	7:13 pm	16h26m25.3s	+02°16'23"	Ophiuchus	3.6	5.9
Oct 25	7:29 pm	17h26m46.7s	+03°20'06"	Ophiuchus	5.1	4.5
Oct 31	7:22 pm	18h01m01.1s	+03°43'42"	Ophiuchus	6.0	3.5

Comet C/2023 A3 Looking west on September 12 at 7:00 pm (6.5° above horizon)

ASTRONOMICAL LEAGUE Double Star Activity



Navigating the October Night Sky by John Goss



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.

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

Scan the area with binoculars for asterisms and stellar groupings

Between the First Point of Aries and the Water Jar

The **First Point of Aries** marks the intersection of the celestial equator and the ascending ecliptic which defines the location of 0 hrs Right Ascension.

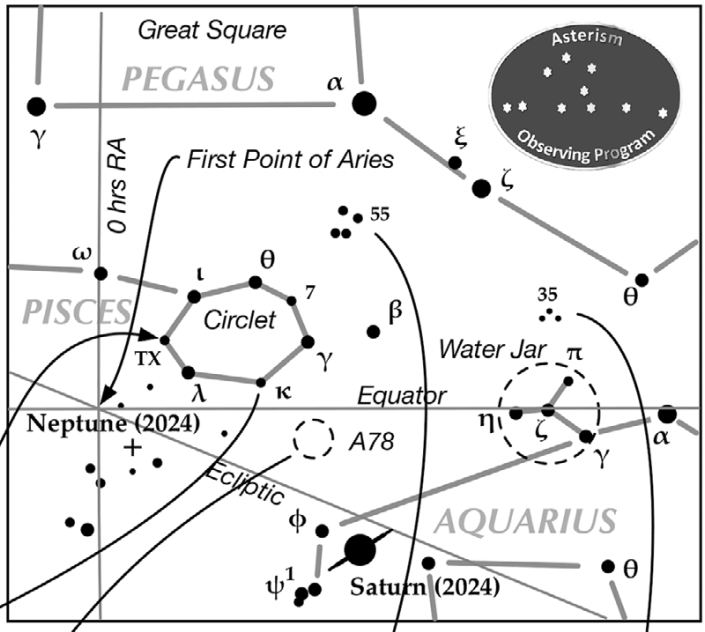
Naked eye and binocular sights

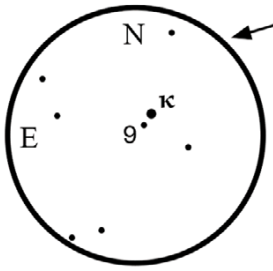
Circlet. These six, maybe seven depending on sky clarity and visual acuity, 4th and 5th magnitude stars trace a squashed circle at the far southwestern corner of Pisces.

It lies 10º below the southern edge of the asterism the **Great Square** in Pegasus, and less than 15º east of another asterism, the four 4th & 5th magnitude stars of the **Water Jar** in Aquarius.

These features are subtle, not bright. Best seen from a dark location with a transparent sky.

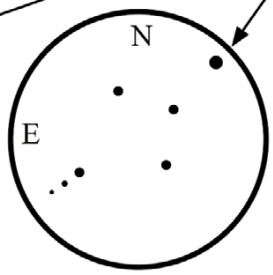
Binoculars users enjoy studying **TX Piscium**. The star varies between 4.8 and 5.2 magnitude, a noticeable amount to the careful observer. It appears as a distinct orange-red hue and its period is irregular, but averages around 224 days.





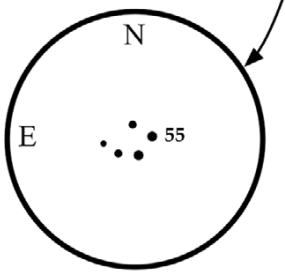
6º Field

Binocular Double
4.9 mag. Kappa Psc
6.2 mag. 9 Piscium
Separation: 9 min



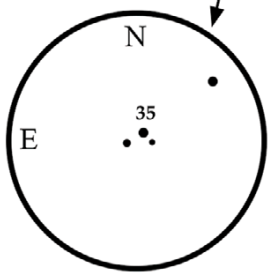
1º Field

Asterism A78
7 stars of 7-8 mag.
tracing the outline
of a "rocketship"



6º Field

Binocular sight
A stellar quintet
Four 5th mag stars
& one 6th mag star.



6º Field

Binocular sight
A stellar trio
One 5th mag. star &
two 6th mag. stars.

In 2024, Saturn lies 10º southwest of the Circlet and Neptune hides just 5º to its southeast.

2409

September 19 LAS Meeting Notes by Eileen Hall-McKim

I. Introduction

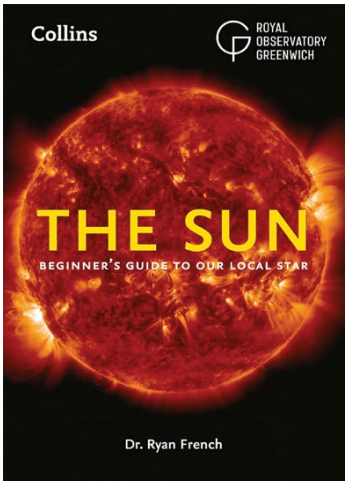
The September LAS monthly meeting was held in-person and by zoom on September 19th at the Longmont Lutheran Church, 803 Third Ave. President Vern Raben began the meeting with self-introduction of members. Twenty-five members attended in person, 12 attended on-line.

II. Main Presentation

Our guest speaker for the September meeting was Dr. Ryan French. Ryan is a solar physicist at the National Science Foundation's National Solar Observatory, science communicator, and author. Since completing his PhD in 2022, he is pursuing the mysteries of the Sun at the forefront of modern solar physics research, using cutting edge telescopes on the ground and in space. Ryan also works to share the wonders of the Sun and space with the public, through social media, public talks, and on television and radio.
Website: www.ryanjfrench.com
Twitter & TikTok: @ryanjfrench

Earth at Sun's Mercy
By Dr. Ryan French

Despite its seemingly unchanging appearance in the daytime sky, the Sun is incredibly dynamic and shrouded in mystery. Descended from ancestors who hailed the Sun as a deity, the way we observe the Sun has come a long way. Our scientific journey to understand the Sun has included many intriguing and humorous stories from over the centuries, including tales of 11th century monks, feuds of 17th century astronomers, and a part-time brewery owner who discovered the link between the Sun and northern lights. The influence of the Sun's activity on the near-Earth environment is known as space weather, which has the ability to damage satellites, disrupt power grids, and deliver harmful levels of radiation to astronauts. In this talk, we'll explore how humanity is adapting to living under a star, and how our understanding of the Sun has helped unlock the wider secrets of the universe.

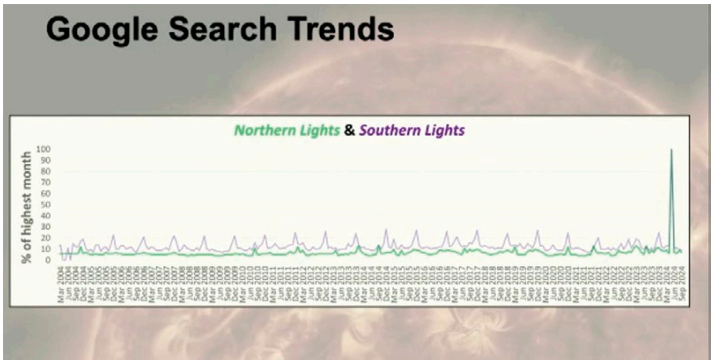


Dr. Ryan's book, "The Sun: Beginners Guide to Our Local Star" may be purchased on Amazon.

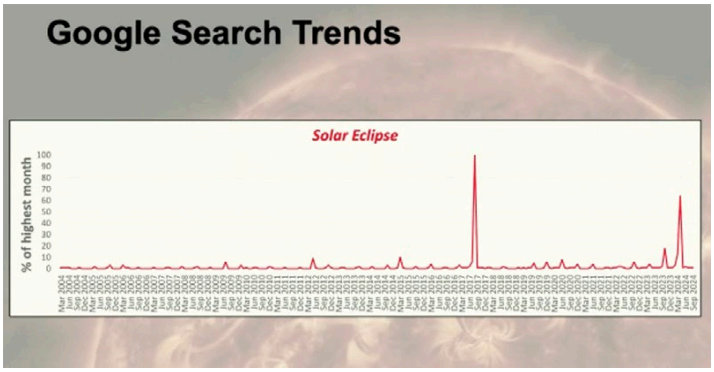
Dr. Ryan is a solar scientist and his day job is to research the Sun, he is in nearby Boulder at the National Solar Observatory, using the 4-meter Inouye Solar Telescope in Hawaii and NASA Space European Telescopes in orbit as well. This year has been a really exciting year for the Sun for a couple of reasons. First of all we are approaching the Solar Maximum which means the Sun is a lot more active now than a couple of years ago. This means a lot of Sun stuff like the Northern Lights. The May 2024 aurora that many of us saw was the largest display we have had since 2003.

Aurora at Pawnee National Grasslands
by Dr. Ryan French

Total Solar Eclipse April 2024 by Ryan French

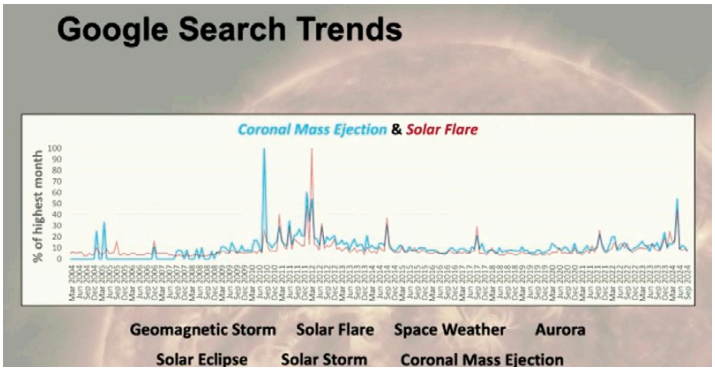


Of interest on the human side of Solar News: Google Search Trends March 2004 – June 2024 we see a very large spike in searches for Northern Lights May 2024. Northern lights googled 10x more in May 2024 than any time in Google's record.



Google Search Trends – Total Solar Eclipse plotting March 2004- Sept 2024

Highest ever search trend for solar eclipse – August 2017. Even though it went through a smaller population there were more google searches for the 2017 total solar eclipse.



Google Search Trends – Coronal Mass Ejection & Solar Flares. Every little spike a solar flare or eruption that would have made the news at the time. Plot shows the large flare in May 2024 that caused the large aurora display.

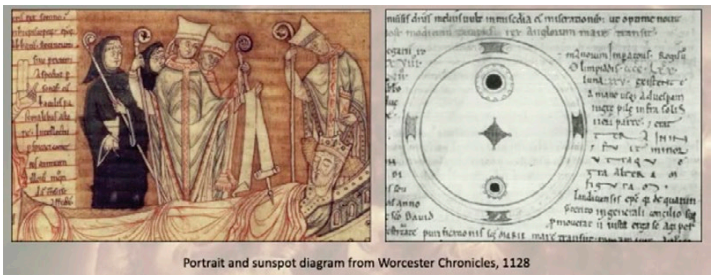
Solar cycle of 'Solar Flare' searches – people google searches follows the solar cycle.

What people think of the Sun as looking like – what we see with our eyes. We see a bright, hot light in the sky, relatively unchanging, rising, moving across the sky, setting; but we really don't see anything else, cannot see the intricate processes going on. Despite humanity not knowing anything about it for many centuries, the Sun has always played a very important role in human civilization, and given a very God-like form in the sky above us.

Three gods from different cultures:

- Ra – Ancient Egyptian god of the Sun
- Apollo- Ancient Greek god of the Sun, light, and many other things
- Huitzilopochtli – Aztec god of War, the Sun and human sacrifice

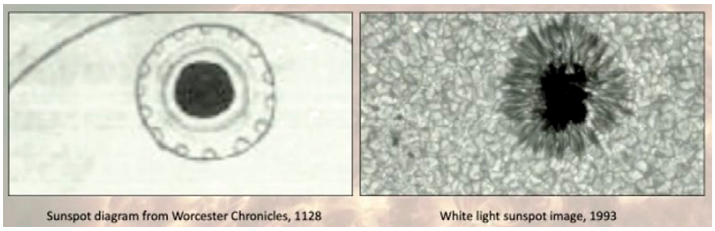
These are really the first solar astronomers - explaining what they were observing with what they knew at the time.



Portrait and sunspot diagram from Worcester Chronicles, 1128

Worchester, England –1128 AD Portrait and sunspot diagram from Worcester Chronicles

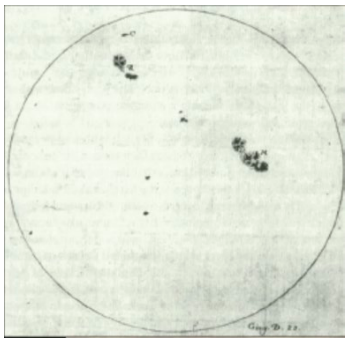
- Monks in Worcester one day saw unusual Sun, looked like two black holes; very frightening, didn't know what was going on: the Sun breaking apart? Demons? Something strange, supernatural?
- Worcester Chronical, written by the monks and spanning 700 years of history only contained 5 images in that time, this was one of the 5; clearly very important to them
- There was even a total solar eclipse the year before that did not make it into the chronicles, so that how important is was to them
- At the time, to suggest sky and heavens were anything but constant would be heresy
- In reality what they saw is a sunspot



Sunspot diagram from Worcester Chronicles, 1128 White light sunspot image, 1993

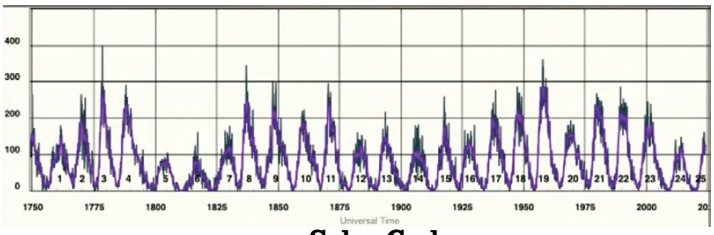
Worcester, England monks drawing – diagram from Worcester Chronicles, 1128

Image on left their sketch, on right White light sunspot image, 1993. They captured a lot of detail even seeing it unmagnified; see the dark part of the inner sunspot called the umbra; and the outer part can be seen as separate.



