

# **LONGMONT ASTRONOMICAL SOCIETY**

**AUGUST 2023**



**M27**  
**BY GARY GARZONE**

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## LAS Meeting Thursday, August 17 at 7 pm

### “Gravitational Waves - Observing the Dark and the Bright” by Dr. Carl Haster

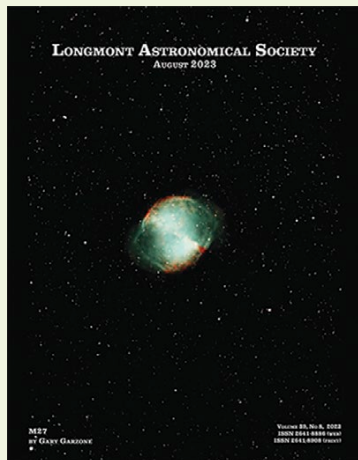
For the last few years we have been able to observe gravitational waves, ripples in space-time itself, originating from the most extreme astronomical objects and processes in the Universe. In this talk, I will both introduce the concepts of gravitational waves, and describe what our current set of observations can tell us about the nature of Black Holes, stellar evolution, ultra-dense nuclear matter, and even Gravitation itself.



I am an Assistant Professor of Astrophysics in the Department of Physics & Astronomy and the Nevada Center for Astrophysics at University of Nevada, Las Vegas. Before this, I was a Postdoctoral Associate at the LIGO Laboratory and the Kavli Institute for Astrophysics and Space Research at MIT, a CITA Postdoctoral Fellow at Canadian Institute for Theoretical Astrophysics, a PhD student at University of Birmingham and a MPhys student at University of Manchester.

My main research interests are all the exciting things we can learn about the extremes of our Universe through observations of Gravitational Waves (for example using the current LIGO, or future Cosmic Explorer, instruments). I am particularly interested in finding satisfactory robust connections between the observed population of compact objects, mainly black holes and neutron stars, and the astrophysical processes through which these objects are formed and evolve. I am also interested in exploring matter at its extremes, like what can be found in coalescing neutron star binaries, how this can be observed using as many astrophysical messengers as possible and help us find the best model for the Neutron Star Equation of State. Finally, I enjoy working on the inference methods used to analyse these gravitational wave signals, in order to improve their speed, fidelity and robustness. This will in turn be crucial for using these observations for precision tests of General Relativity as our preferred theory of gravitation, as otherwise it's easy to confuse a claimed beyond GR detection caused by a not-accurate-enough analysis.

#### Front Cover: M27 by Gary Garzone



Gary's image of the M27 “Dumbbell Nebula” in Vulpecula was taken with his Celestron C14 EdgeHD telescope at F7 and Zwo ASI 6200MC camera. He processed the images with PixInsight.

#### Back Cover: Lagoon and Trifid by Paul Kirkpatrick



Paul's image of the M8 “Lagoon Nebula” and M20 “Trifid Nebula” was taken with a William Optics Redcat 51 telescope, and Zwo ASI 2600MM mono camera. Filters were SII 240 sec x10, H-Alpha 240 sec x10, ad OIII 240x x 30. He images processed with PixInsight.

#### LAS Officers and Board Members in 2023

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

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

#### Appointed Positions 2023

Sarah Detty, Webmaster; Bruce Lamoreaux, Library Telescope Coordinator; Bill Tschumy, Public Outreach Coordinator;  
Vern Raben, Newsletter Editor; Eileen Hall-McKim, Newsletter Archives;



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## 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 Detty. 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.





## Planets in August

### Mercury

Mercury is not visible this month.

### Venus

Venus is at inferior conjunction (at the same RA and between Earth and the Sun) on Aug 13. It reappears very low in morning sky about the 3rd week this month.

### Mars

Mars disappears into the bright evening twilight about mid month,

### Jupiter

Jupiter increases in brightness from magnitude -2.5 to -2.7 this month. It increases in apparent size from 40 arc sec across to 44 arc sec. You may observe the Great Red Spot at mid transit at the following times this month:

- Aug 3, 2:23 am at altitude of 26°
- Aug 5, 4:01 am at 46°
- Aug 7, 5:40 am at 62°
- Aug 8, 1:31 am at 20°
- Aug 10, 3:10 am at 40°
- Aug 12, 4:48 at 58°
- Aug 15, 2:18 am at 34°
- Aug 17, 3:57 am at 53°
- Aug 19, 5:35 am at 66°
- Aug 20, 1:27 am at 28°
- Aug 24, 4:43 am at 63°
- Aug 25, 12:35 am at 21°
- Aug 27, 2:13 am at 42°
- Aug 29, 3:52 am at 59°
- Aug 31 at 5:30 am at 66°

### Saturn

Saturn is visible just before midnight in the constellation Aquarius. It is around magnitude 0.5 in brightness and the disk is 19 arc sec across. It is at opposition on Aug 27.

### Uranus

It is visible in the morning sky in constellation Aries. It is magnitude 5.7 in brightness and the disk is 3.6 arc sec across.

### Neptune

Neptune is visible in the morning sky in constellation Pisces. It is about magnitude 7.8 in brightness and the disk is 2.3 arc sec across.

## Meteor Showers in August

The Perseids meteor shower peaks the evening of August 12-13. It is one of the best meteor showers of the year; approximately 100 may be seen per hour from dark location.

## Lunar Phases in August

- Full moon: August 1 at 12:33 am
- Third quarter: August 8 at 4:30 am
- New moon: August 16 at 3:39 am
- First quarter: August 24 at 3:58 am
- Full moon: August 30 at 7:37 pm

## Bright Nebulas in August

- M27 "Dumbbell Nebula" in Vulpecula, mag 7.1
- NGC 6543 "Cat's Eye Nebula" in Draco, mag 8.1
- NGC 6572 planetary nebula in Ophiuchus, mag 8.0
- NGC 7009 "Saturn Nebula" in Aquarius, mag 7.8
- NGC 7027 planetary nebula in Cygnus, mag 8.5
- NGC 7662 "Blue Snowball" in Andromeda, mag 8.3
- M20 Trifid Nebula in Sagittarius mag 6.3
- NGC 6990 in Sagittarius mag 7.0

## Galaxies in August

- M31 "Andromeda Galaxy", in Andromeda, mag 3.3
- M32 elliptical galaxy in Andromeda, mag 7.9
- M33 "Pinwheel Galaxy, in Triangulum, mag 5.8
- M51, Whirlpool Galaxy in Canes Venatici, mag 8.4
- M101, Pinwheel Galaxy in Ursa Major, mag 8.4

## Globular Clusters in August

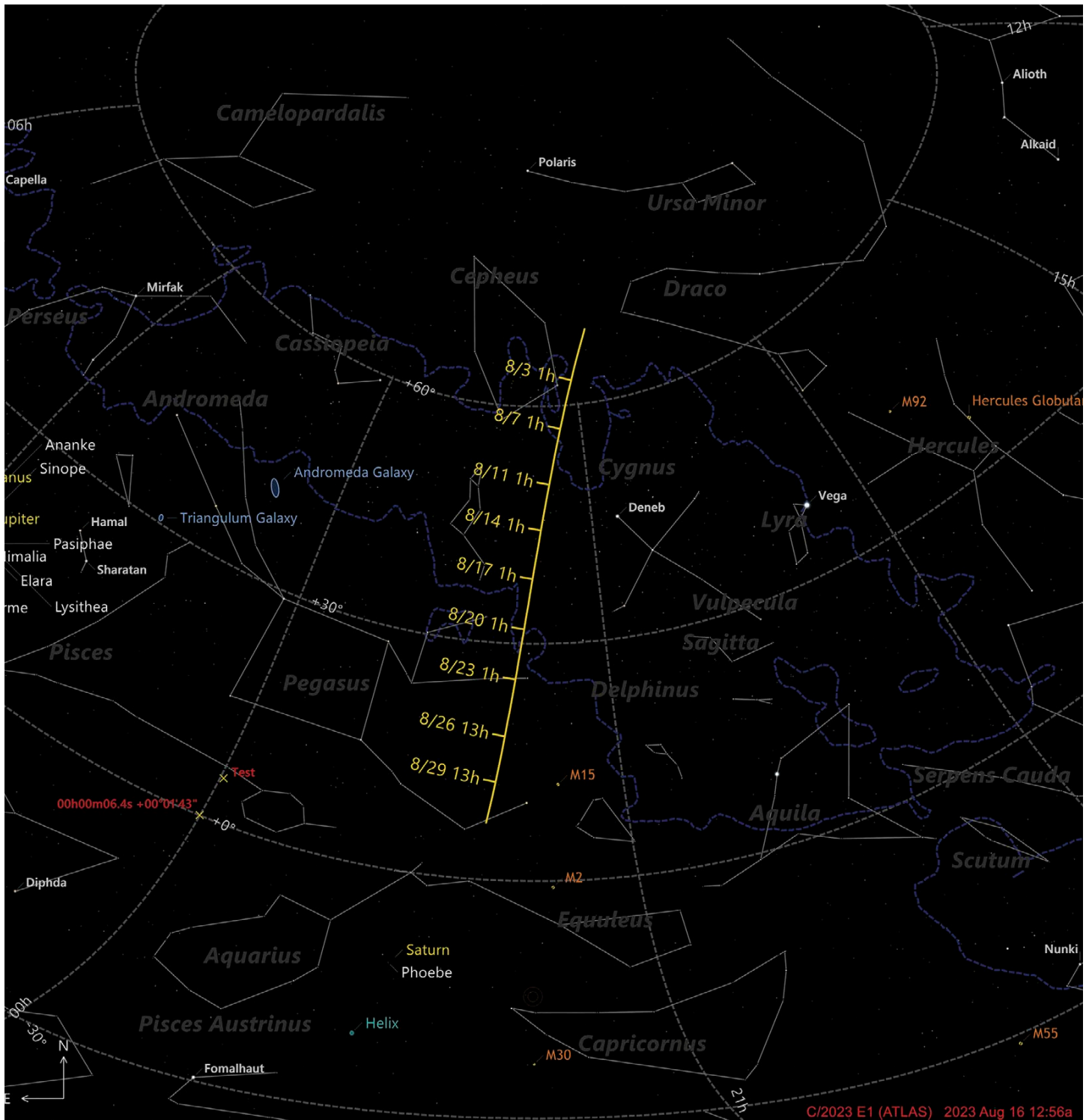
- M2 in Aquarius, mag 6.5
- M3 in Canes Venatici, mag 6.2
- M5 in Serpens, mag 5.7
- M10 in Ophiuchus, mag 6.6
- M12 in Ophiuchus, mag 6.7
- M13 "Hercules Cluster" in Hercules, mag 5.8
- M14 in Ophiuchus, mag 7.6
- M14 in Ophiuchus, mag 5.8
- M15 in Pegasus, mag 6.2
- M92 in Hercules, mag 6.4

## Planetary Nebulas in July

- M27, Dumbbell Nebula in Vulpecula, mag 7.1
- NGC6572 in Ophiuchus, mag 8.0
- NGC6543, Cat's Eye Nebula in Draco, mag 8.1
- NGC7027 in Cygnus, mag 8.5
- M57, Ring Nebula in Lyra, mag 8.8
- NGC6210 in Hercules, mag 8.8