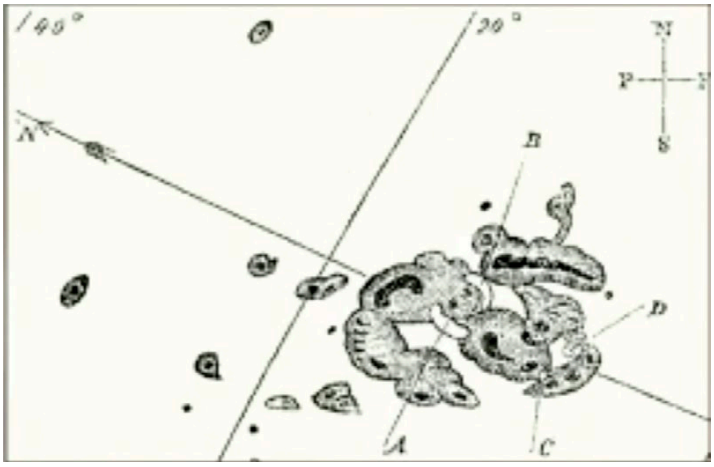
Europe, 1610- 1801 Sunspots not observed again until 1610 – by Galileo and theories develop over sunspots and they had many images of sunspots.

- German Christoph Scheiner thought "small planets closely orbiting the Sun"
- Galileo Galilei said "perhaps cloud-like structure in the solar atmosphere"
- Christoph Scheiner – later said these were "dense objects embedded in the Sun's luminous atmosphere like Islands floating on the surface"
- William Herschel- "Openings in the Sun's luminous atmosphere, allowing a view of the underlying, cooler surface of the Sun" (he also thought the Sun was inhabited)



Solar Cycle

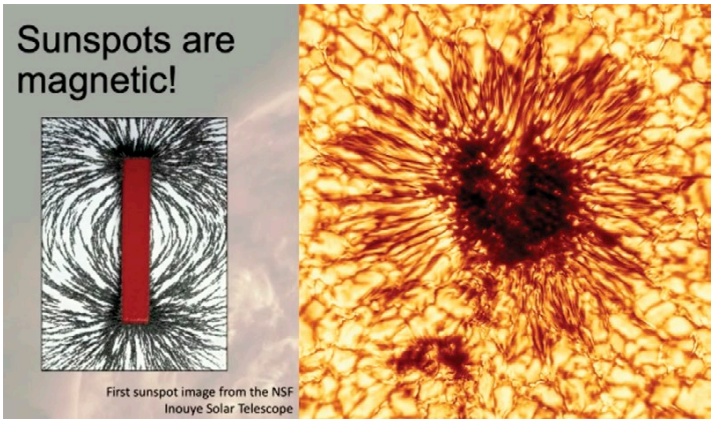
- Around this time in the early 1800s – Solar Cycle discovered
- About 11 years on average
- Solar maximum – Solar minimum



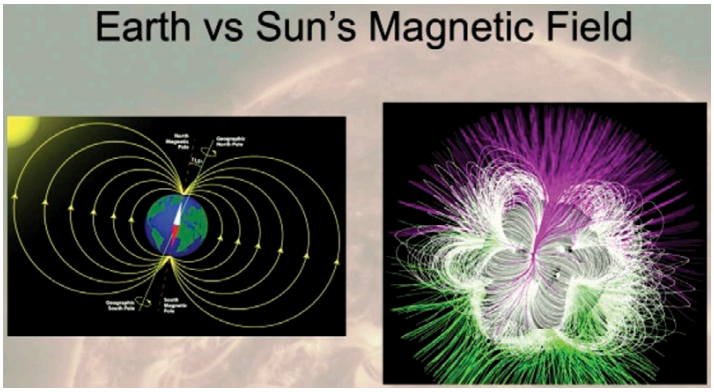
1859 – Carrington Event – Lord Kelvin in image Richard Carrington had pivotal role in solar physics and had dream job to many Coloradoans: as part time astronomer and part time brewer. He was observing a sunspot when he saw bright, white bulbs, slow moving of sunspots, then disappeared; he had unknowingly observed the first solar flare. The next day the largest display of Northern Lights in history, of bright green aurora, so bright it was mistaken for sunrise and very odd telegraph activity occurred, even sending and receiving random messages even when not connected to power, electric shocks!

May 2024 Geomagnetic Storm

"While having an event welcoming our new director, at the Solar Observatory in Boulder with solar telescopes set up, scientists gathered for other events, we get a text there had just been a solar flare, looking through the scope, we saw the solar flare. Two days later a spectacular wide-spread display of the aurora was visible, so we were able to experience both events".



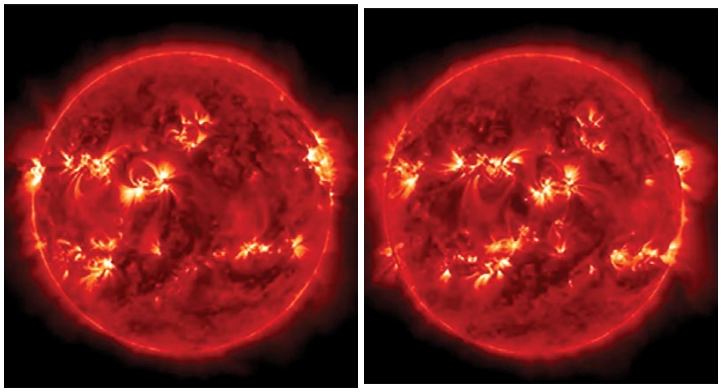
- In 1906 discovery that sunspots are magnetic- giant magnets in the Sun's atmosphere
- First sunspot image from the NSF Inouye – World's Largest Solar Telescope
- Realized the Sun is a giant magnet – reason sunspots are dark is plasma within these magnets is repelled from rest of Sun's surface, able to cool down a bit because its isolated, so appear dark, creates own magnetic fields



Earth vs Sun's Magnetic Field

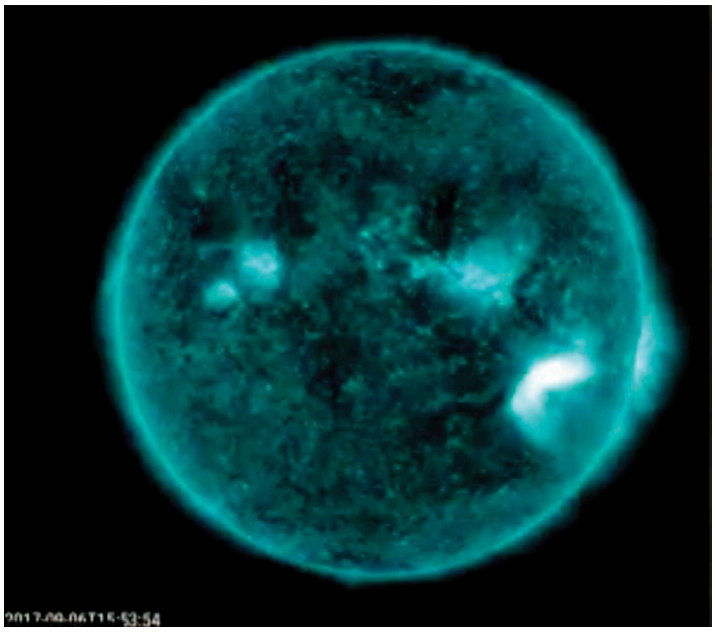
Earth has a magnetic field too, north pole & south pole, makes simple dipolar shape

- Sun's magnetic field looks quite different than Earth's, a tangled, twisted mess
- Every sunspots on the Sun acts as a giant magnet, with north pole or south pole
- The sun in ultraviolet light reveals hotter plasma in the atmosphere of the Sun and can see this evolve with time

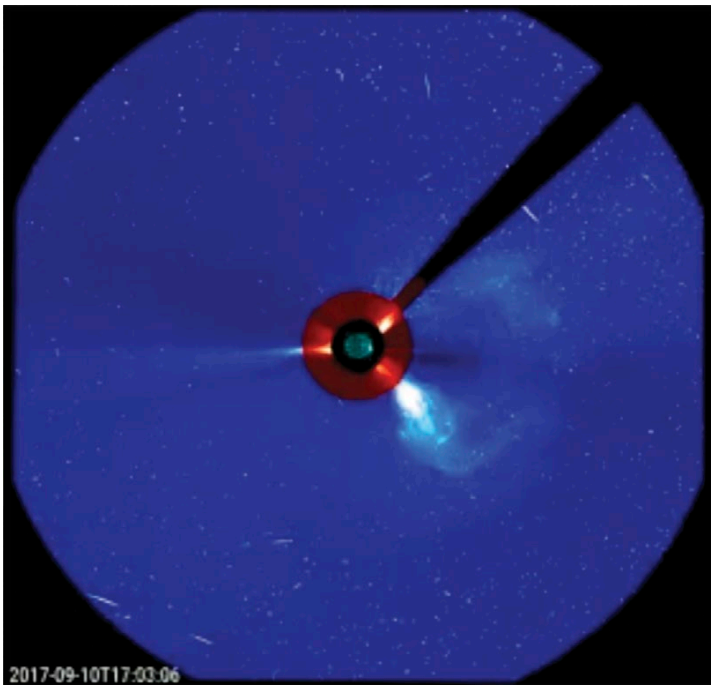


Animation of solar rotation

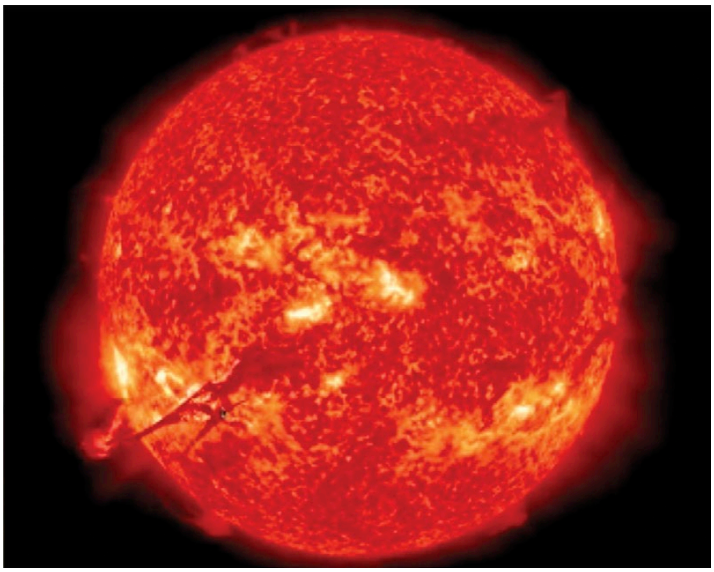
- Bright regions areas of sunspots, above them see plasma moving with time
- As these magnetic fields twist and tangle may not have opportunity to pull away from each other, this creates big buildup in magnetic energy, which continues to persist with acceleration of energy until a breaking point and a release of energy, and get what's called a solar flare



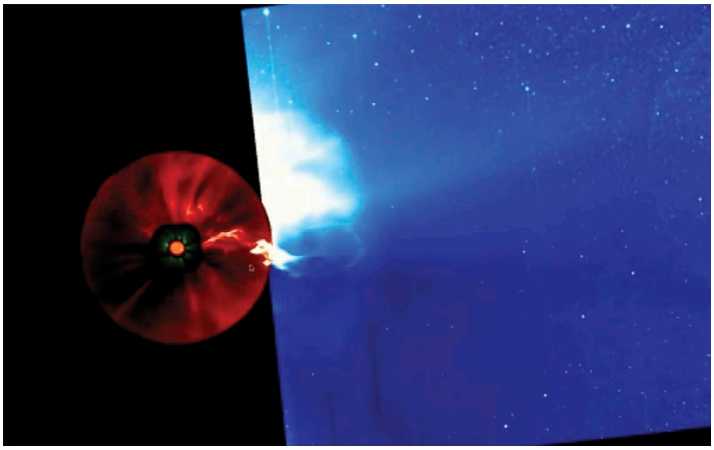
A solar flare is a conversion of energy from magnetism in the atmosphere of the Sun to light, primarily ultraviolet x-rays, acceleration of particles, and the heating of local plasma.



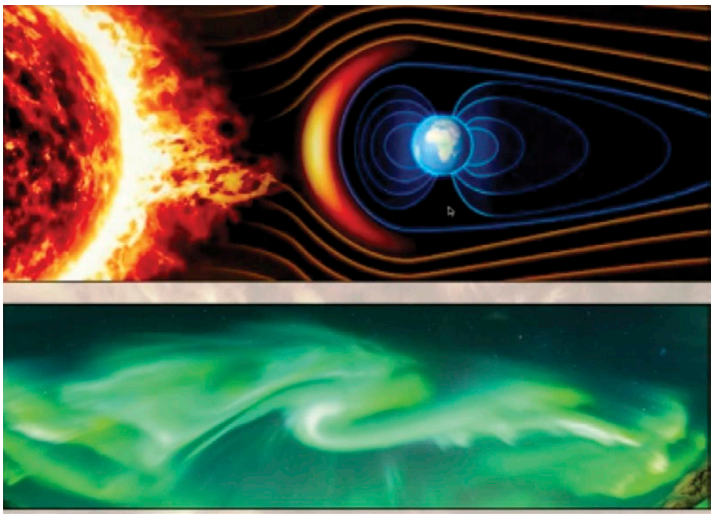
Coronal Mass Ejections (CMEs)
A solar flare can also cause an eruption of material from the Sun's surface, Coronal Mass Ejections (CMEs).



Another example of a CME, quite a famous one, about the mass of Everest erupting off the Sun. It is believed that over the lifetime of the Sun, it loses about 5% of total mass due to processes such as this.

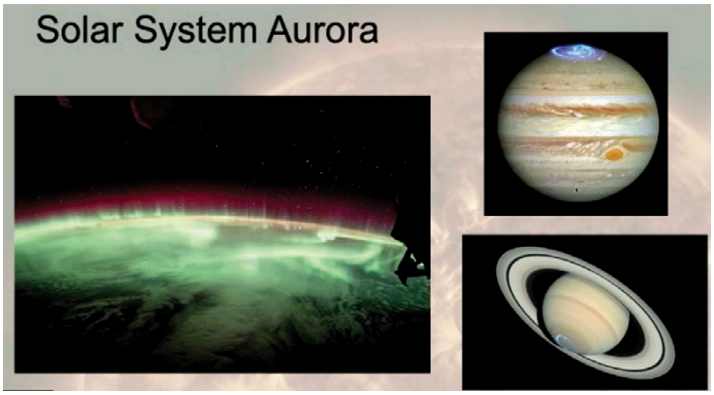


Alternative view of CME, taken by a NASA spacecraft called STEREO, that doesn't orbit the Earth but orbits the Sun, you can see the ejection firing off into space, obliterating Mercury, heading all the way though solar system towards Earth.

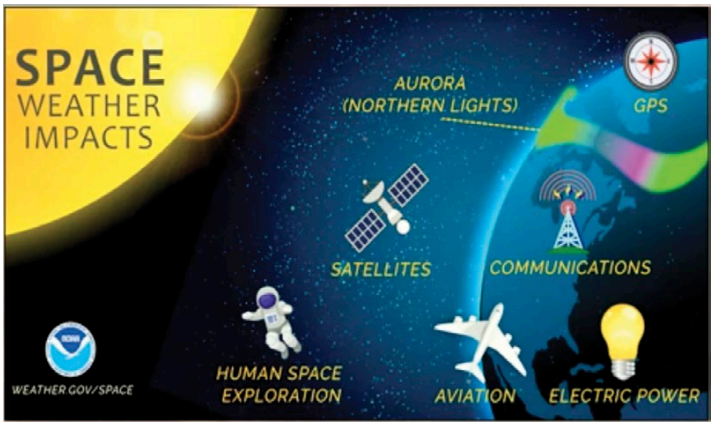


CME Arrival at Earth: Dramatic artist's rendering. When it does reach the Earth, we are protected by our magnetic field that protects from worst of these impacts from the Sun.

- What happens in simplified terms is when the magnetic field of CME collides with magnetic field of the Earth, depending on orientation, plasma from the Sun is able to enter the Earth's magnetic field
- Stronger the CME impact, more able to enter Earth's atmosphere, the farther south the Northern Lights will appear

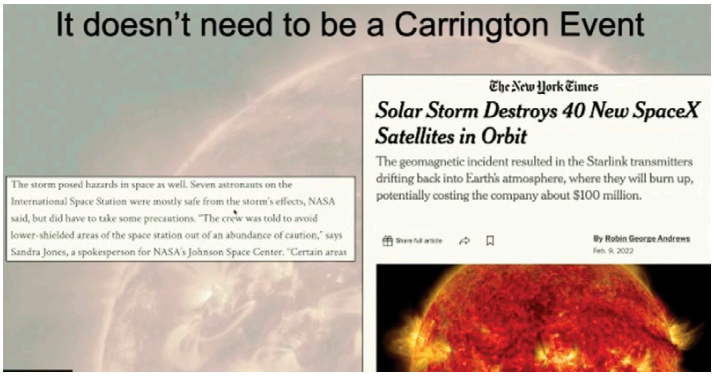


Solar System Aurora
Earth not the only place we have auroras, Earth's aurora from International Space Station (seen in ultraviolet light) Jupiter and Saturn have it too and even Uranus and Neptune have some evidence to suggest there could be some aurora there.



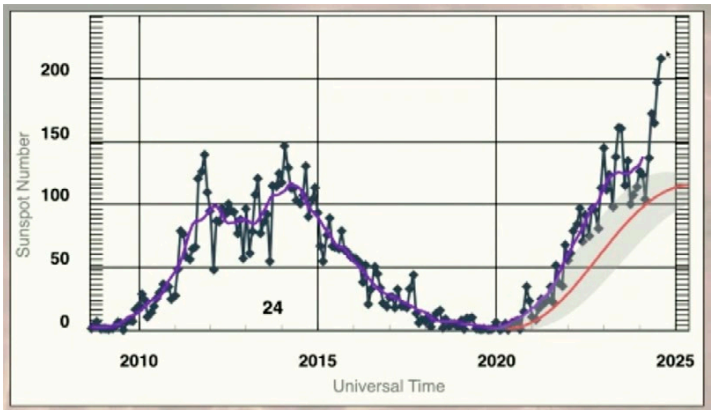
Space Weather – The Impacts on Earth from the Sun

- As magnetic field from CMEs hits Earth, the Earth's magnetic field begins changing and wobbling
- Faradays Law in Physics: if you change the magnetic field of something you will create an electrical current, this is how wireless chargers work, smartwatch, magnetic chargers change the magnetic field and allows electricity to flow
- As with the telegraph machines during the Carrington Event, electricity was being pumped into the machines from the magnetic field of the Earth
- This could happen today, if you create a electrical current from the Sun can overload transformers, overheating in power grids, damage components, satellites, GPS, rail networks, etc. real possibility – listed on National Index of Natural Hazards, dangerous for astronauts in space
- Potential natural disasters but not apocalyptic, but could be similar economic impacts to large hurricanes, tsunamis, but NO threat to human life here on the ground
- This is why we do this work to try to know when these thing are going to happen



It doesn't need to be an event as big as the Carrington Event for us to care!

- Example from May 2024 – Hazards to people in space being exposed to excess radiation – Seven astronauts alerted to take cover in high shielded areas of living quarters in the center of ISS
- Example from February 2022- Space X Launched Starlink satellites during a solar flare – solar flare slightly expands the upper atmosphere of the Earth, disrupted launch, 40 of 60 crashed into ocean



NOAA Sunspot Numbers

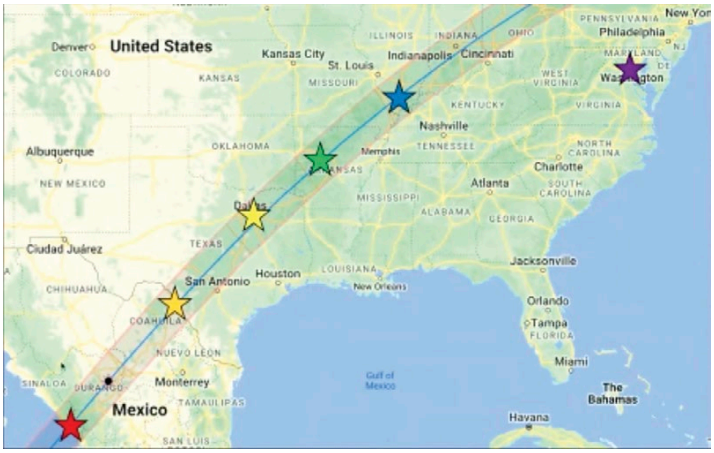
Solar Cycle Update- Solar cycle does not always have the same size peak – latest August 2024

2024-2025, What to expect…

- More sunspots, solar flares, and coronal mass ejections
- More frequent northern light shows, stretching further into lower 48 states
- Follow scale of G1-5, Had G5 in May, recent September G4
- More new stories in the news!

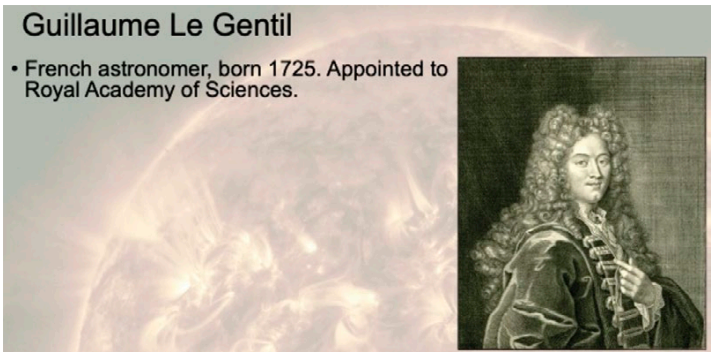
Total Eclipses – Last and Next Total Solar Eclipses for each of the United States

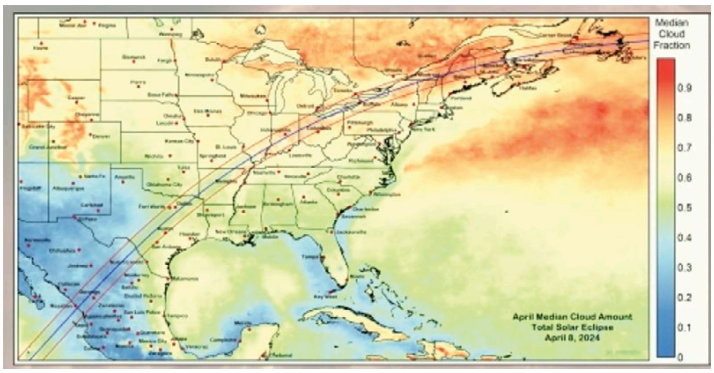
Eclipse weather forecast just before eclipse



National Solar Observatory Eclipse Spots – Many projects in scientific experiments, outreach

After mass migration northeast from further south – Success for everyone on this team!



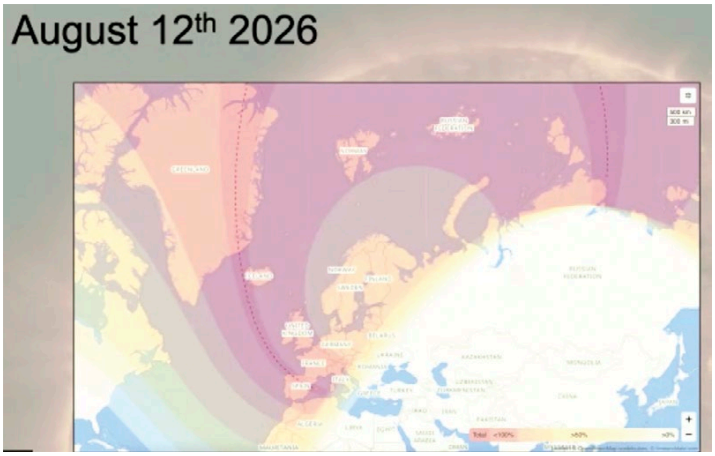


Eclipse weather forecast historical average

If you ever feel like you had a really stressful time following an eclipse path—think of this guy!

Guillaume Le Gentil, French astronomer, born 1725. Appointed to Royal Academy of Sciences.

- Tried to observe the transit of Venus, sailed a year from France to Indian Ocean, found a war going on, attempted to observe 1761 transit of Venus offshore – failed
- Waited seven years in area to observe another transit of Venus in 1769 – cloudy, failed
- Was shipwrecked, more wars, finally arrived in Paris in Oct. 1771 been away for 11 years, only to find that he had been declared legally dead and been replaced in the Royal Academy of Sciences. Wife had remarried and his estate plundered!



Next Eclipses:

- August 12th 2026 – passes through Greenland, Iceland, Spain
- August 2nd 2027 – passes through; Luxor, Egypt, Mecca - 6 minute eclipse in some awesome places that are guaranteed sunshine
- Spanish Trio Eclipses 2026, 2027, 2028
- Australia Eclipse Run – Incredible 4 eclipses in 10 years 2028-2038
- US – March 30, 2033 – Alaska, NW Canada, Russia
- US – Contiguous, August 22, 2044 Northwest corner
- US – Colorado Eclipse Path, August 12th 2045, totality path just south of Denver!!

Next transit of Venus? Forget it. 2117!
Questions and comments followed from members:
You probably are aware that the corona that you observe during a total solar eclipse at solar maximum is different than that of a total solar eclipse at solar minimum; at maximum is pretty much circular, while at solar minimum it is extended in wings or something, you would think at solar maximum one would see more corona. What would be your explanation of that?

I've been told that the aurora of the Northern and Southern Hemisphere are often mirror images of one other, how would you explain that?

Can the Sun have something that could be considered a surface?

Can you talk about how the Solar Cycle is really a 22 year cycle?

III. Business Meeting - Miscellaneous

2025 Calendars – October coming up, this is when we decide on whether we are going to do a Calendar for coming year. We sold out last year and made a little money. If we want to do another one, we will need to get it submitted by our last meeting. Can be approved by the board, if we have decided to go ahead.

Upcoming Events
Star Party for Boulder County Parks and Recreation on Friday, October 4th starting at 7:00pm
at Ron Steward Preserve at Rabbit Mountain. All members are welcome to attend, please sign up on the website as a volunteer if bringing a telescope.