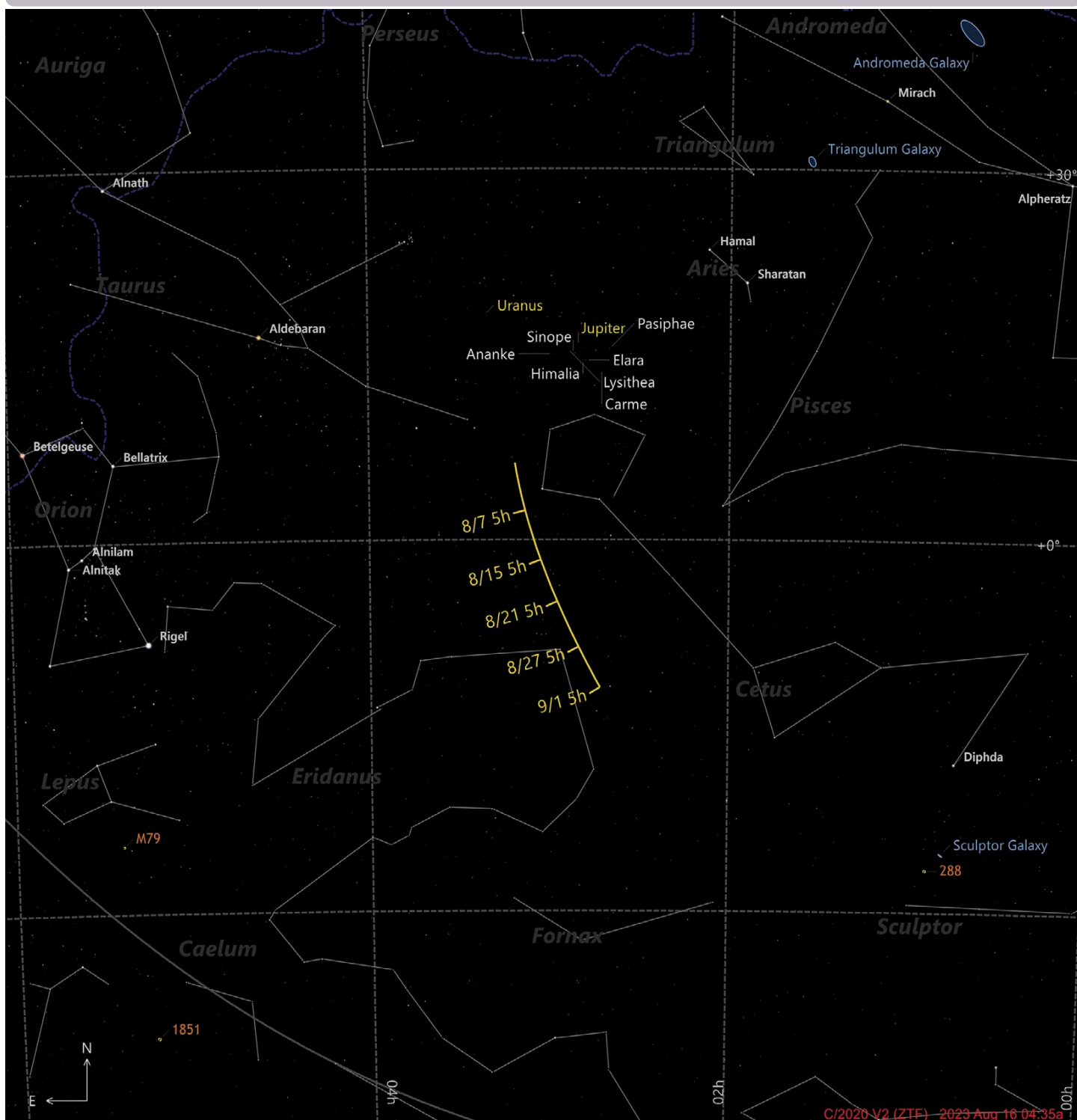


# Comet C/2023 E1 (ATLAS)



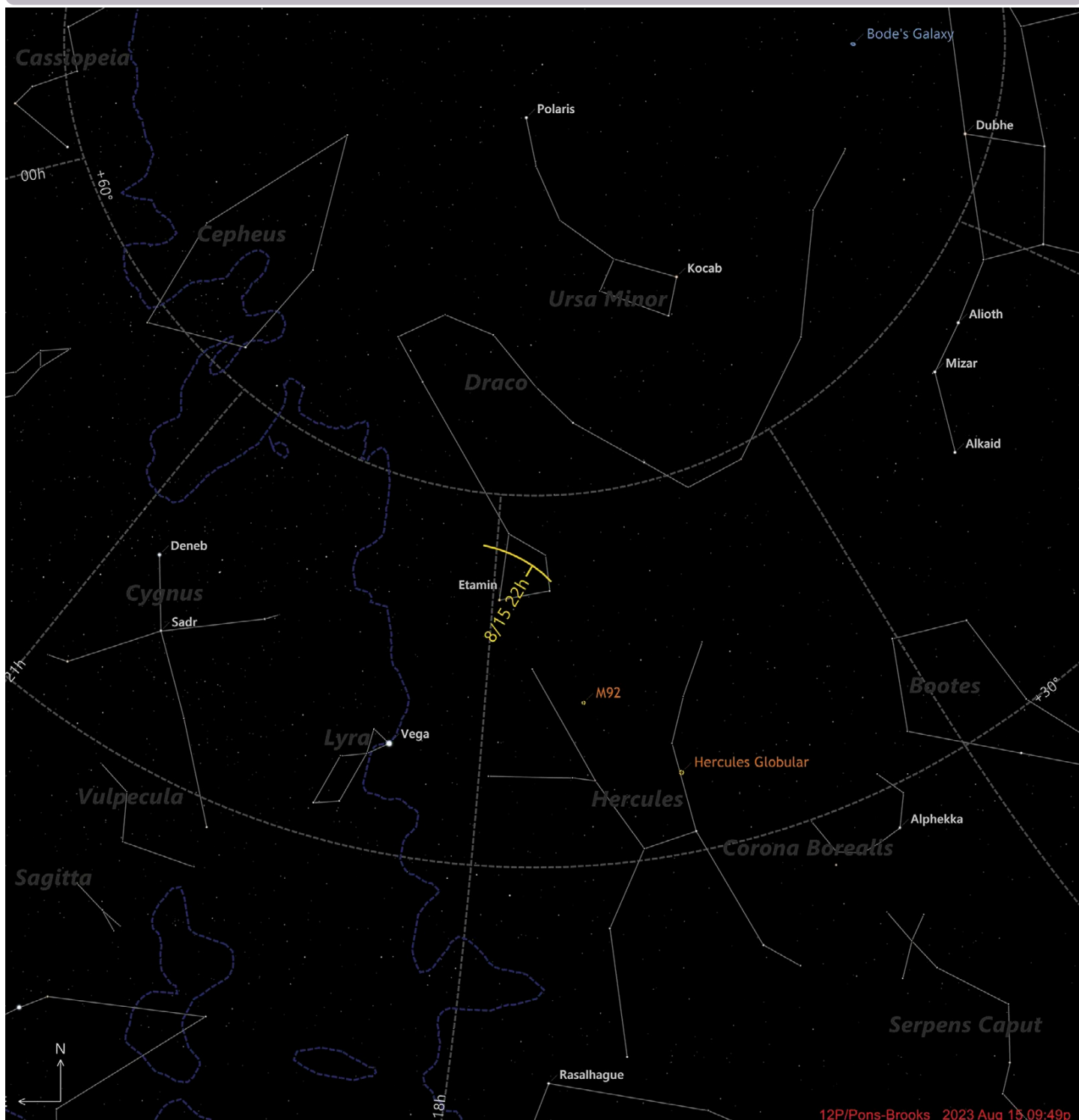
Date	Optimal time	RA	Dec	Constellation	Magnitude	Size (arc min)
Aug 1	9:55 pm	20h59m29.5s	+64°43'46"	Cepheus	9.8	4.8
Aug 7	11:47 pm	21h22m15.7s	+55°35'33"	Cepheus	10.1	5.2
Aug 13	1:02 am	21h37m29.7s	+44°24'58"	Cygnus	10.5	5.5
Aug 19	12:49 am	21h48m05.4s	+31°56'16"	Cygnus	11.0	5.5
Aug 25	12:44 am	21h55m56.7s	+19°20'56"	Pegasus	11.6	5.2
Aug 31	4:06 am	21h59m19.4s	+13°12'32"	Pegasus	12.0	5.0

# Comet C/2020 V2 (ZTF)



Date	Optimal time	RA	Dec	Constellation	Magnitude	Size (arc min)
Aug 1	4:22 am	03h11m26.7s	+04°40'42"	Cetus	10.1	3.5
Aug 7	4:27 am	03h08m45.1s	+01°59'43"	Cetus	10.0	3.7
Aug 13	4:32 am	03h04m50.7s	-00°59'39"	Cetus	10.0	3.8
Aug 19	4:39 am	02h59m33.3s	-04°18'19"	Eridanus	9.9	4.0
Aug 25	4:43a am	02h52m43.1s	-07°55'50"	Eridanus	9.9	4.1
Aug 31	4:53 am	02h44m10.7s	-11°50'20"	Cetus	9.9	4.3

## Comet 12P/Pons-Brooks



12P/Pons-Brooks 2023 Aug 15:09:49p

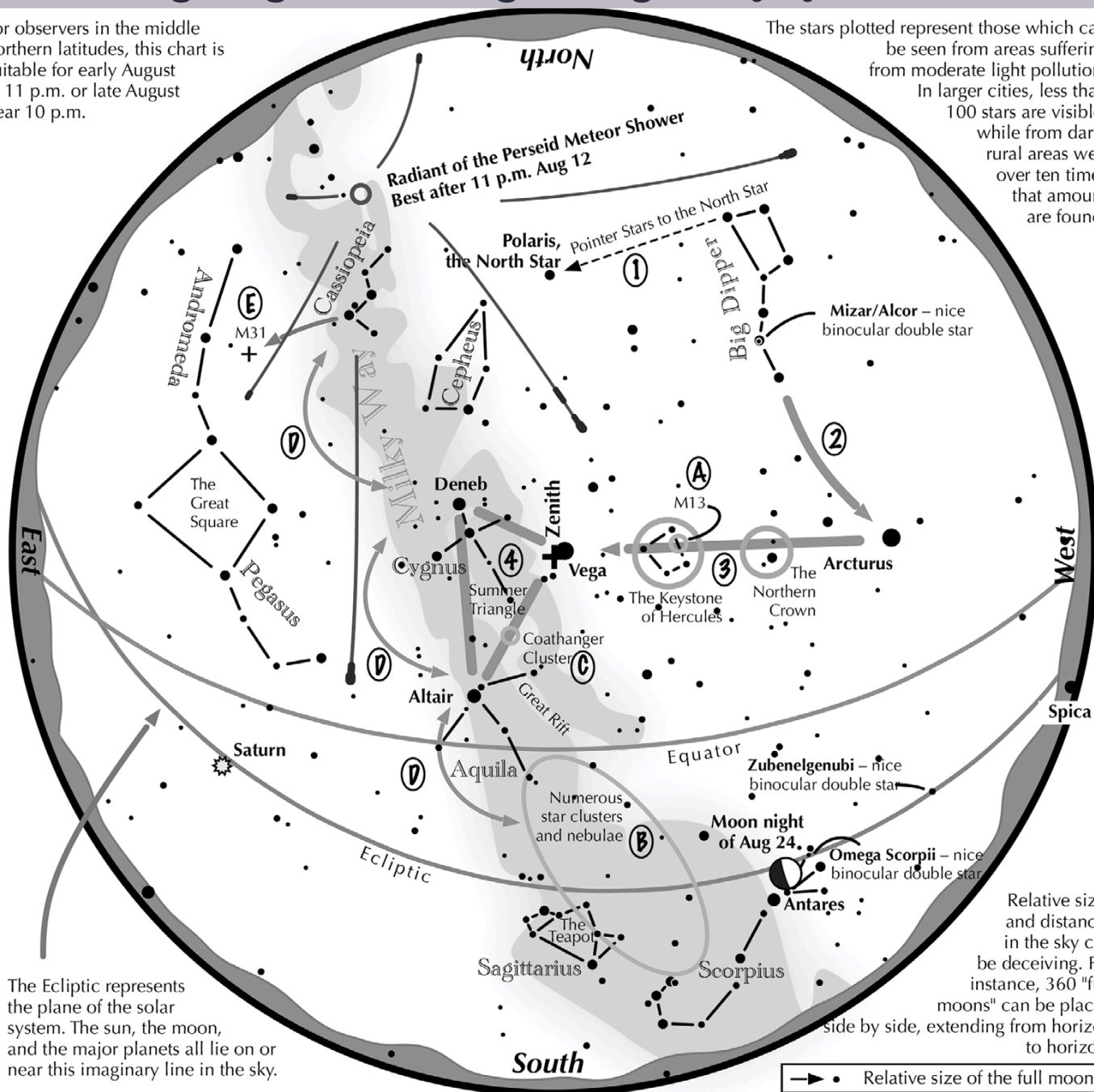
Date	Optimal time	RA	Dec	Constellation	Magnitude	Size (arc min)
Aug 1	9:49 pm	17h58m54.7s	+55°33'01"	Draco	11.6	1.5
Aug 7	10:08 pm	17h50m10.9s	+55°08'10"	Draco	11.5	1.5
Aug 13	9:53 pm	17h42m21.9s	+54°33'51"	Draco	11.4	1.6
Aug 19	9:40 pm	17h35m34.9s	+53°51'11"	Draco	11.3	1.6
Aug 25	9:31 pm	17h29m55.9s	+53°01'31"	Draco	11.2	1.6
Aug 31	8:58 pm	17h25m28.8s	+52°06'26"	Draco	11.1	1.6



# Navigating the mid August Night Sky by John Goss

For observers in the middle northern latitudes, this chart is suitable for early August at 11 p.m. or late August near 10 p.m.

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.



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.

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

→ • Relative size of the full moon.

**Navigating the mid August 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 June 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 High in the East lies the summer triangle stars of Vega, Altair, and Deneb.

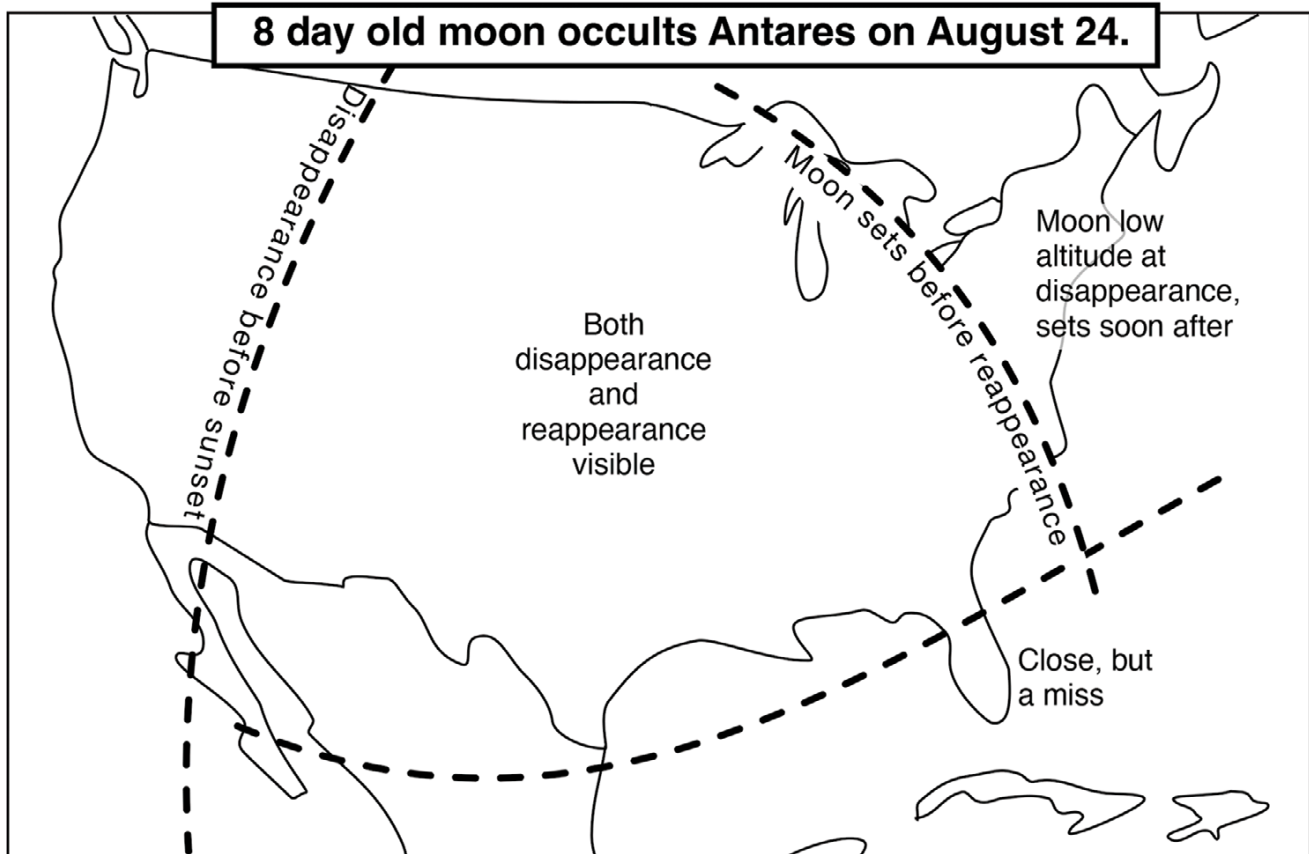
## Binocular Highlights

- 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.



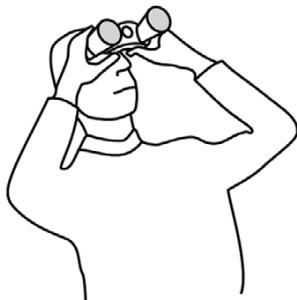
Astronomical League [www.astroleague.org/outreach](http://www.astroleague.org/outreach); duplication is allowed and encouraged for all free distribution.

**If you can see only one celestial event this August, see this one.**

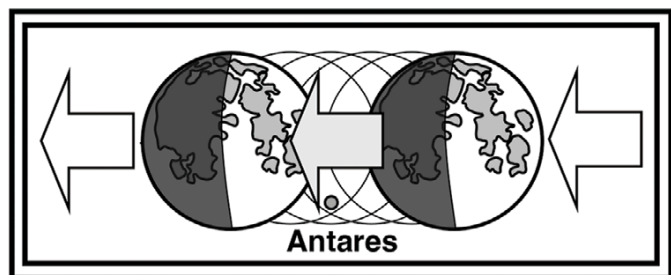


The full occultation event on Aug. 24 of Antares by the moon occurs for the central part of the US. Both coasts will not see the complete event. For disappearance and reappearance times in your area, visit the International Occultation Timing Association webpage:

<http://lunar-occultations.com/iota/bstar/0824zc2366.htm>

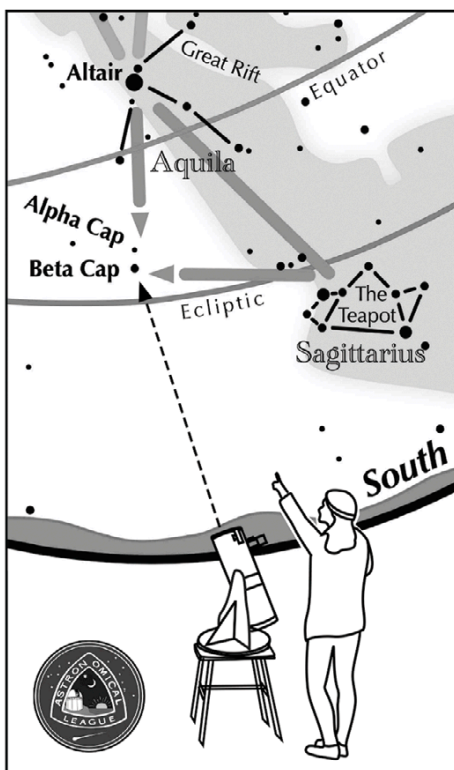


Start looking in the southwest shortly after sunset on August 24. Watch the moon slowly approach Antares, then suddenly block it. Binoculars will give better view.



Occultations demonstrate the moon's eastward orbital motion as Earth's rotation causes it to move in a westward arc across the night sky.

## ASTRONOMICAL LEAGUE Double Star Activity



### Other Suns: Beta Capricorni

#### How to find Beta Capricorni on an August evening

Find bright Altair, the southeastern member of the Summer Triangle. Then locate the "Teapot" asterism of Sagittarius. Use them to form a right triangle with Beta Capricorni being the right angle vertex.

Suggested magnification: >10x  
Suggested aperture: >2 inches

#### Beta Capricorni

A-B separation: 207 sec

A magnitude: 3.2

B magnitude: 6.1

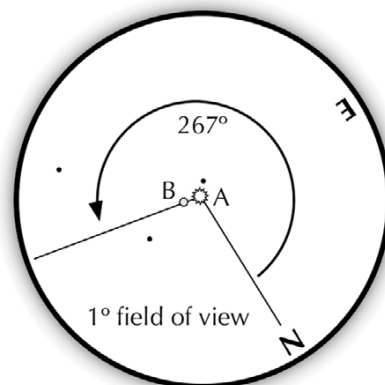
Position Angle:  $267^\circ$

A & B colors:

orange, white



**Good binocular object!**





## Secretary Notes Thursday, July 20, 2023

### by Eileen Hall-McKim

#### I. Introduction

The July LAS in-person/hybrid monthly meeting was held on July 20th at the Longmont Lutheran Church. President Vern Raben began the meeting with a self-introduction by all members attending in-person. Sixteen members attended in-person, 7 attended by zoom.