Next LAS Monthly Meeting – Thursday, October 17th at 7pm, First Evangelical Lutheran Church
Longmont, CO 80501

III. Business Meeting – Treasurer's Report by Bruce Lamoreaux

Longmont
Astronomical Society

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

LAS Treasurer's Report - Bruce Lamoreaux **9/19/2024**

Main Checking Account (xxx-1587)

Begin Balance:	$ 8,010.00	**8/6/2024**	
Deposits:	$ 25.00	Membership	
Expenses:	$ (4.00)	Bank Charges	
Current Balance:	**$ 8,031.00**	**9/4/2024**	

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

Past Balance:	$ 8,215.00	**3/29/2024**
Interest:	$ 15.00	
Balance:	**$ 8,230.00**	**6/28/2024**

Telescope Fund (xxx-0165)

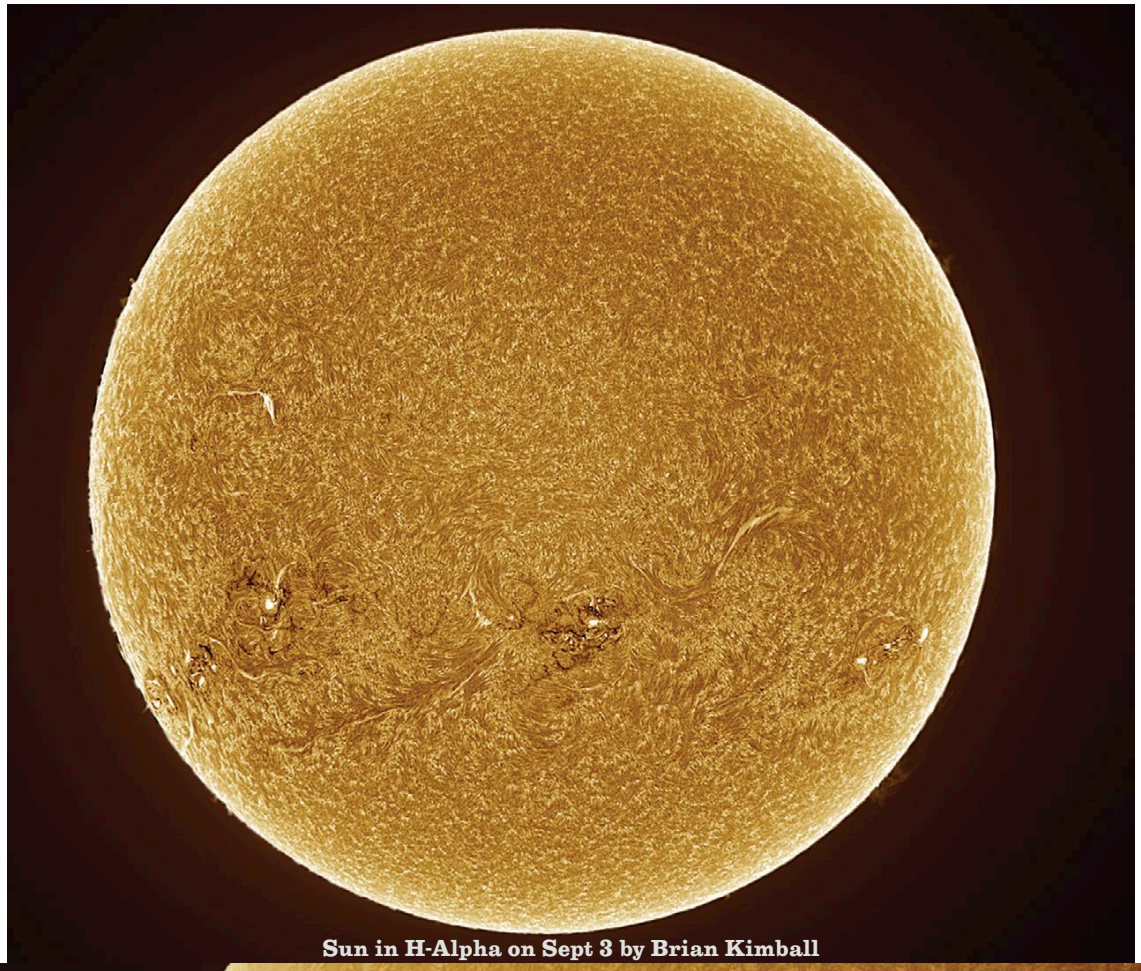
Past Balance:	$ 1,100.00	**7/30/2024**
Deposits:	$ -	
Expenses:	$ -	
Balance	**$ 1,100.00**	**8/29/2024**

Petty Cash

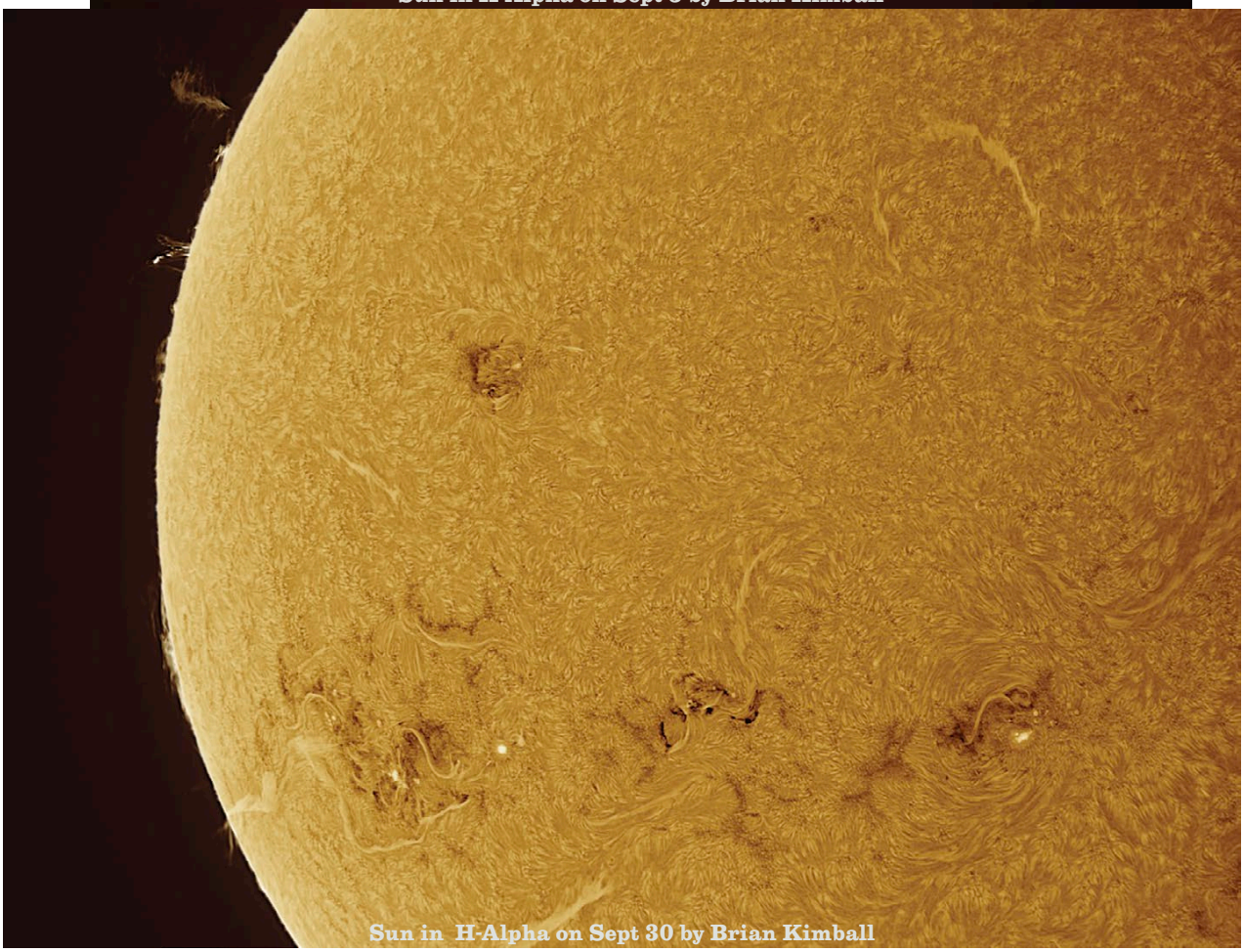
Past Balance:	$ 50.00
Deposits:	$ -
Expenses:	$ -
Balance	**$ 50.00**

Total Assets	**$ 17,411.00**	$ 21.00 Up from August

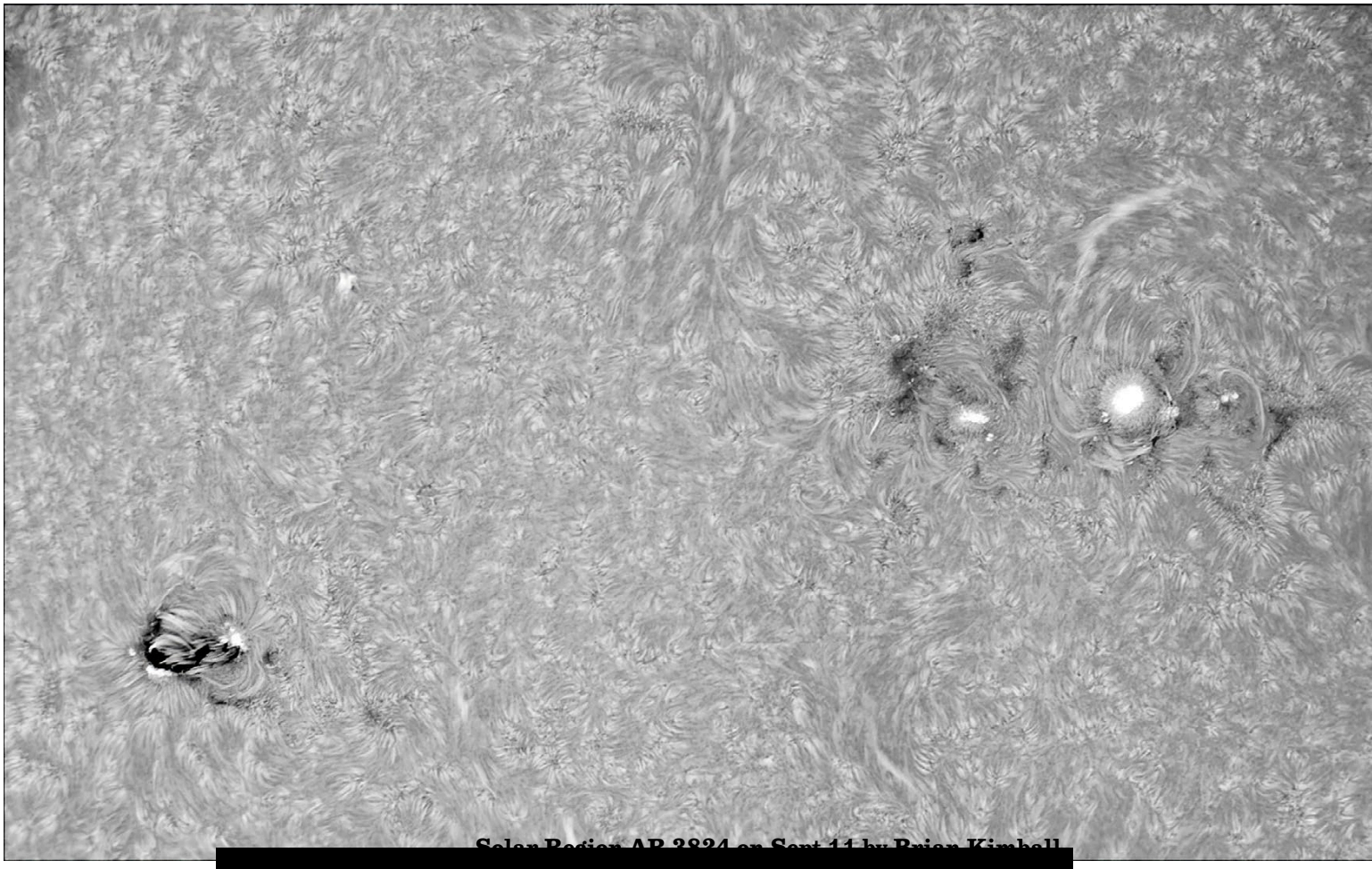
Active Membership:	**97**
Student Membership:	**3**
Total	**100**