#### II. Main Presentation

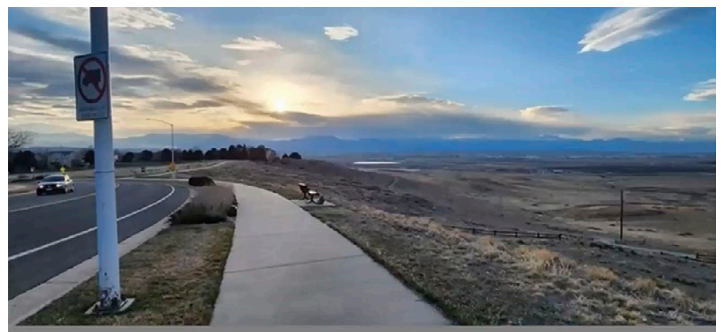
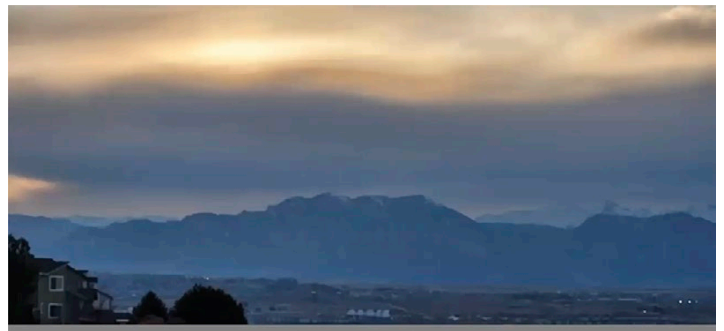
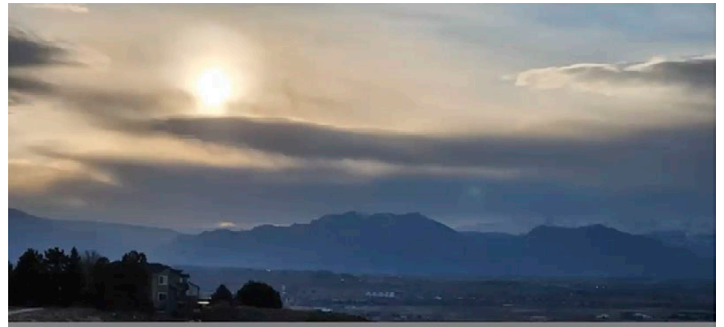
Our main presentation this month is an open forum of member presentations. Mike Hotka will talk about “Stonehenge in Broomfield” and Ellen Steiner’s presentation is “Easy Analemma, or How to Make an Analemma in 52 Easy Steps.” Marty Butley presents his recent new image of a Wolf-Rayet Star in Cygnus WR134, and Steven Albers presents a simulation sequence of morning twilight of the All-Sky (DSNM) camera that he has been working on.

#### Stonehenge in Broomfield by Mike Hotka

There are great learning opportunities in the Astronomical League Observing Programs. A new observing program that Mike is working on right now is called Astronomy Before The Telescope

- Lots of activities using instruments from a time gone by. Mike especially likes the Galileo Observing Program because it repeats what Galileo did back in 1610, when he first turned his telescope toward the heavens
- He has looked at all of William and Caroline Herschel’s 2500 objects just to repeat the steps of these giants
- In the Astronomy Before The Telescope program you complete 15 activities such as;  
Learn to use Jacob’s Staff; a trigonometry right angle device for measuring angular distances in the sky, another activity is to make an Astrolabe and do an exercise with it, playing with Sundials, and now he is about to build a Quadrant to measure angles in the sky
- Activity 6 is what Mike wants to show us the steps of in this talk

- Your task is to find a place where you live where on the winter and summer solstice you can view the rising or setting Sun behind an object on the horizon. Then take a picture that shows the event

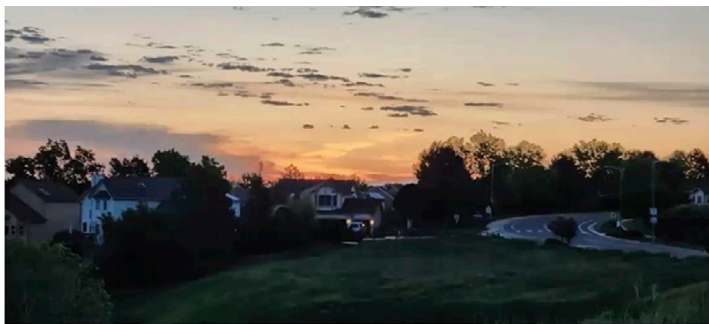


#### Broomfield’s Sunset Solstice Observing Bench

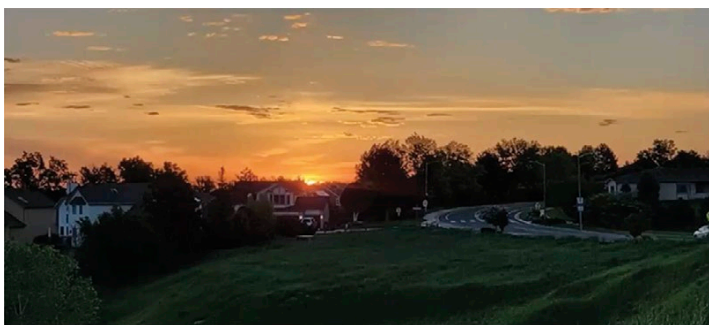
Where Mike took all his summer solstice sunset pictures, but as we all know, during most of spring it was very cloudy almost every night at sunset, so Mike’s early drive to work gave him clearer skies and a look at summer solstice sunrise, so he was now looking for a Casa Grande.







**Mornings were clear**

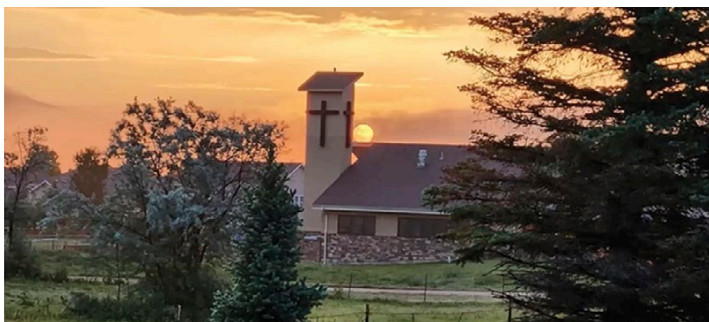


**Middle of May Sunrise Over Houses**



**Viewing location by the water towers**

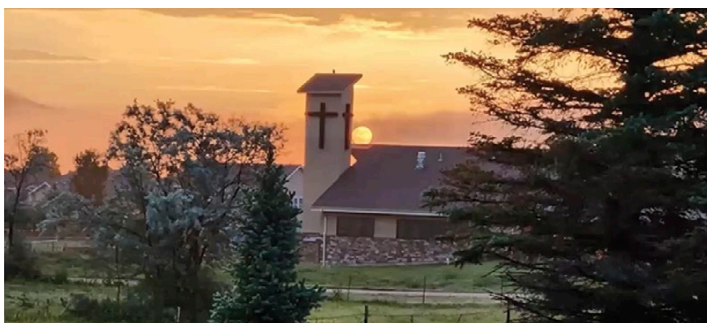
Broomfield Casa Grande Observing Location, 75 yards to the west of the Viewing Bench



Iglesia Grande de Broomfield Sun coming up next to church tower, standing next the fire hydrant and look back there is the church



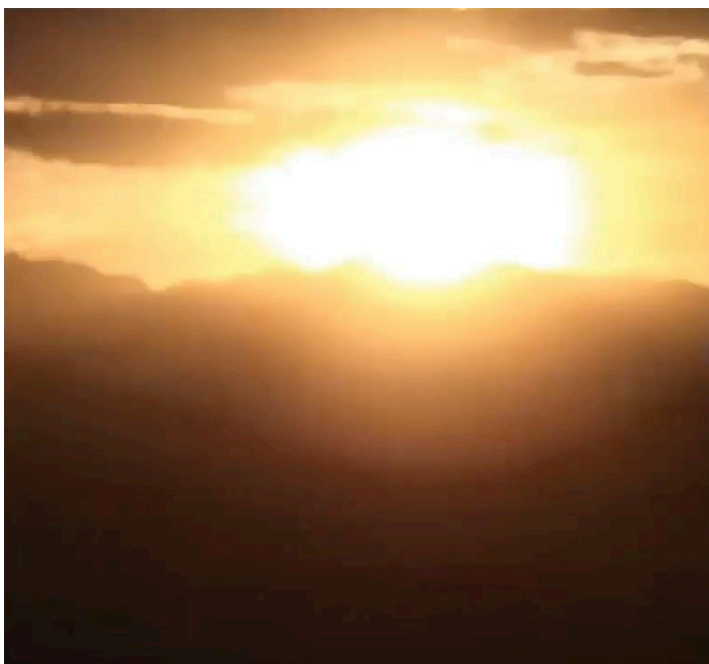
Solstice Sunrise over Iglesia Grande, taken on June 20th



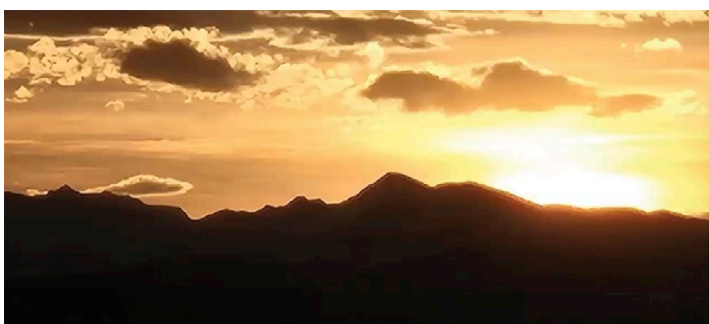
After 3 Weeks of Sun Movement, notice now how the Sun has moved to the left of the church tower



## Easy Analemma Or How To Create An Analemma In 52 Easy Steps by Ellen Steiner



Solstice Sunset over Broomfield from the bench



Beautiful Solstice Sunset over the mountain peaks

Another program Mike is currently working on is called Solar Neighborhood, in which you look at all the stars that are within 10 parsecs or 34.24 light years of our Sun; there are a lot of stars to see including many beautiful red stars. With one more observation next month of the year-long program, it will then be complete.

Starting in 1999 with the Messier Observing Program, Mike has worked through and completed many different observing programs, and designed and wrote the Globular Cluster Observing Program for the Astronomical League. He highly recommends the programs as cookbook lists of things to do to be able to learn so much about whatever the topic is that the program is about; for example, learning to use and know the limitations of the Jacobs Staff and know that Sundials must be level at  $40^\circ$  or you do not get the right time, shows the need for exacting accuracy when applying and improves observation experiences.