Sun in H-Alpha on Sept 3 by Brian Kimball

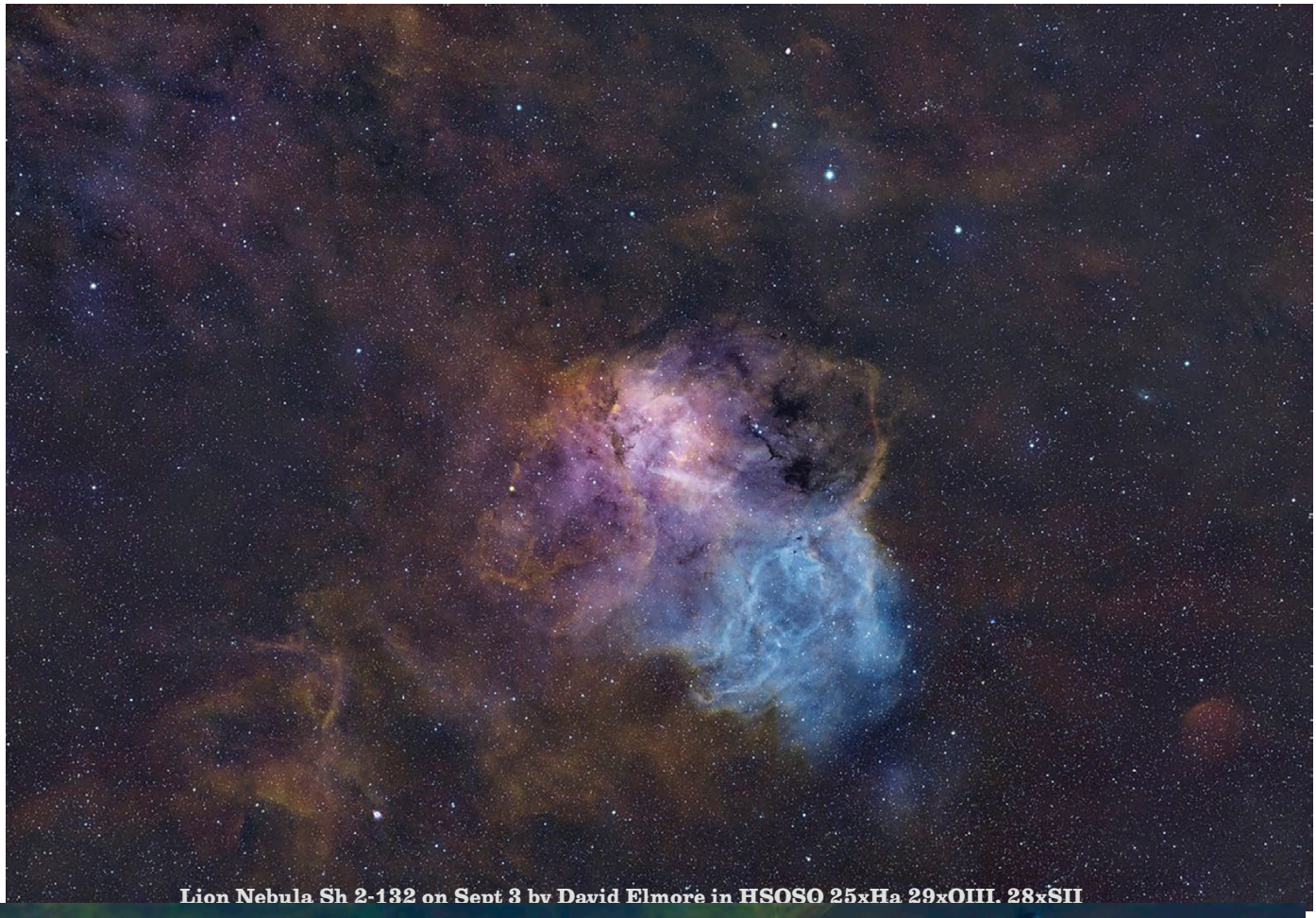


Sun in H-Alpha on Sept 30 by Brian Kimball

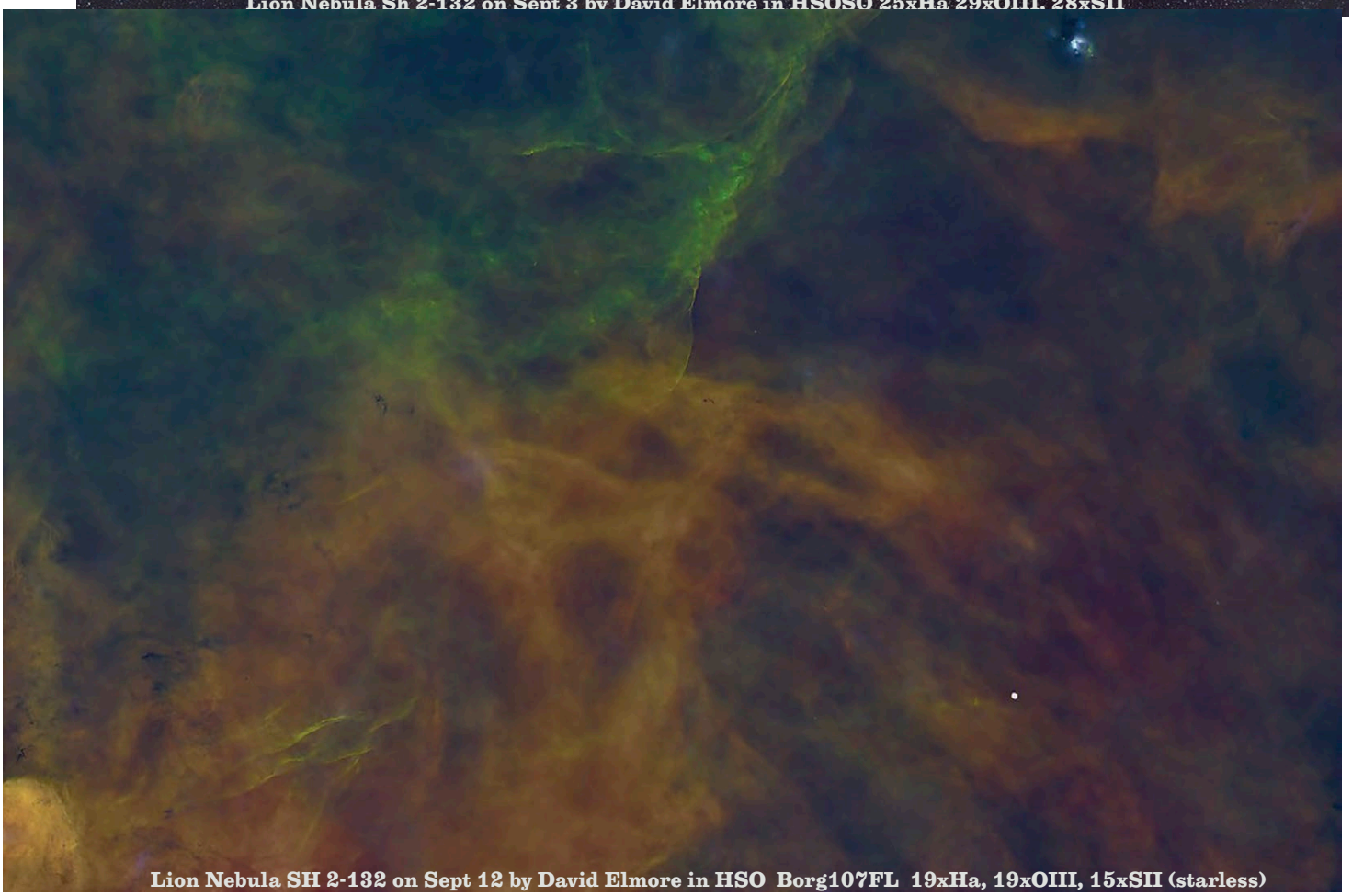


Solar Region AR 3824 on Sept 14 by Brian Kimball

Moon on Sept 14 by Brian Kimball

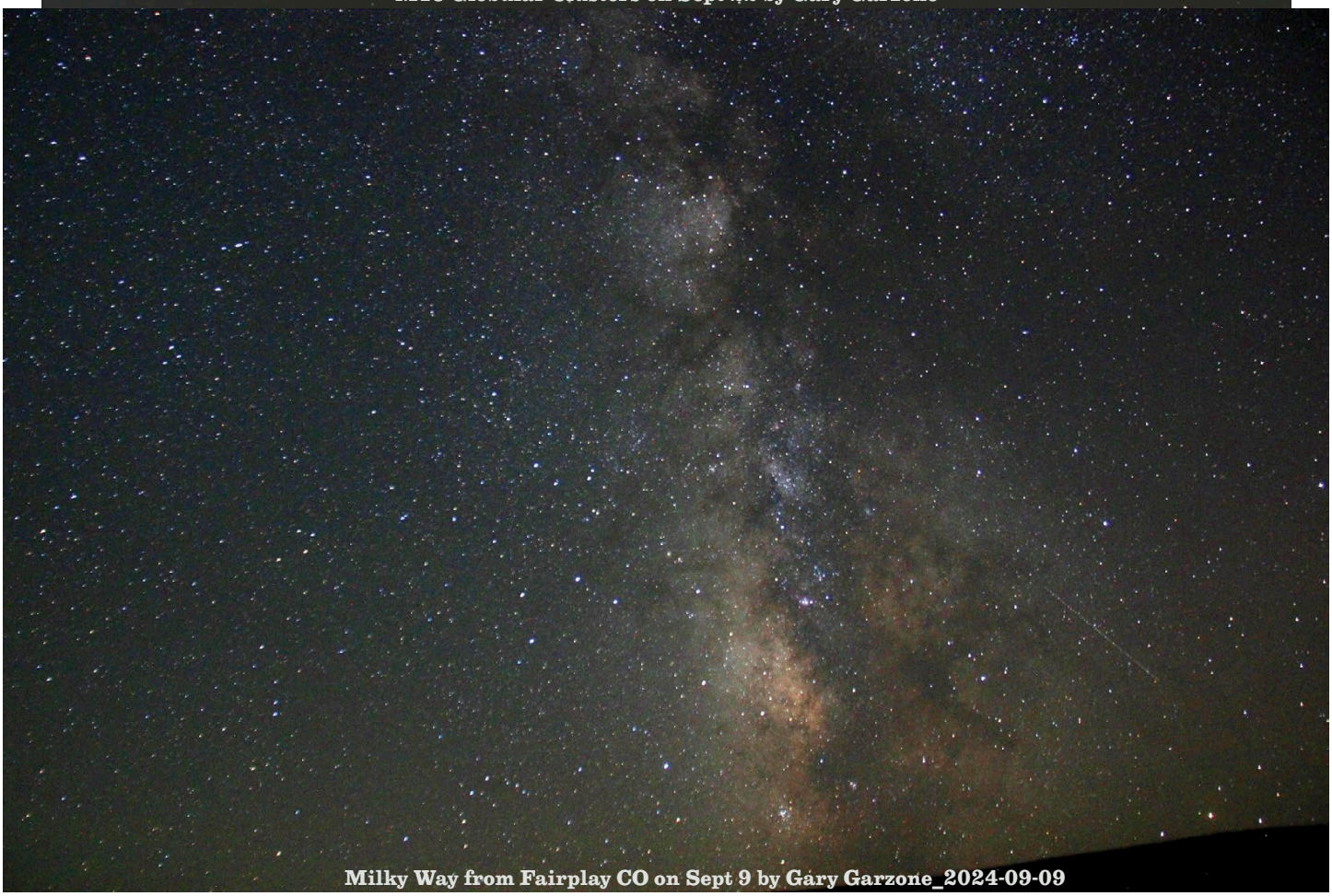


Lion Nebula Sh 2-132 on Sept 3 by David Elmore in HSOSO 25xHa 29xOIII. 28xSII

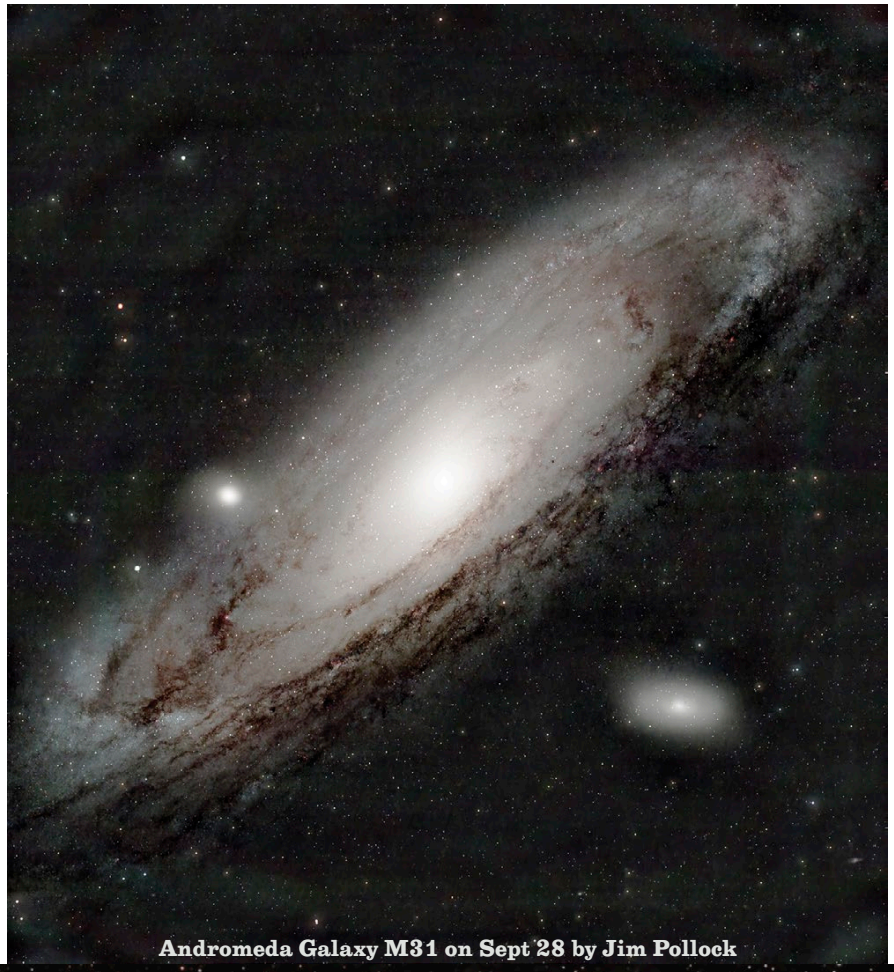


Lion Nebula SH 2-132 on Sept 12 by David Elmore in HSO Borg107FL 19xHa, 19xOIII, 15xSII (starless)

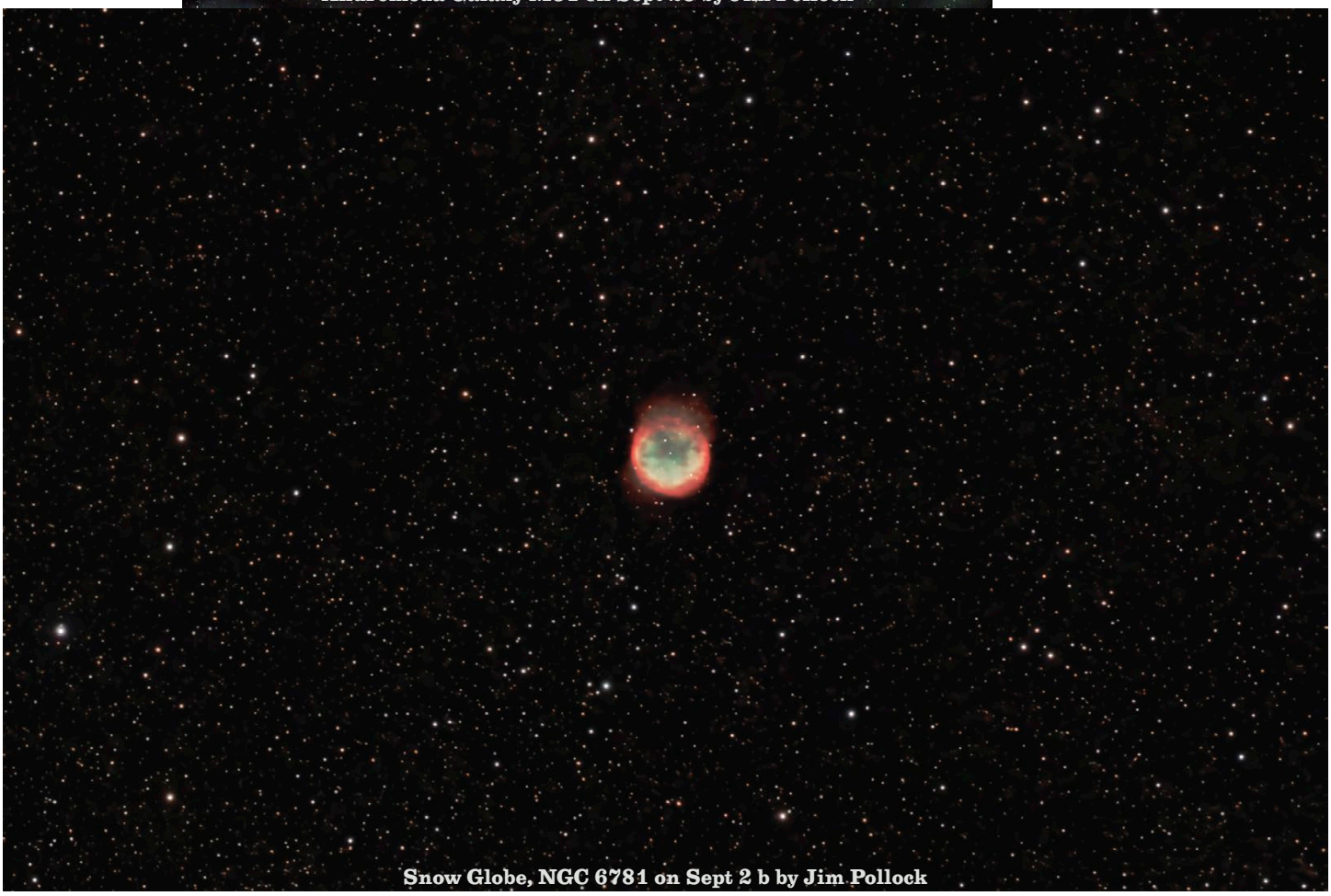
M13 Globular Clusters on Sept 22 by Gary Garzone



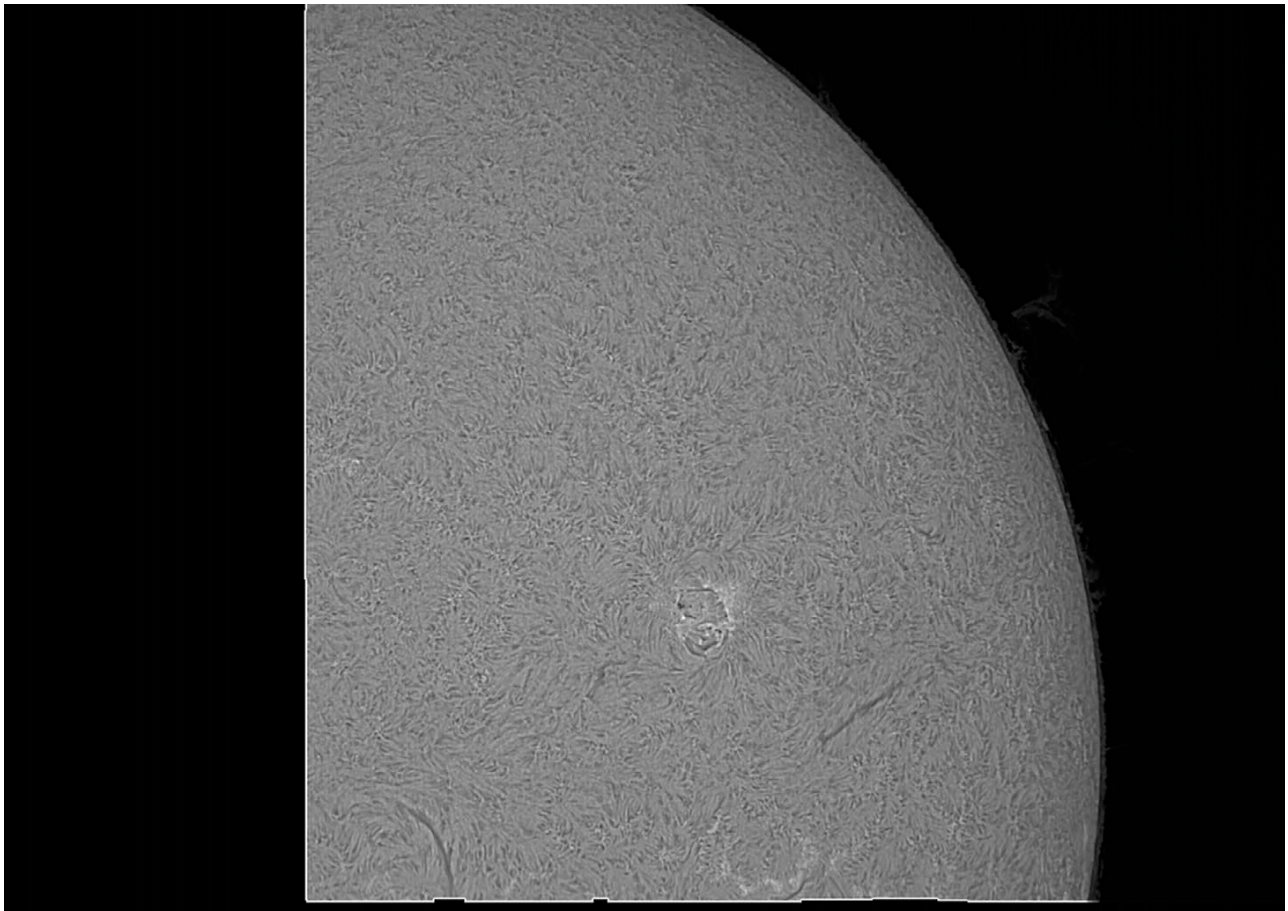
Milky Way from Fairplay CO on Sept 9 by Gary Garzone_2024-09-09



Andromeda Galaxy M31 on Sept 28 by Jim Pollock



Snow Globe, NGC 6781 on Sept 2 b by Jim Pollock

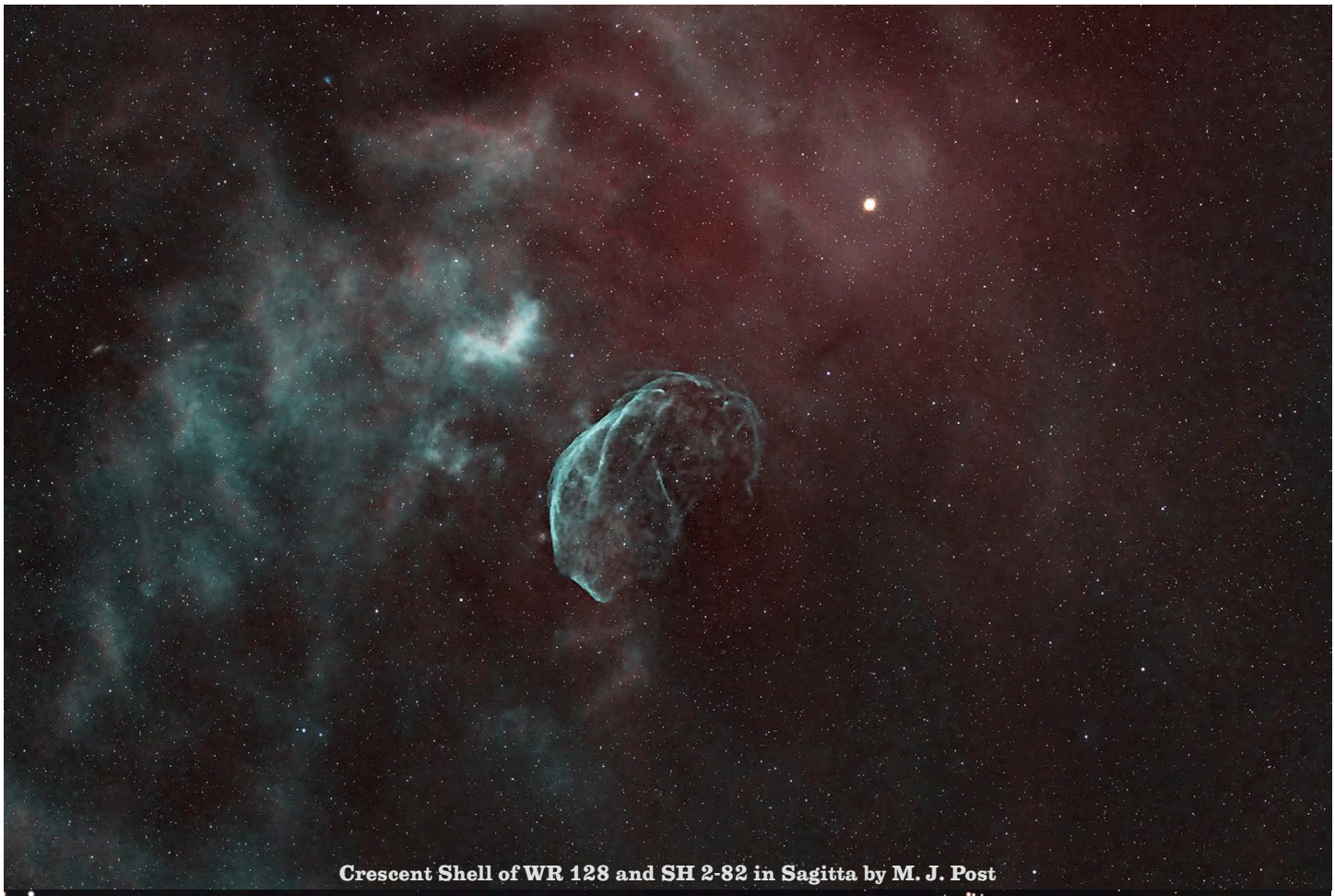


Sun in H-Alph on Sept 14 by Joe Hudson

Aurora at Carter Lake on Sept 16 by Leah Shipley

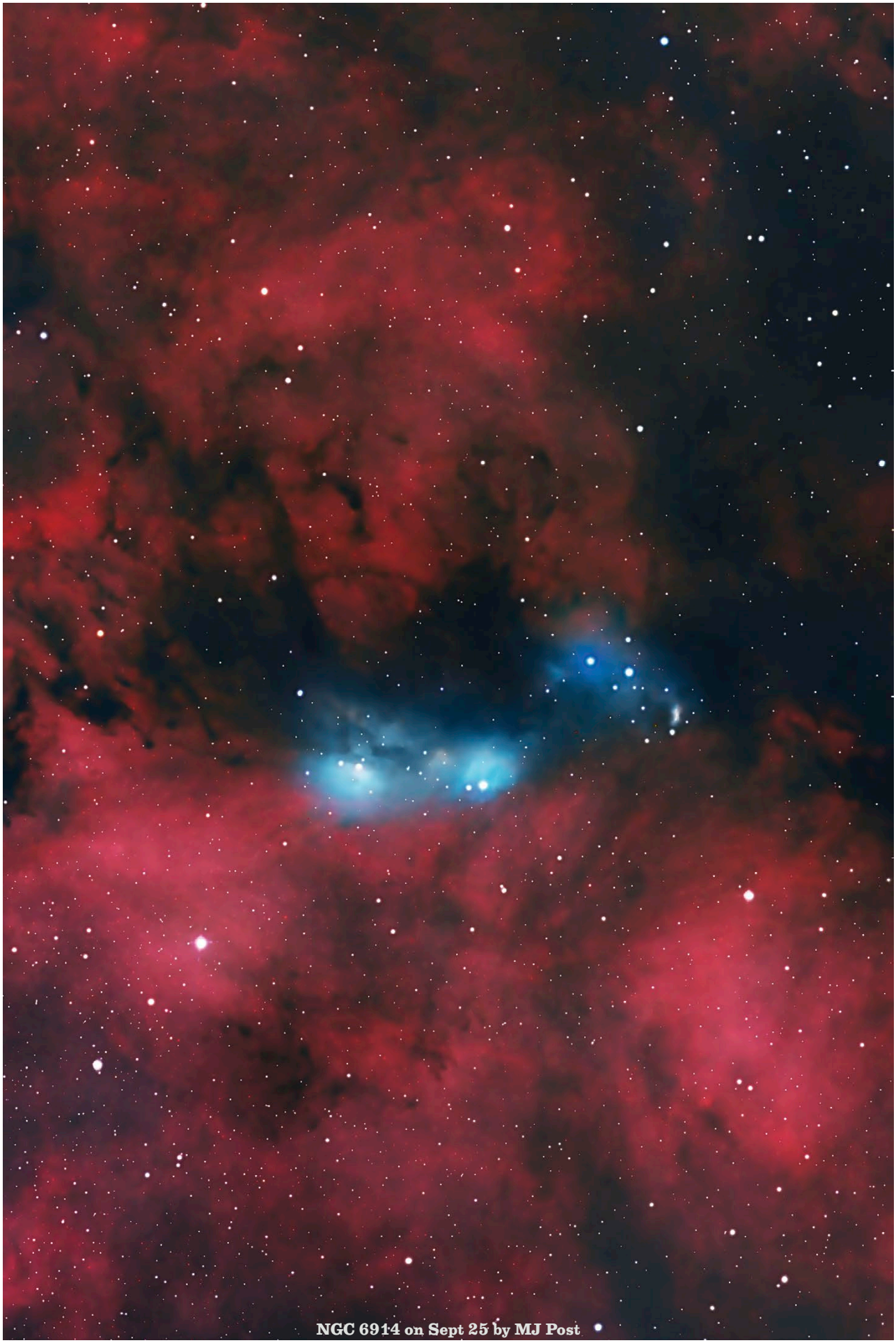
SNR W63 G82-2+5.3 in Cygnus on Sept 12 by Martin Butey_2024-09-12