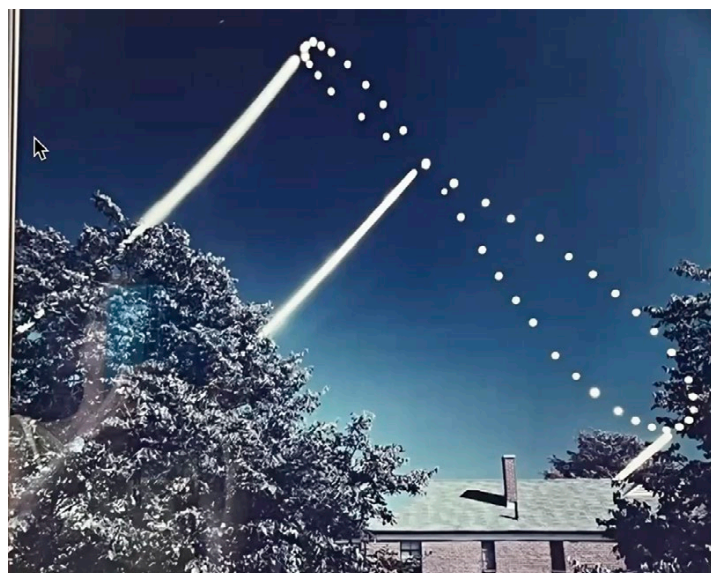
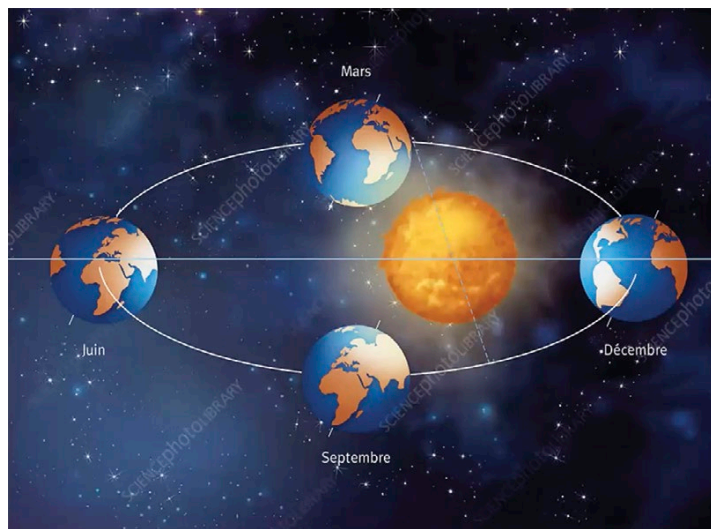


Image created by Dennis di Cicco from Sky and Telescope, back in the late 1970s, before the digital cameras and all, he had his camera set up to take a picture once a week at the same time every day throughout a year. He had a solar filter on his camera, and on the solstices, but not on the equinoxes, for aesthetic appeal, he let the shutter stay open to get the streaks, and then added the foreground and possibly his house in exposure afterwards.

Why does the Sun have a different position in the sky throughout the year?

What is the reason for the Figure 8 and the tilt?



Two factors cause the Sun to appear at a different angle throughout the year:

- 1) Earth is tilted at  $23^\circ$  to its plane of orbit
- 2) The orbit around the Sun is elliptical and not circular

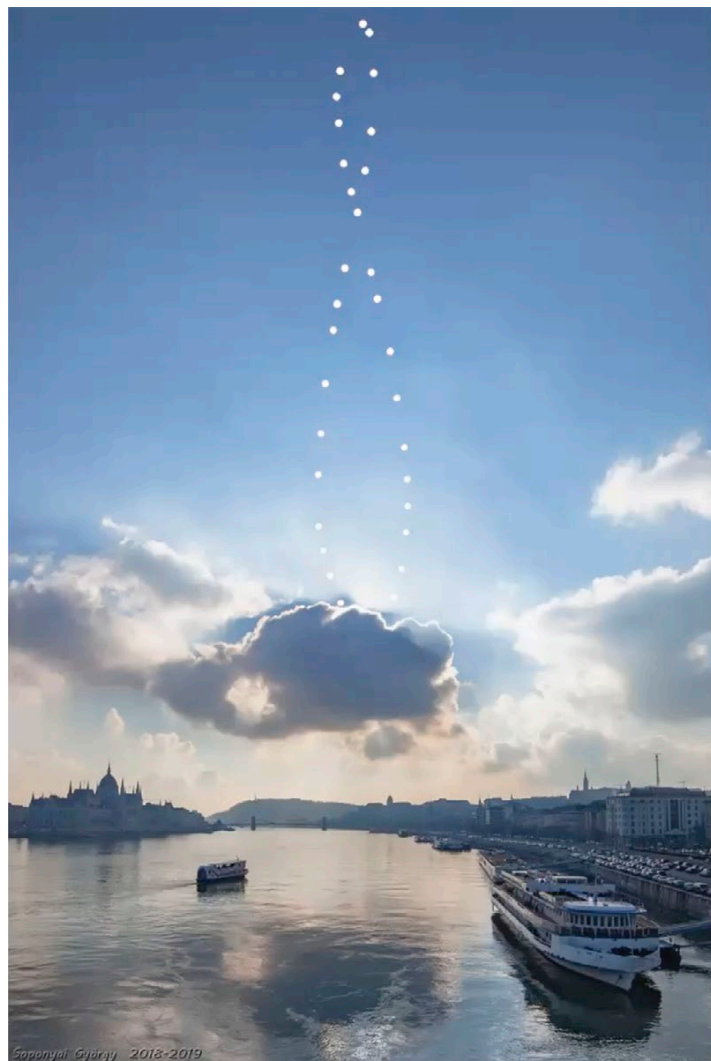
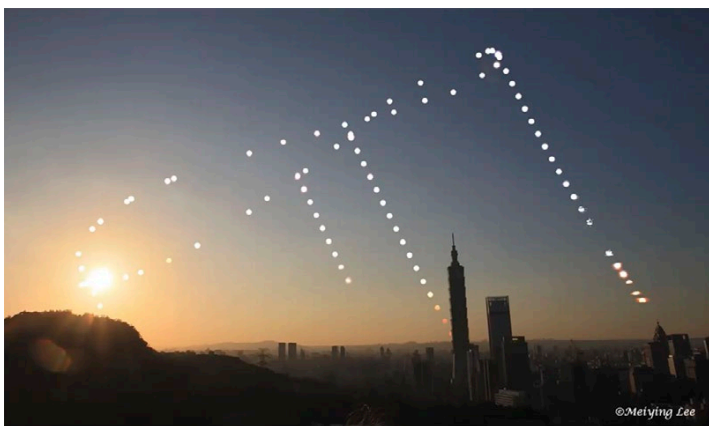
These two factors cause the Sun to appear in a different place in the sky throughout the year.



So if you are telling time with your sundial, you will either be late or early, you will only be on time 4 times a year. An analemma tells you how much adjustment must be made throughout the year by determining what corrections you need to make to your sundial to get mean solar time which is what your clock tells. Your sundial will always tell you true solar time. We like to think the Sun crosses the meridian every day at noon and the sundial will always tell you that, but your clock is going to tell you something else, so in order to get this to coincide, you must add in the analemmatic correction.



Since Dennis de Cicco made his first analemma, digital cameras and other new technology has enhanced the images made, and we see many fine examples now:



### Steps For Making An Analemma

Ellen wanted to make one herself simply and without long term use of phone or camera on a tripod. So if not going to take a picture of the Sun every day, what can be used instead as a proxy for position of the Sun in the sky to give you this analemmatic figure? – a shadow

Easy project – only need 4 things:

- South facing yard or deck
- Stick
- Clock
- Marker



Need a south facing deck or yard that will be exposed to Sun all year

- Look for point of the tip on edge of shadow cast by rail board to make your marks





- Vertical line connecting points give north/south line, which is also longitude
- About a 2 year project, because of inevitable missed days throughout a year

There were challenges:

- May have to do some shoveling in winter months
- The shadow itself is quite fuzzy because the Sun isn't a point source and also you are getting scattering into the shadow, so look for umbral shadow (interior darkest part of the shadow) rather than the penumbral shadow, better to start off that way



- Ellen went out once a week (thus the 52 easy steps) at noon (will need to allow for Daylight Savings Time) but you can go at any time as long as it is consistent



Zoomed out image of finished analemma, points enhanced with blue dots

Ellen uses whiteout for her markings, some other methods for markings could be:

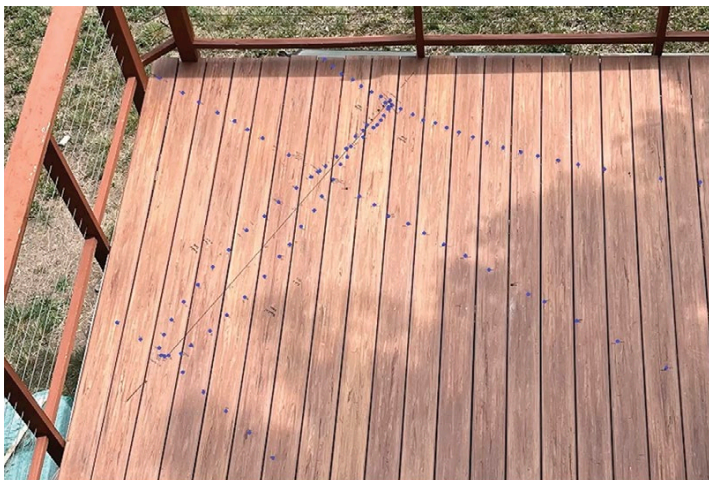
- Paint
- Night glow paint if you want to go out with your black light and illuminate at night!
- Any kind of permanent marker that doesn't fade in the Sun
- Nails, tacks







Like in Greenwich, England Meridian at 0° Longitude, where one can stand on the line that divides the eastern/western hemisphere, Ellen can straddle her Boulder, Colorado 105.32° west longitude

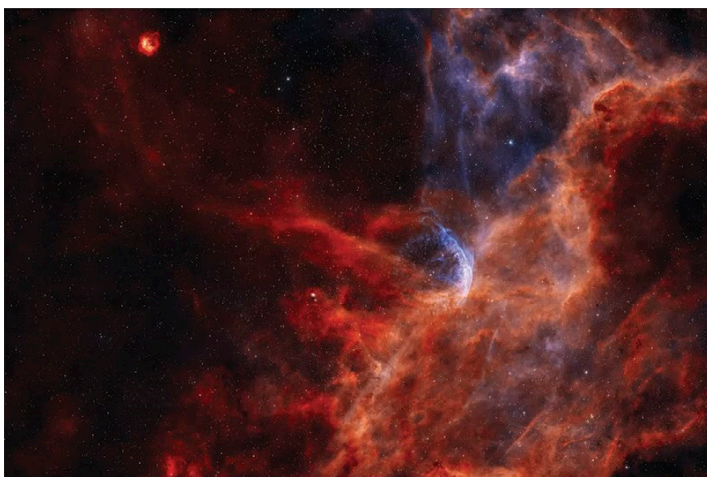


Ellen adds equinox markers to her Analemma. Equinox lines tracks sunsets at due east and due west, so this is approximately her latitude line.



With 4 simple objects, some dedication and scheduled timing, and perhaps a little self-described absolute obsession thrown in, Ellen has demonstrated how to plan and construct a fun and unique observing project!