SNR W63 in Cynus on Sept 12 by Martin Butley



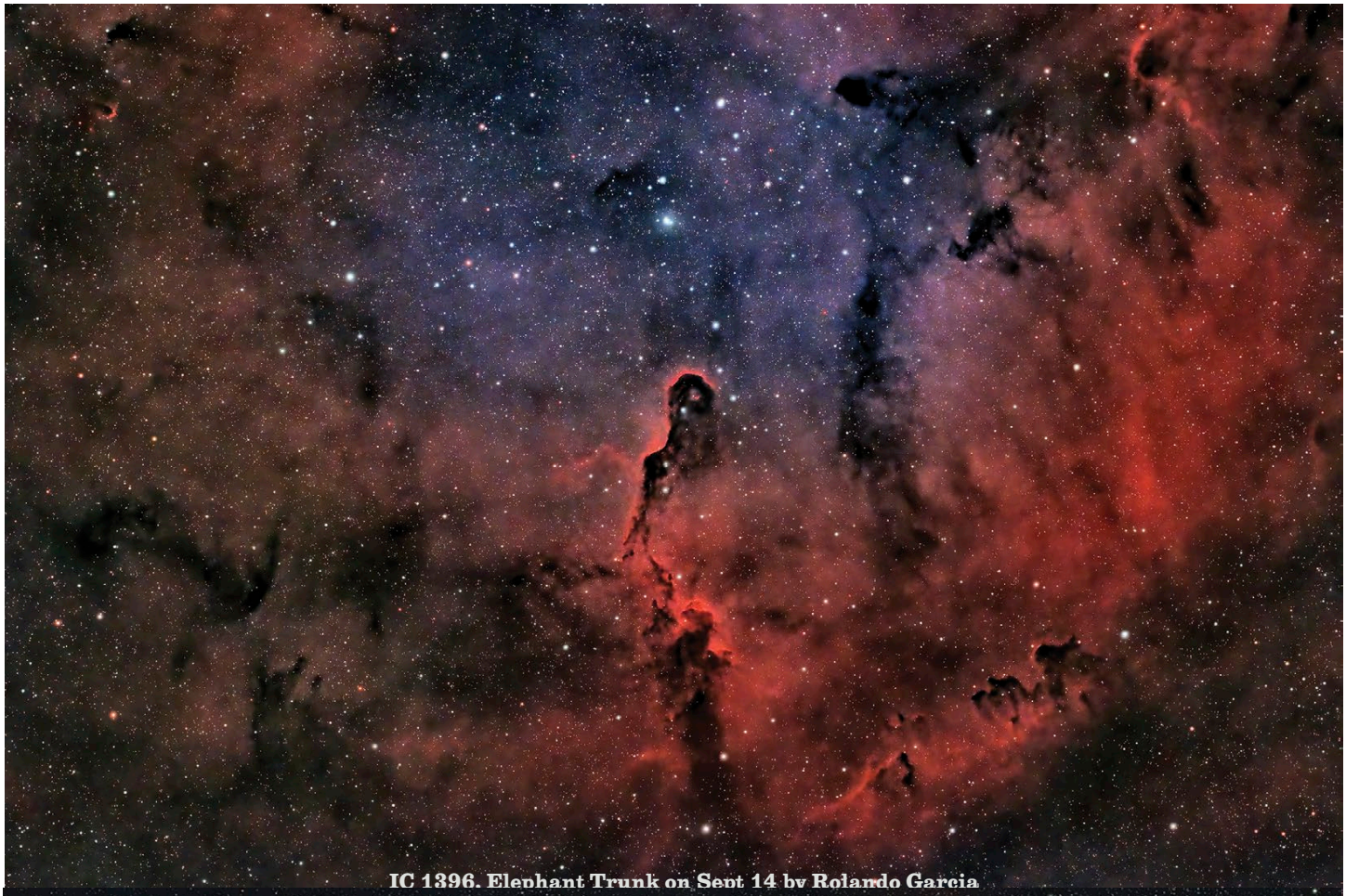
Crescent Shell of WR 128 and SH 2-82 in Sagitta by M. J. Post

Van Den Berghs Ghost, Vdb141 on Sept 3 by M. J. Post



NGC 6914 on Sept 25 by MJ Post

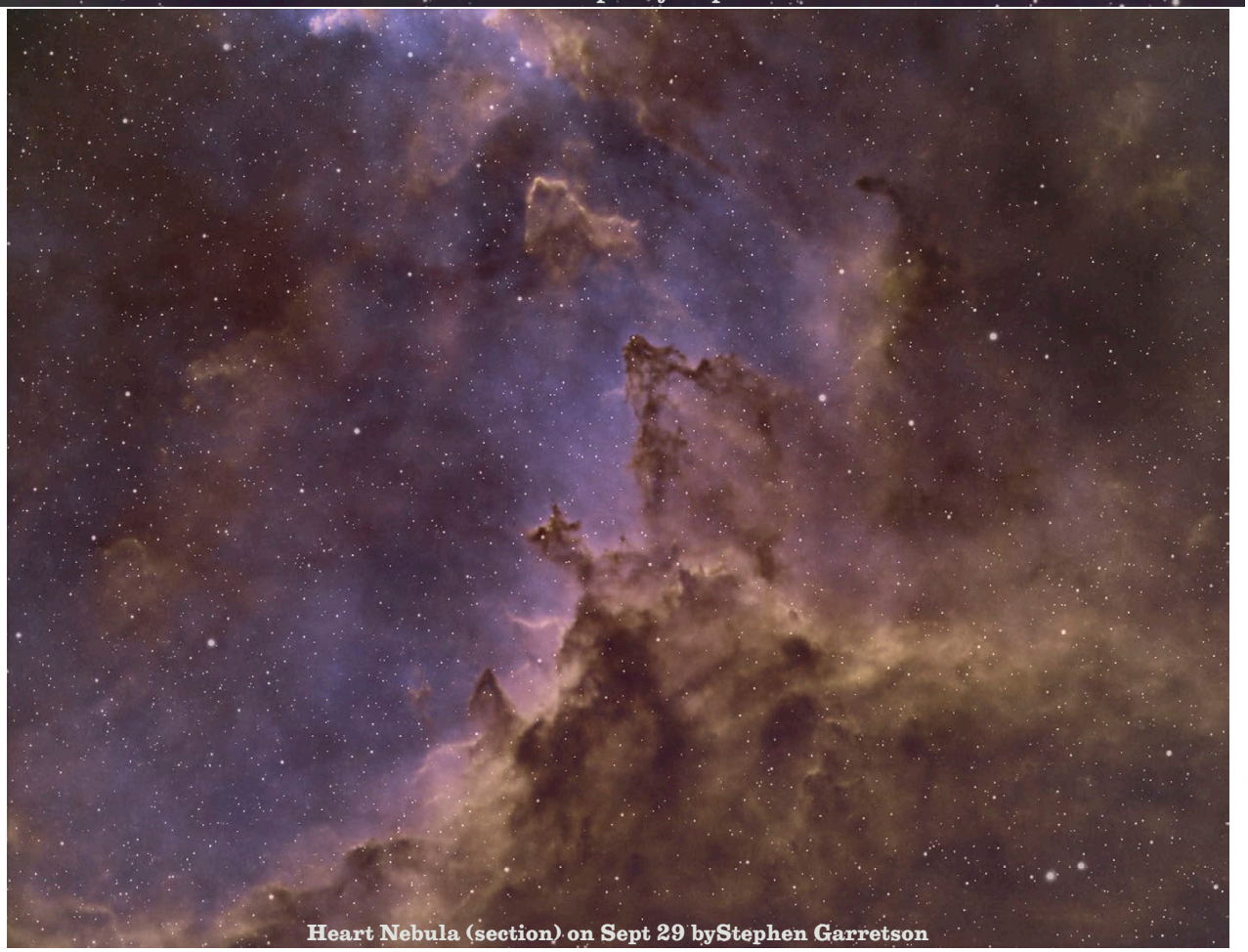
M20 in HOO on Sept 3 by Paul Kirkpatrick



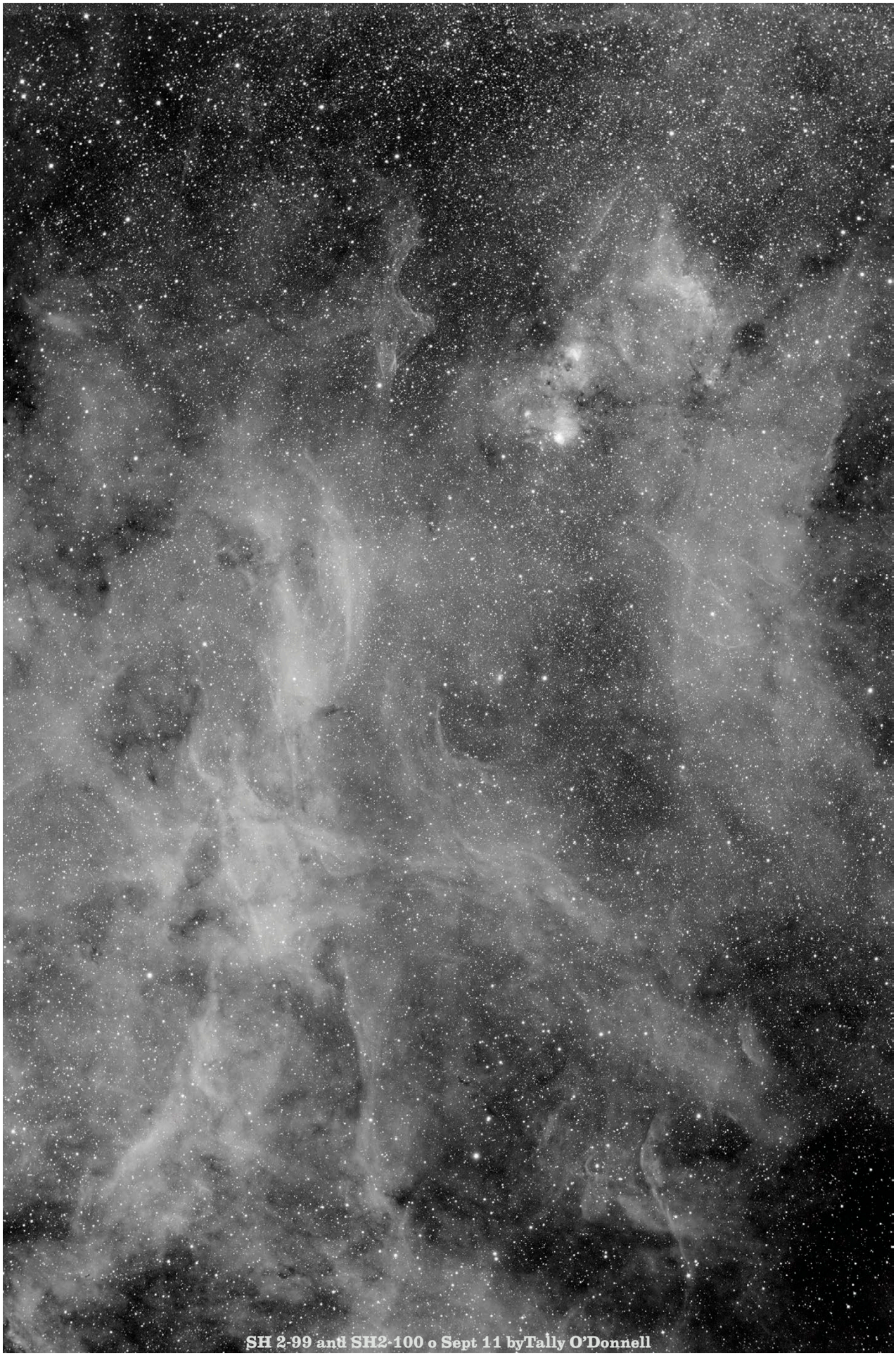
IC 1396. Elephant Trunk on Sept 14 by Rolando Garcia

NGC 7380 on Sept 18 by Rolondo Garcia

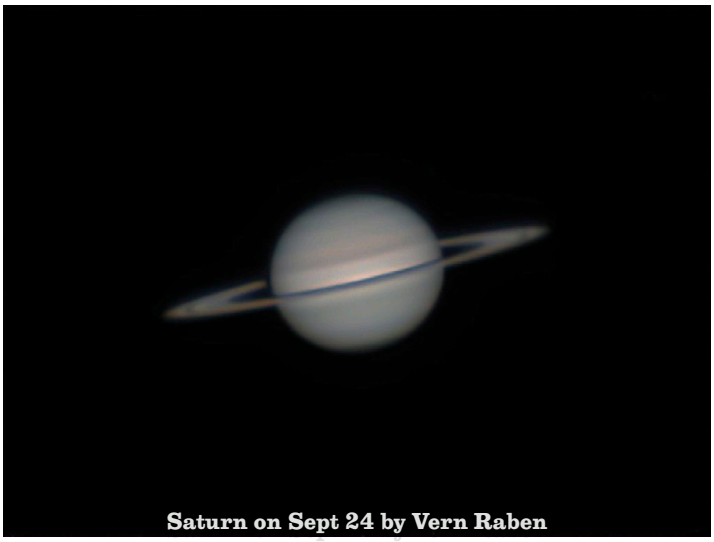
NGC 281 in SHO on Sept 3 by Stephen Garretson



Heart Nebula (section) on Sept 29 byStephen Garretson

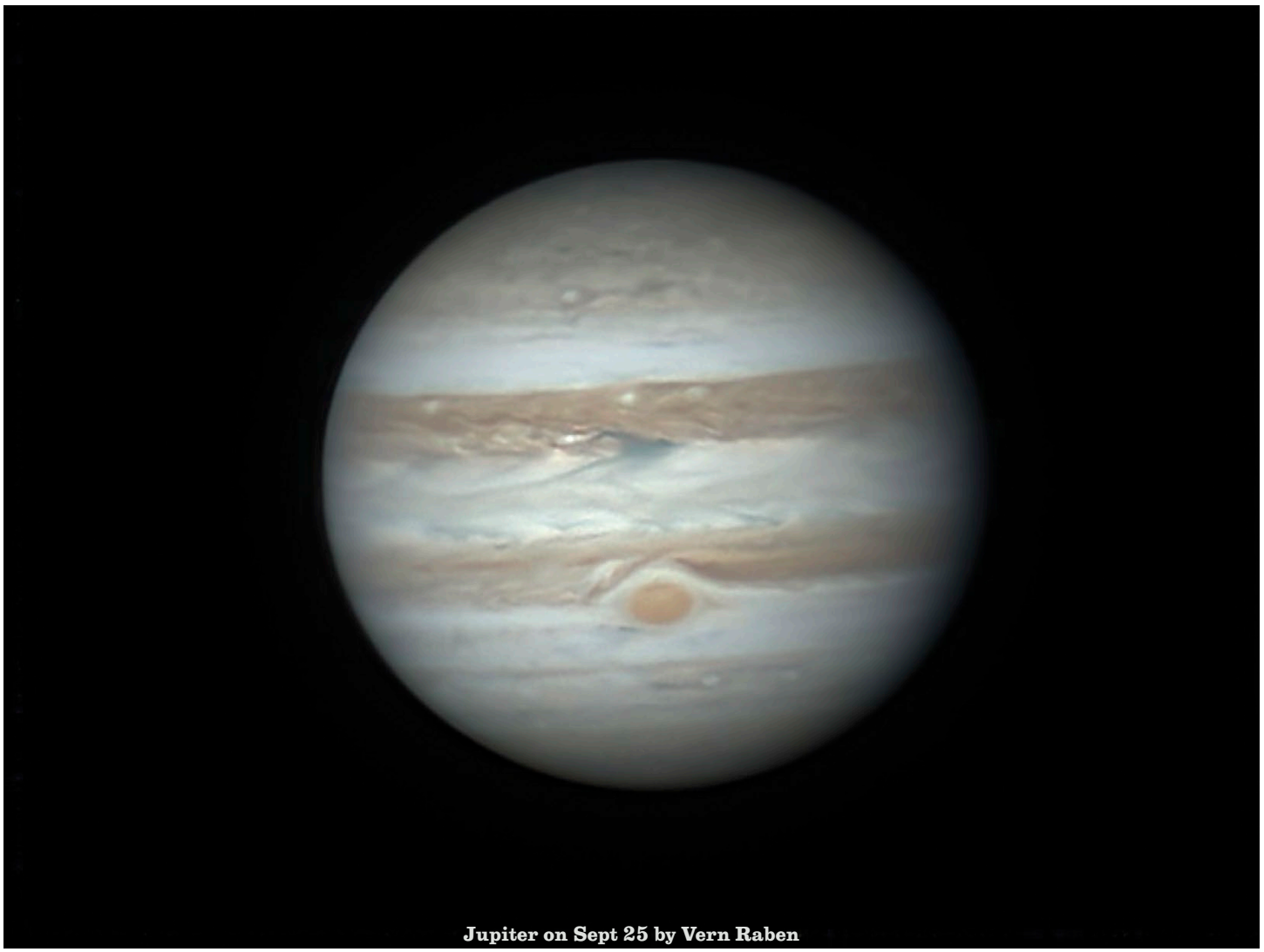


SH 2-99 and SH2-100 o Sept 11 byTally O'Donnell



Saturn on Sept 24 by Vern Raben

Mars on Sept 25 by Vern Raben



Jupiter on Sept 25 by Vern Raben

Newsletter Archives by Eileen Hall-McKim

30 Years Ago October 1994

Our annual Astronomy Day display and Star Party on Saturday Oct. 8 , was a big success. The display at Center Court of Twin Peaks Mall, turned out to be an excellent, high-traffic location. Several hundred people took their turn at the eyepiece of the club's solar telescope. The two small sunspots we observed in the morning evolved into rather complex systems as the day wore on – pretty neat!

Our public star party was held that evening at Dawson Park where a strange and wonderful thing occurred: the sky was clear and the park lights were off – BOTH AT THE SAME TIME!! We estimated the crowd at about 100 people – a most excellent showing on a very nice evening. Objects observed included the moon, Saturn, Ring Nebula, Double Cluster, Andromeda Galaxy, M13, M81 and M82.

Carnegie Bldg. discussion/report. This building is being pursued as an activity center and storage facility for the LAS. Our submitted report has been accepted and will be decided upon hopefully by January 1995.

Public presence via public school involvement. Bob Spohn is coordinating with the county science education coordinator regarding LAS presentation activity at the public schools during the 1994/1995 school year. If you can or want to participate in school presentations or star parties please contact a club officer.

General discussion regarding the Deadman Star Party, the 3 club telescopes for checkout, a new museum at Lowery Air Force Base opening in December 1994, the 'Wings over the Rockies'. Nine visitors were introduced, welcomed.

Bob Ross gave a main presentation titled "Observing tips and techniques: Part I". Part II will be given in the near future.

20 Years Ago October 2004

Hello everyone, the moon is getting smaller and the skies are getting clearer so it's time to head back out to the observatory. Last night I worked on IC 5146 is a RRGB=60:60:60:60 minutes. All images are binned 2x2. My name is Brian Kimball and I approve this message...
Thanks for looking

September meeting notes:
The meeting took place at the FRCC in Longmont. President, Bob Spohn called the meeting to order and the officers gave their reports. Newsletter Editor, Philippe Bridenne went through the different article and upcoming events in the Newsletter.

- Ray Warren gave a short report on the probe that crashed back to Earth. Despite the violent crash, scientists reported they could get some material intact. Ray passed stickers related to the Genesis mission.

- Planispheres project: Ray manufactured several planispheres that were immediately sold for $1 each. He is trying to find tools and people to produce these planispheres in volume. Ray also manufactured bumper stickers that sold immediately. Two for $1.

- Mike Hotka gave us a short report on the Genesis mission. Thanks Michael! Then all participants to the meeting went out to watch an Iridium flare of-5 magnitude right on time.

- SpaceShipOne – Back to the Future? By Ray Warren – Article and discussion of recent achievements of SpaceShipOne

- Tri Town Star Party by Michelle Lavers Thanks to all the club members who came and helped out in Frederick on Saturday. We had a total of 8 telescopes there with Dave Street, Philippe Bridenne, Mike Hotka, Andrew Planck, Jeff and I, Ray Warren. All in all I believe we had roughly 30 or so visitors, mostly children. What was unusual was that the people who came stayed for at least two hours and boy did they have questions. The sky was wonderful and we had some great views of M13, M31, M57, M27, Arcturus and its disco ball appearance fascinated many people and the Veil Nebula was absolutely stunning through Andrew's telescope. The good news is that the Town of Frederick has given the LAS permission to use the site for public observing whenever we please we just need to drop them an e-mail.

- New Moon Star Party at Pawnee by Gary Garzone
  Hello all, We went to Crow Valley in Pawnee grasslands this weekend for the Star Party. Tom T, Steve L, Dave D, Dan, new LAS guy, Dave C. and his wife and several others for a very good night under ideal conditions. Clear transparent skies, not too bad seeing conditions. They all were blown away with views in 30, 18, and 16, 14 , 9.25 inch and 8 inch scopes. Huge group of two bus loads of people, guest speaker from university and Park Ranger. I was hoping to get to use this area in winter months but they lock gates to keep hobo's out during winter months. I looked at many objects, NGC 253, NGC 891, edge on galaxies, we also found NGC 6946 and the super nova going on in it. We stayed up till 2:30 am for views of Orion, first telescope view since last year, and the queen of the universe, the majestic Saturn and it's tiny moons. The Greeley newspaper was there for write up in paper this week. Always an adventure, glad to see my astro friends again as usual, the Dark Sky Marines from LAS and NCAS. See you in the Dark, bye, Gary

Ready for observation at CrowValley

- Lunar Eclipse Viewing at Gary's place
  On Wednesday evening, October 27th, the full Moon will undergo a total eclipse lasting for 82 minutes, when it will be high in the Eastern sky after dark but while most of us are still awake.

  One more time Gary Garzone offered to observe this unique 2004 astronomical event at his place. (9722 Majestic Drive in Longmont) The eclipse will start around 6:15 PM, with a total eclipse starting around 8:15 PM. Bring your scope, binoculars, cameras and have fun! The next total lunar eclipse is not scheduled before March 2007, so come and join us at Gary's on Wednesday October 27th.
  Thanks Gary!

The Astro-photography corner (photos on right)
Been having fun in the observatory. Friday night I imaged the Supernova in NGC 6946. LRGB=120:60:60:60 minutes. Last night was the Iris Nebula and M11 (Wild Duck Cluster). NGC7023 is a LRGB=120:60:60:60 minutes and M11 is a LRGB=15:15:15:15 Minutes. All images were taken through the 12.5" f6 Ritchey and the ST2000XM camera. Dark and Flats were subtracted in MaxIm DL.
Thanks for looking, Brian

10 Years Ago October 2014

September meeting notes: Twenty two people attended the presentation on the Daniel K. Inouye Solar Telescope currently being built atop the Haleakala volcano on Maui, Hawaii. David Elmore's presentation gave us all some appreciation of the technical challenges involved with building this amazing solar telescope. LAS treasurer, Mike Fellows, presented an update on club financials and we reviewed some more great member images taken during the past month.

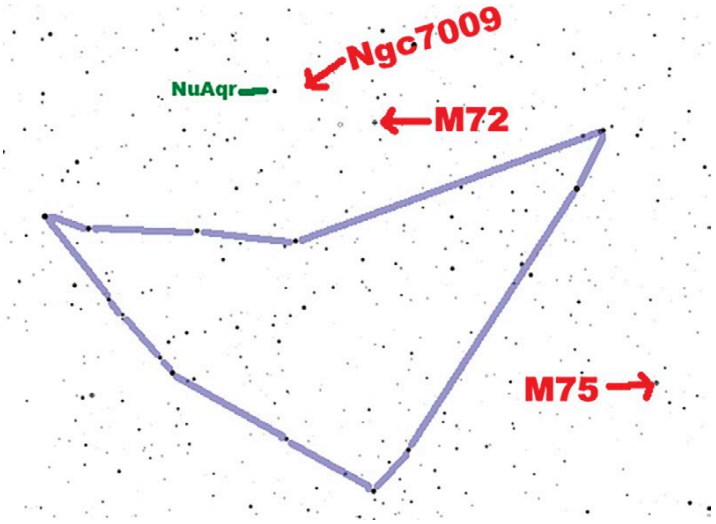
Next meeting topic will be the "MAVEN mission to Mars" presented by LAS member Bill Possel, Director of Mission Operations and Space Systems, LASP, University of Colorado, Boulder

Comet C/2013 (Siding Spring) will pass very close to Mars on Sunday October 19th at approximately 12:27 MDT at distance of somewhere between 24,000 to 83,000 miles from the surface. For us Mars will be fairly low in the southwest and also in the turbulence over the mountains. Still there is an imaging opportunity as Mars will be 12.5° above the horizon at astronomical darkness which is around 7:50 pm. At that time Mars and the comet will be approximately 18 arc minutes apart. After you get your image send it into NASA to get a NASA/Astronomical League observing certificate.

A few October Dark Sky Objects:

The Saturn nebula, NGC 7009, was discovered by William Herschel on Sept. 7, 1782. It gets its name from its similarity

Saturn Nebula, NGC 7009 by Gary Garzone



Saturn Nebula, NGC 7009 location

to the planet Saturn when the rings are nearly edge on. The Saturn nebula is located one degree west of Nu Aquari.

M75 by Gary Garzone

Messier 75 was discovered by French astronomer Pierre Mechain on August 27, 1780. William Herschel resolved it into stars in 1784. He described it as a miniature Messier 3. It is a class 1 globular cluster and has one of the more compact, densely concentrated globular clusters known. It is located in the eastern part of constellation Sagittarius.

A couple days later on August 29, 1780 Pierre Mechain discovered Messier 72. On Oct. 5 Charles Messier located, measured its position and added it to his catalogue along with Messier 75. M72 is located in the western part of constellation Aquarius.

M72 by Gary Garzone

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

M27, Dumbbell Nebula by Rolando Garcia