### **Wolf-Rayet Star in Cygnus WR134 by Marty Butley**



This star is in Cygnus, a constellation that is high in the sky at this time of the year. WR stands for Wolf-Rayet star, the image above is a narrowband hydrogen/oxygen or HOO image.

There are not very many of these stars in the galaxy, this one is about 6,000 light years away, 400,000 x as luminous as the Sun, in a bubble of intense radiation.

Spectroscopically unique, this star was first discovered in 1867 at Paris Observatory by Charles Wolf and George Rayet. They discovered 3 such stars in Cygnus; in addition to WR134 they also discovered WR135 and WR137. The stars are unique because they display broad emission bands absorption lines. They are fairly unusual stars as they



continually eject gas into space. Not all have these stars have full envelopes around them.

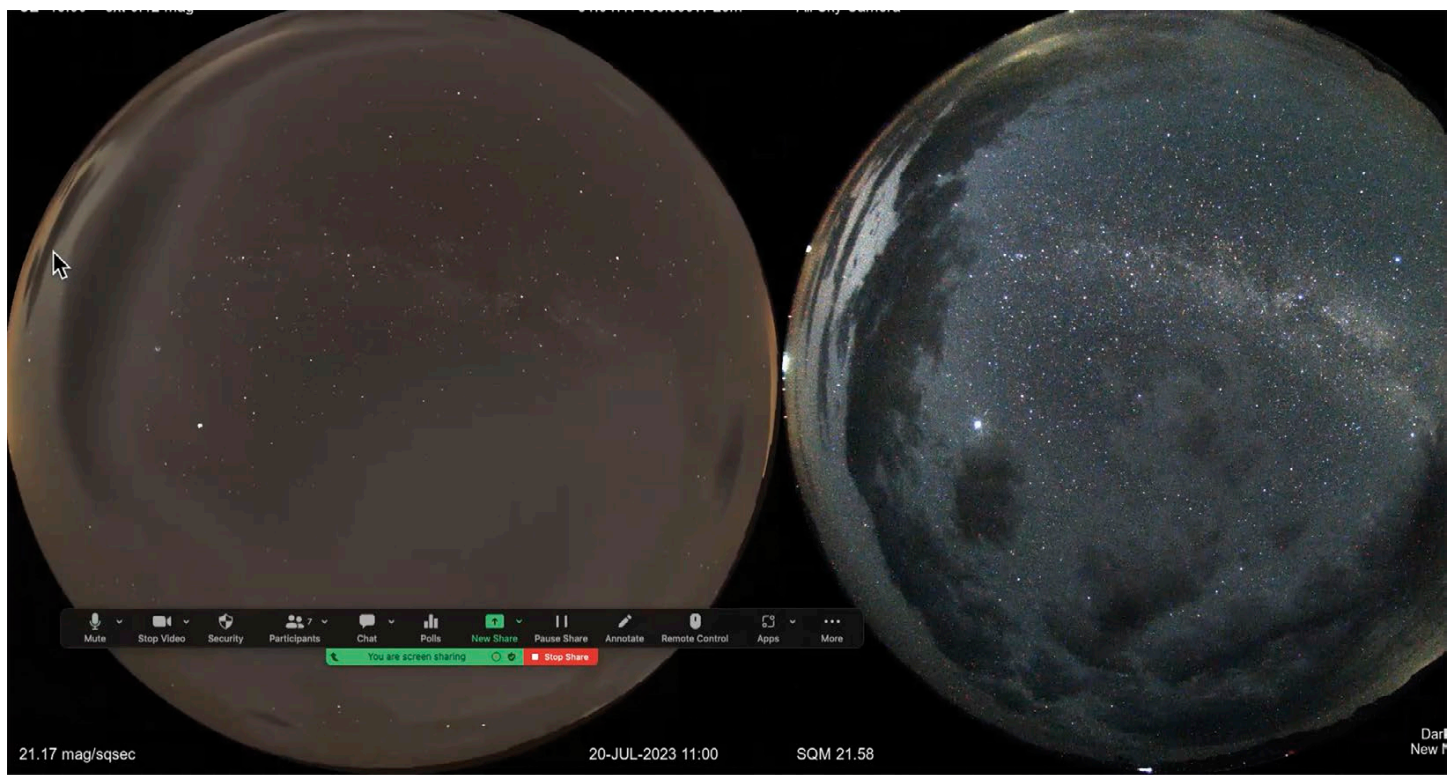
The Crescent Nebula is associated with WR 136 (also in Cygnus)

Another common Wolf-Rayet star in constellation Canis Major is Thor's Helmet, another in Bubble Nebula.

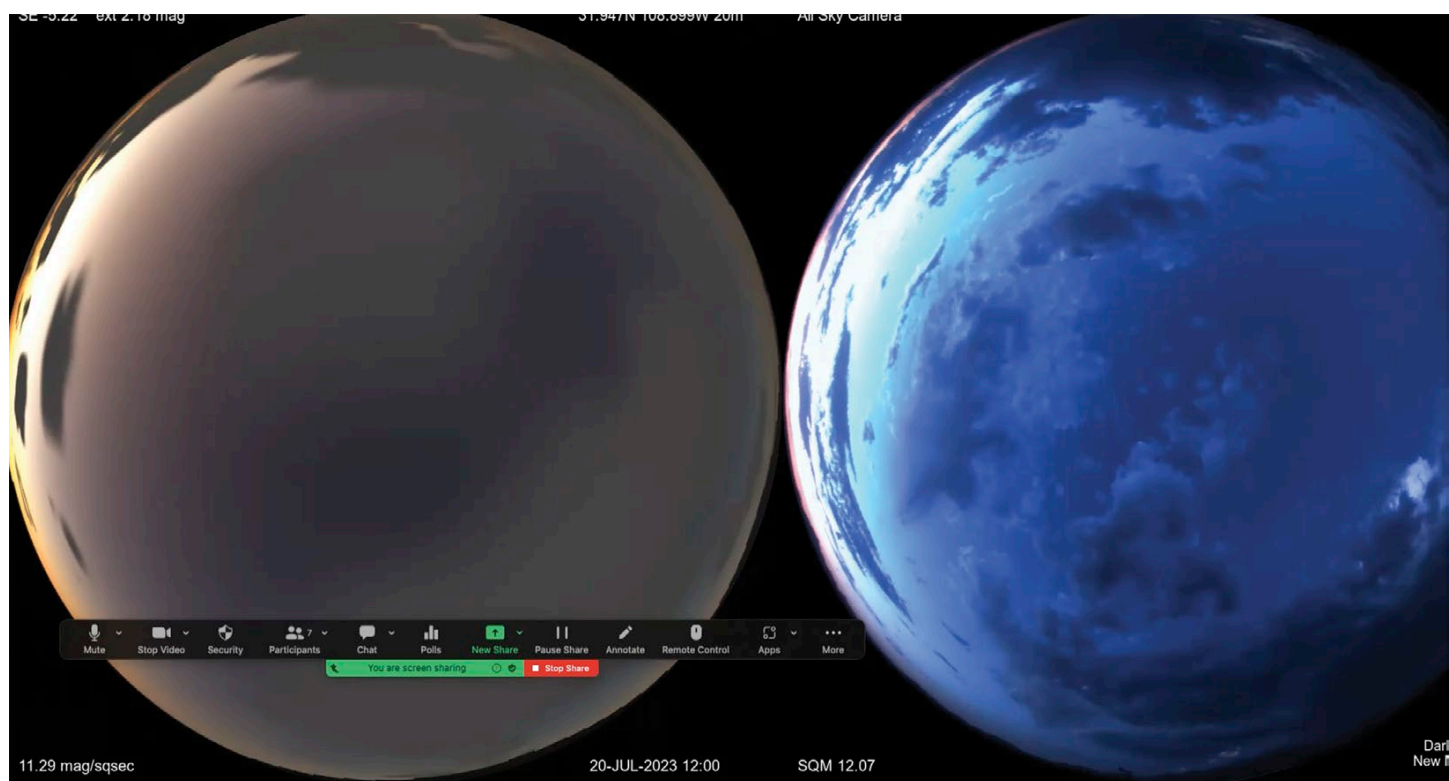
### **All Sky Camera Simulation by Steve Albers**

Left hand side: A Simulation package Steve has been working on Right hand side: All Sky Camera operating from DSNM

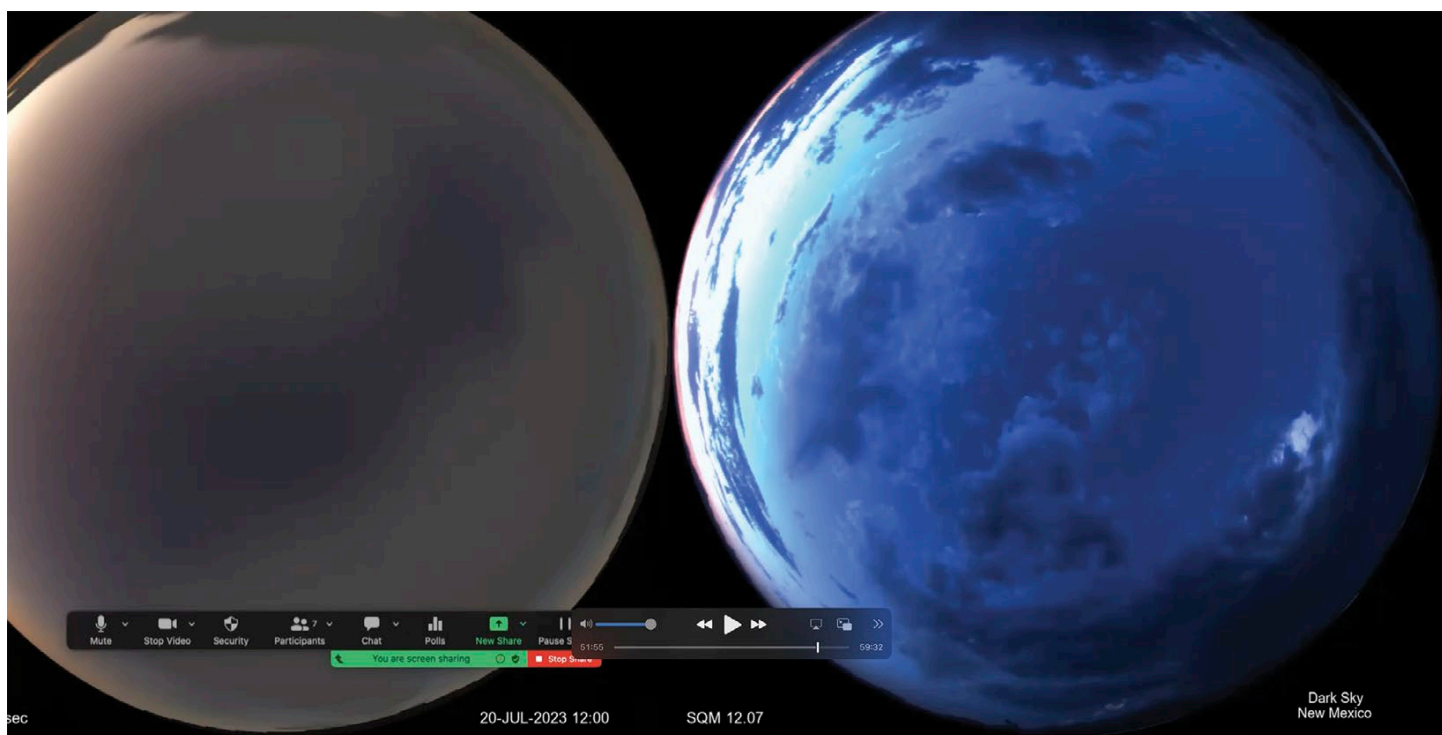
Idea is to try to take into account both the astronomical and meteorological way the sky looks and build up on the simulation basically what you would see on an actual camera SqM – (Sky Quality Measure) used to measure darkness of the night sky. On right: calculated on integrating the light.



Twilight building, with reddish band right on the horizon, 1 magnitude brighter



Dawn on July 20, 2023



Future work would want to get the bright cloud seen in lower bottom right, and catch the alpen glow of the twilight, features to be figured out in the future. Cloud Analysis and simulation of cloud cover and where they will be in the future are some of the challenges which Steve works on at his day job in weather forecasting.

### III. Business Meeting

#### Bruce Lamoreaux monthly Treasurer's report:



## Longmont Astronomical Society

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

### LAS Treasurer's Report - Bruce Lamoreaux

7/20/2023

#### Main Checking Account (xxx-1587)

Begin Balance:	\$ 9,750.00	6/5/2023
Deposits:	\$ 24.00	Membership
Expenses:	\$ (4.00)	Bank Charges
<b>Current Balance:</b>	<b>\$ 9,770.00</b>	<b>7/5/2023</b>

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

Past Balance:	\$ 8,155.00	3/31/2023
Interest:	\$ 15.00	
<b>Balance:</b>	<b>\$ 8,170.00</b>	<b>6/30/2023</b>

#### Telescope Fund (xxx-0165)

Past Balance:	\$ 1,100.00	5/30/2023
Deposits:	\$ -	
Expenses:	\$ -	
<b>Balance</b>	<b>\$ 1,100.00</b>	<b>6/29/2023</b>

#### Petty Cash

Past Balance:	\$ 50.00
Deposits:	\$ -
Expenses:	\$ -
<b>Balance</b>	<b>\$ 50.00</b>

<b><u>Total Assets</u></b>	<b>\$ 19,090.00</b>	\$ 40.00 Up from last report
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<b>Active Membership:</b>	<b>99</b>
<b>Student Membership:</b>	<b>2</b>
<b>Total</b>	<b>101</b>



## IV. Old/New Business

### Upcoming Events:

- Aug 17 – LAS Meeting 7 pm
- Sept 21 – LAS Meeting 7 pm
- Oct 7 and Oct 14th Solar Events for Louisville Public Library – more information coming on this in coming months
- Oct- Nov? Erie Elementary School would like a star party

## Newsletter Archive

### 30 years ago August 1993

From the President, Bob Spohn:

How did your Perseids observing go? I took the family up to Pawnee Grasslands, and there were a lot of people on the side roads up there to watch the shower! The sky was pretty active all through the weekend – Sunday night at Deadman was great for meteors.

Congratulations to Bob Noble for observing his 110th Messier object while at Deadman.

August will be a fine month for observing 6 excellent galaxies (amongst thousands) 3 open clusters, and a fine planetary nebulae.

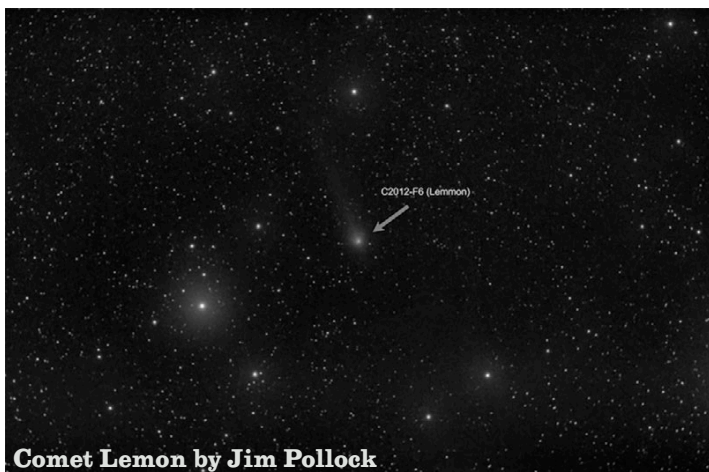
### 20 years ago August 2003

Jim presented the Astronomy League Binoculars Award to Brian Kimball for observing and recording Messier objects through binoculars. He used 10x42 Binoculars.

Star-Hopping by Michael Hotka, “Star-Hopping is the art of moving your telescope from a brighter, easier to locate object to fainter and fainter objects. Two items are a must when attempting to star-hop, The first is an accurately aligned finder system and the second is a detailed set of star charts.”

Dr. Don Hassler, from SW Research Institute of Boulder gave a presentation on the Solar Probe that is hopefully going to be launched in our lifetime.

### 10 years ago August 2013



Comet Lemon by Jim Pollock



Milky Way by Gary Garzone

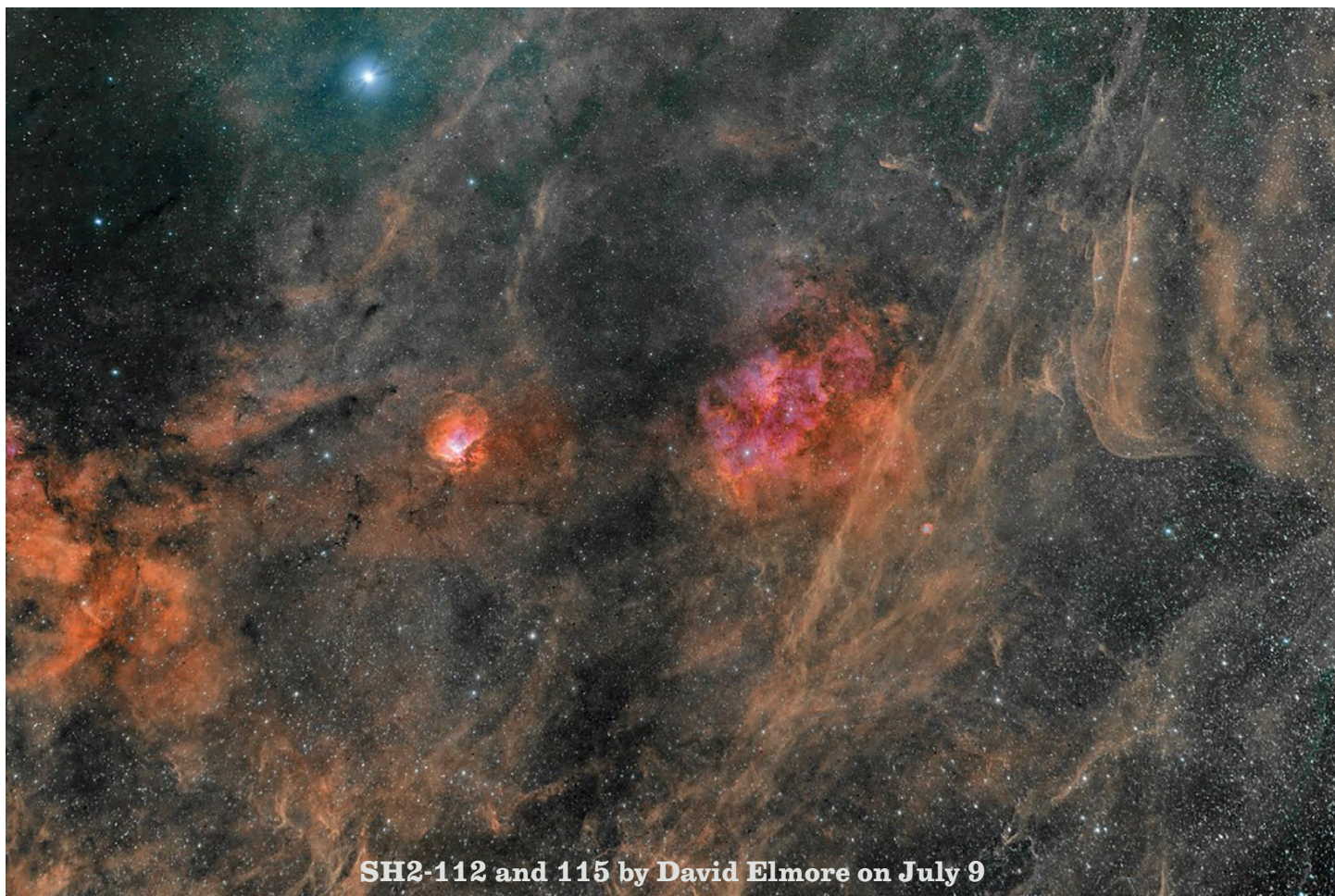


34 Hour Crescent Moon by Lefty Harris



Jim Pollock's first image of the Eagle Nebula, 2013





**SH2-112 and 115 by David Elmore on July 9**



**SH2-87,88 and NGC 6820 by David Elmore on July 25**





**M33 by Eddie Hunnell on July 12**



**NGC 6949 by Eddie Hunnell on July 19**



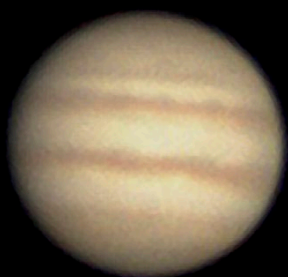


**Veil Nebula by Eddie Hunnell on July 18**



**Abel 39 by Gary Garzone on July 5**





**Jupiter by Gary Garzone on July 28**

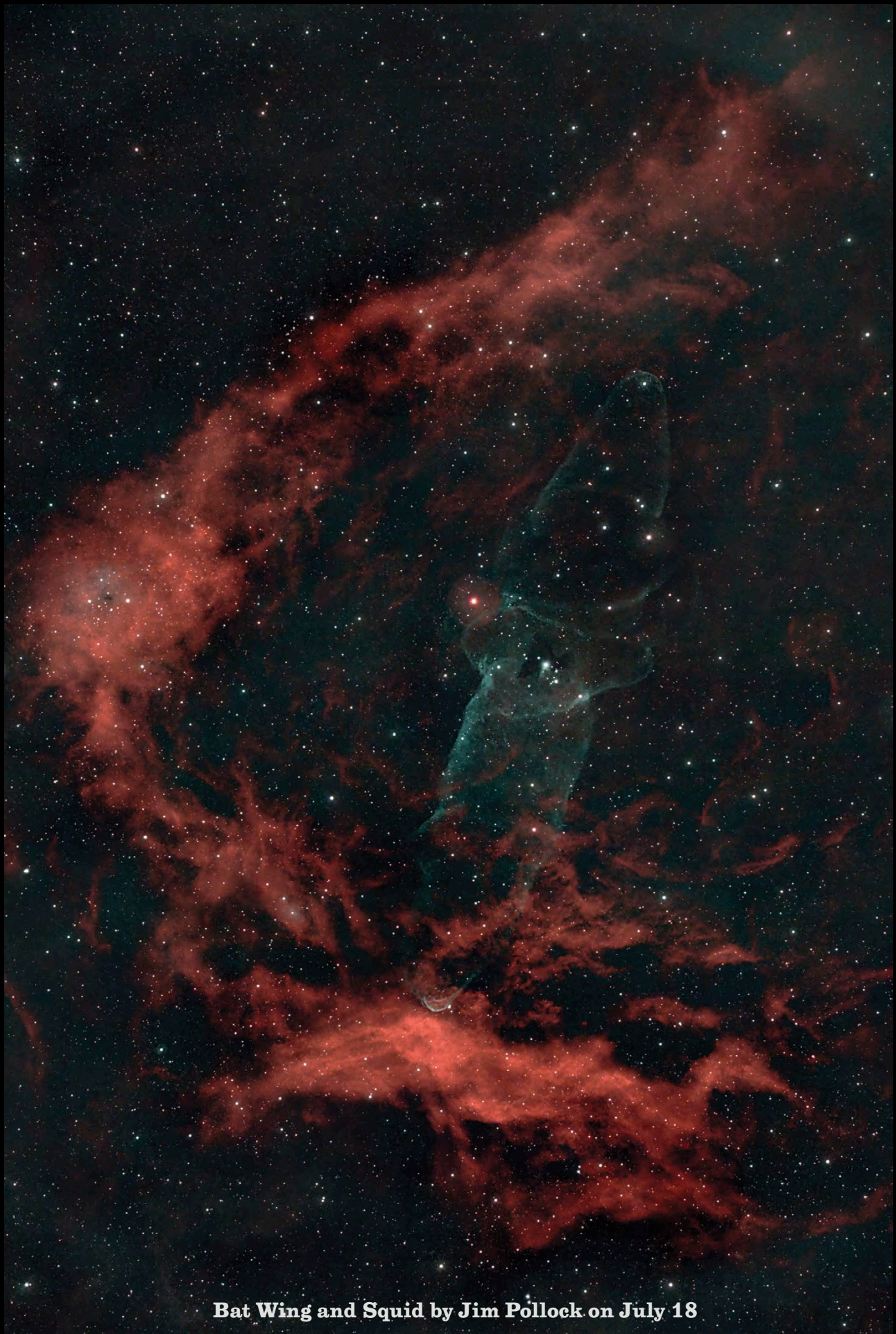


**Saturn by Gary Garzone on July 28**



**M16, Eagle Nebula by Jim Polock on July 17**





**Bat Wing and Squid by Jim Pollock on July 18**





**SH2-115 by Martin Butley on July 4**





**WR 134 by Martin Butley on July 21**





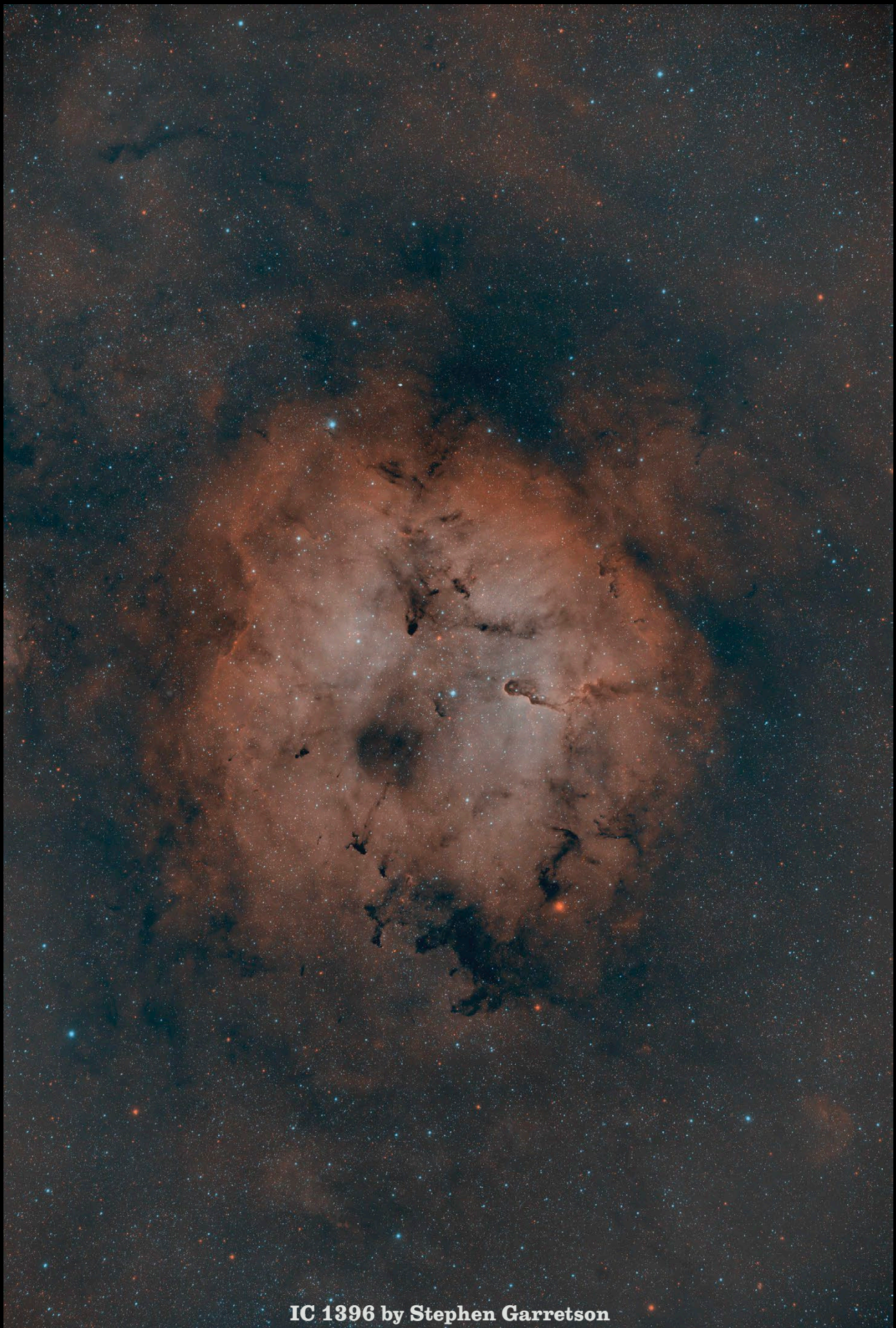
**SH2-115 by M. J. Post on July 13**





**SH2-112 by M. J. Post on July 23**





**IC 1396 by Stephen Garretson**





**SH2-87 Area by Stephen Garretson**





**M10 by Rolando Garcia on July 18**





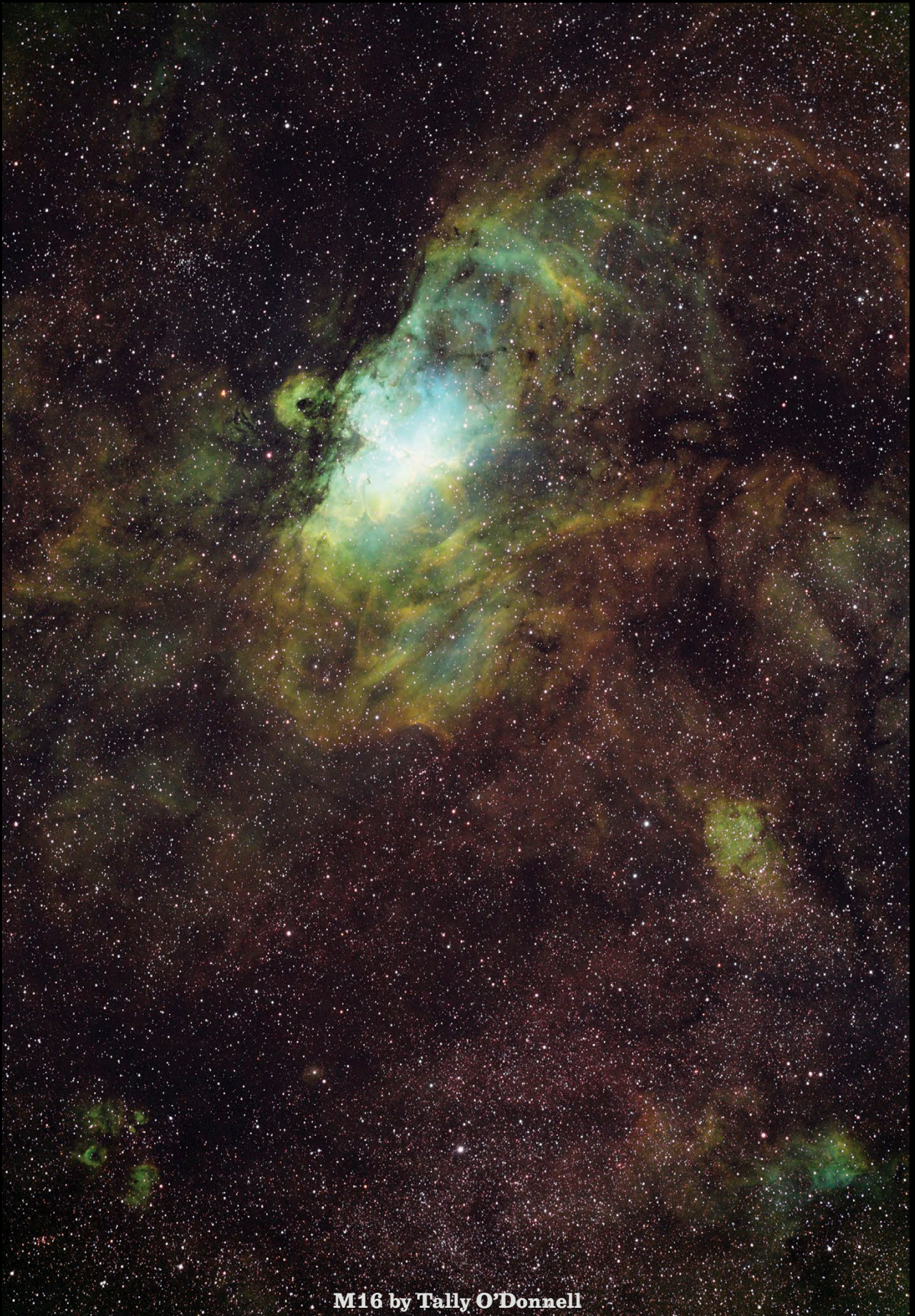
**M5 by Rolando Garcia on July 18**





**Crescent by Tally O'Donnell on July 20**





**M16 by Tally O'Donnell**



**LONGMONT ASTRONOMICAL SOCIETY**  
**PO Box 806, LONGMONT, CO**  
**[HTTPS://WWW.LONGMONTASTRO.ORG](https://www.longmontastro.org)**

**LAGOON AND TRIFID BY PAUL KIRKPATRICK**

